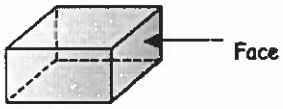
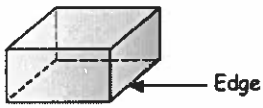
CCM6 Unit 12: Surface Area and Volume Vocabulary

Area	The amount of square units covered by a plane figure measured in square units
Base	One side of a polygon
Decomposing	Break shapes apart into smaller figures
Dimensions	The size of an object
Edge	The line segment along which two faces of a polyhedron intersect
Face	A flat surface of a polyhedron (a 3D figure)
Height	How tall an object is
Isosceles	Two equal sides
Net	An arrangement of two-dimensional figures that can be folded to form a polyhedron (3-D figure); what you get if you "unfold" a shape
Polyhedron	Three-dimensional figure whose surfaces, or faces, are all polygons
Pyramid	A polyhedron that has a polygon base and triangular lateral faces
Right Rectangular Prism	A solid (3-dimensional object) which has six faces that are rectangles
Surface area	The sum of the area of the faces of a 3D figure
Triangular Prism	A solid (3-dimensional object) which has five faces (3 rectangles and 2 triangles)
Vertices	A point where three or more edges intersect; the "corners"
Volume	The number of cubic units needed to fill a given space

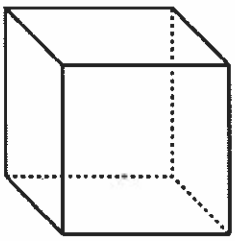
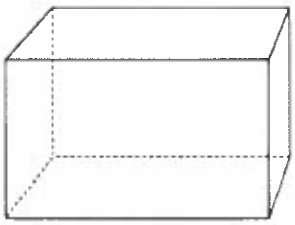
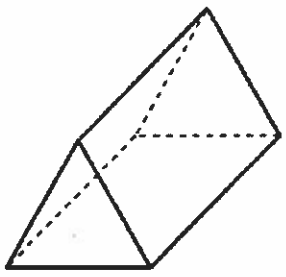
Notes - 3D Figures

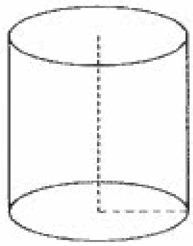
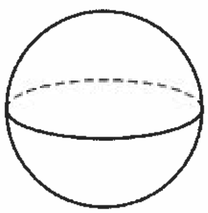
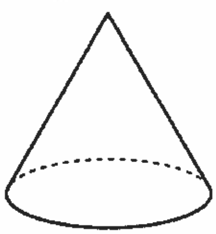
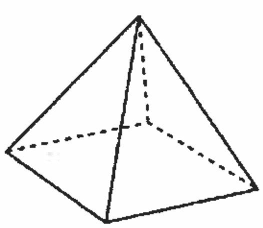
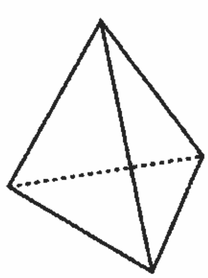
Name: _____

Face	Edge	Vertex
A _____ surface of a polyhedron.	The line segment which _____ faces _____.	A _____ where _____ or more edges intersect.
		

Net: An arrangement of _____ figures that can be _____ to form a _____ figure.

Prisms	Pyramids
▪ Have _____ identical bases. ▪ Named by the _____ of their base. ▪ The sides of a prism are _____.	▪ Have only _____ base. ▪ Named by the _____ of their base. ▪ The sides of a pyramid are _____.

3D Figure	Net	Properties of Figure
		**Shape of Base:** _____ **Name of Figure:** _____ _____ Faces _____ Vertices _____ Edges
		**Shape of Base:** _____ **Name of Figure:** _____ _____ Faces _____ Vertices _____ Edges
		**Shape of Base:** _____ **Name of Figure:** _____ _____ Faces _____ Vertices _____ Edges

3D Figure	Net	Properties of Figure
		Shape of Base: ________ Name of Figure: ________ ______ Faces ______ Vertices ______ Edges
		Shape of Base: ________ Name of Figure: ________ ______ Faces ______ Vertices ______ Edges
		Shape of Base: ________ Name of Figure: ________ ______ Faces ______ Vertices ______ Edges
		Shape of Base: ________ Name of Figure: ________ ______ Faces ______ Vertices ______ Edges
		Shape of Base: ________ Name of Figure: ________ ______ Faces ______ Vertices ______ Edges

3-D Scavenger Hunt

- Use your device to take pictures of at least 5 different 3-D solids around the school.

Cube, Rectangular Prism, Triangular Prism, Cylinder, Sphere, Cone, Pyramid

- After you have taken your pictures, use an app (Google Slides, Pic Collage, iMovie, etc.) to display your pictures.
- Label your pictures: Name of Object, 3-D Name, Faces, Vertices, Edges
- Post/Share/Print your 3-D Scavenger Hunt

*If you don't have a device, sketch your "pictures" using blank paper.

3-D Modeling

- For this activity you need toothpicks, marshmallows/play dough/putty to construct your own 3-D models.
- Using your materials, build the following figures and fill in the chart as you go. Take pictures of each of your models.

Cube, Rectangular Prism, Triangular Prism, Square Pyramid, Triangular Pyramid

*If you don't have a device, sketch your "pictures".

Shape	Sketch/Picture	# of Toothpicks	# of Marshmallows
What did you notice?			

10-6 Exercises

FOR EOG PRACTICE
see page 678

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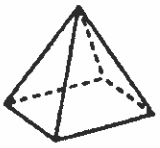
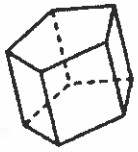
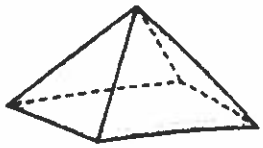
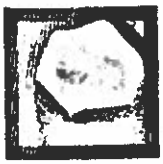
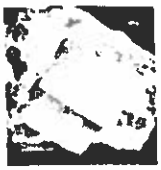
GUIDED PRACTICE

See Example 1 Identify the number of faces, edges, and vertices in each solid figure.

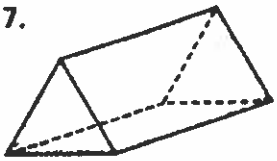
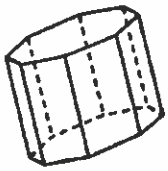
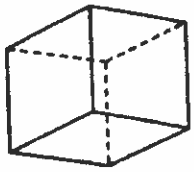
1. 
2. 
3. 

See Example 2 Name the solid figure represented by each object.

4. 
5. 
6. 

INDEPENDENT PRACTICE

See Example 1 Identify the number of faces, edges, and vertices in each solid figure.

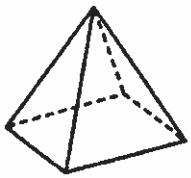
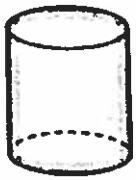
7. 
8. 
9. 

See Example 2 Name the solid figure represented by each object.

10. 
11.
12. 

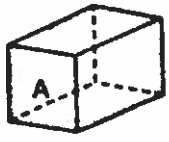
PRACTICE AND PROBLEM SOLVING

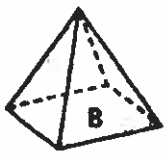
Name each figure and tell whether it is a polyhedron.

13. 
14. 
15. 

Write the letter of each figure described.

16. prism
17. has triangular faces
18. has 6 faces
19. has 5 vertices





Write *true* or *false* for each statement.

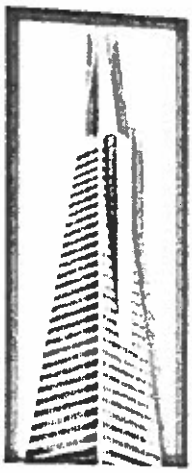
20. A cone does not have a flat surface.

21. The bases of a cylinder are congruent.

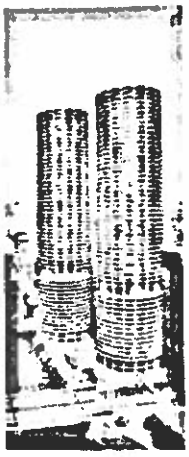
22. All pyramids have five or more vertices.

23. All of the edges of a cube are congruent.

24. ***ARCHITECTURE*** Name the solid figure represented by each building.

a. 

b. 

c. 

25. ***HOBBIES*** Li makes candles with her mother. She made a candle in the shape of a pyramid that had 9 faces. How many sides did the base of the candle have? Name the polyhedron formed by the candle.

26. ***WHAT'S THE ERROR?*** A student says that any polyhedron can be named if the number of faces it has is known. What is the student's error?

27. ***WRITE ABOUT IT*** How are a cone and cylinder alike? How are they different?

28. ***CHALLENGE*** The top of a square pyramid is cut off, and the cut is made parallel to the base of the pyramid. What are the shapes of the faces of the new figure?

Spiral Review

Order the numbers from greatest to least. (Lesson 1-1)

29. 108, 24, 89, 75, 5, 91

30. 246, 235, 241, 36, 240

31. 19, 18, 15, 17, 13

Find each product. (Lesson 3-6)

32. 1.2×8

33. 0.05×0.6

34. 14×0.02

35. 22.1×22.1

36. **EOG PREP** Which of the following types of data should not be displayed using a line graph? (Lesson 6-7)

A The temperature each hour in one day

B A child's height on each of her birthdays

C The price of a computer from 1990 to 2000

D Students' favorite foods

7

Unit 12 Video 1 Notes
Surface Area & Volume
Volume of Rectangular & Triangular Prisms

Name: _____
Date: _____ Core: _____

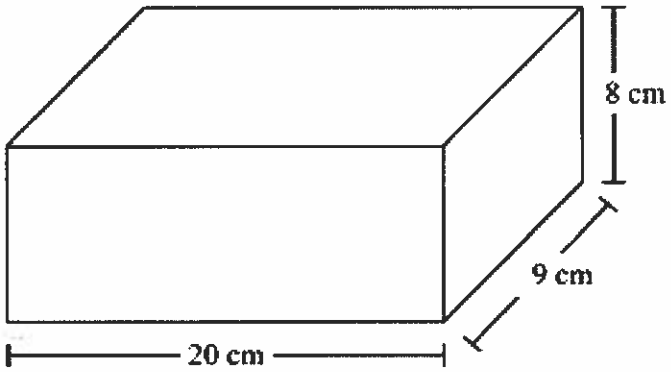
Notes:

Volume of a Cube	Rectangular Prism	Triangular Prism
V = Bh	V = Bh	V = Bh
$V = s^3$	V = (lw h	V = () h

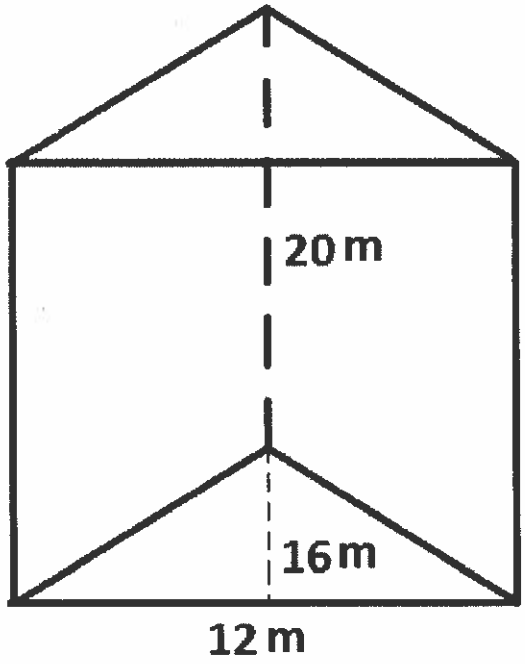
Big "B" represents the area of the base polygon, and that base area is stacked "h" times.

Instructions: Find the volume of each 3-D shape (prism):

1.)



2.) Challenge Problem: Students in CCM6 and CCM6 Plus do not have to know the formula for volume of a triangular prism, but should be able to use a formula when given. V = Bh or



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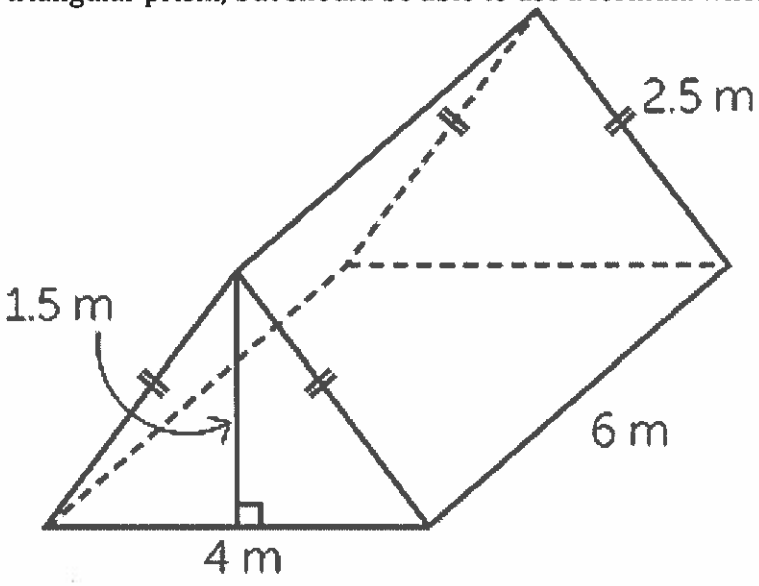
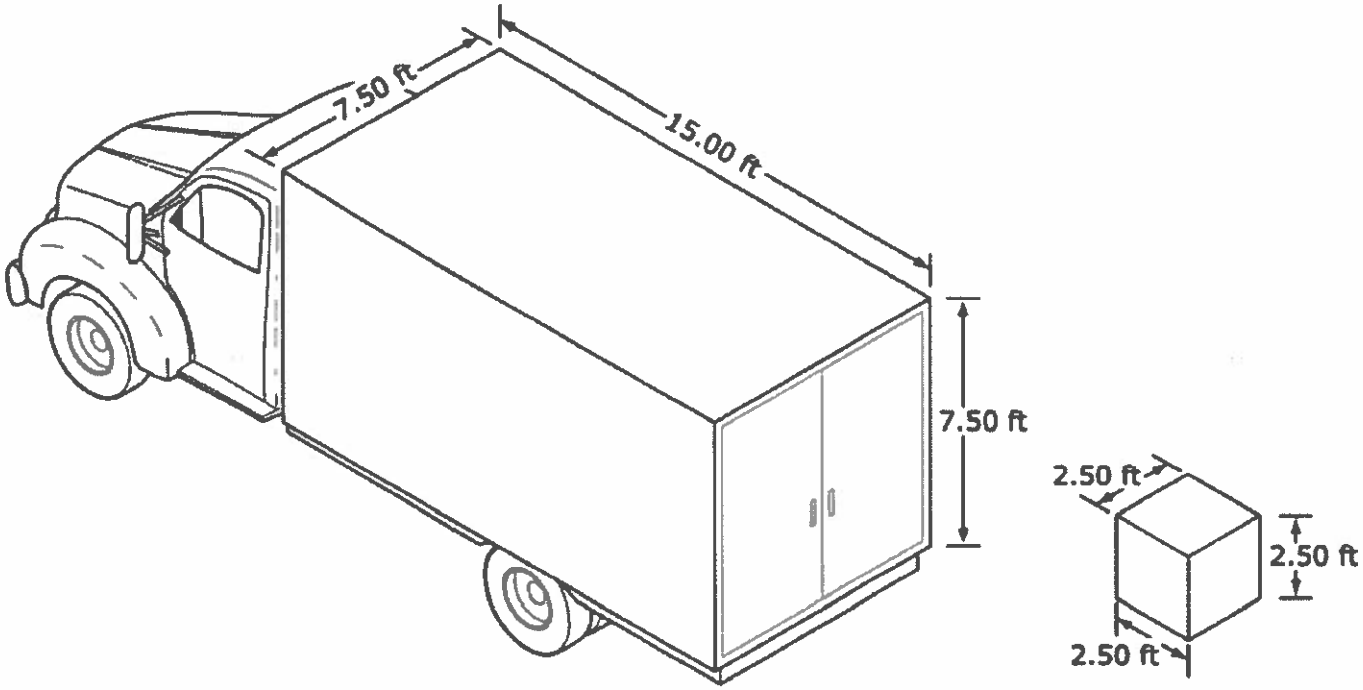
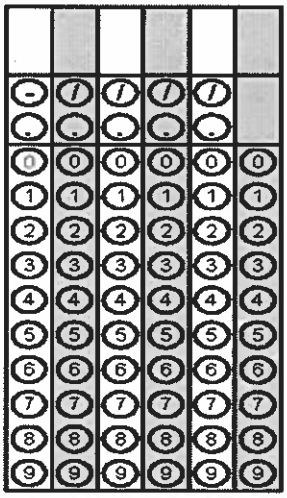
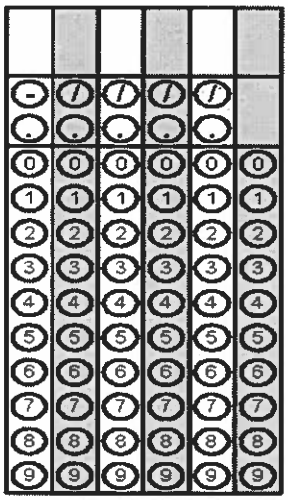
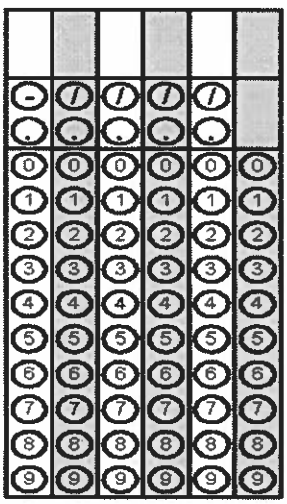


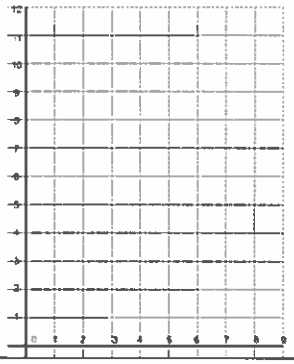
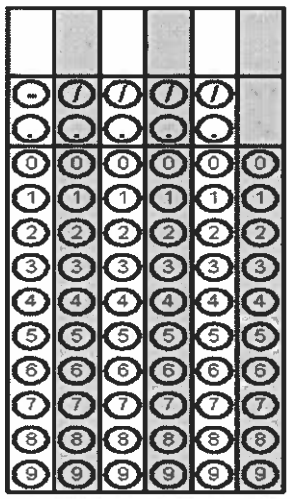
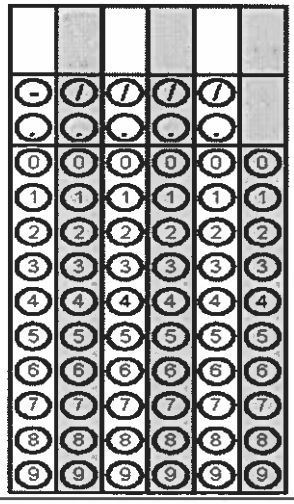
4.) Find the volume of the truck's trailer. Challenge, how many of the boxes would fit inside the trailer?



Additional Work Space

CCM6- Quarter 4 - Week 1

	Problem 1	Problem 2	Gridded Response
Monday	Anthony runs 2.5 miles each day. Celia runs 0.8 as far as Anthony each day. How far does Celia run each day?	What happens to the area of a rectangle if the width is tripled?	***Problem 1*** 
Tuesday	Write a ratio comparing the circumference to the area of a circle with a radius of 7cm. Leave your circumference and area in terms of π.	Solve for x. $\frac{1}{4}x + \frac{3}{2}x = \frac{7}{8}$	***Problem 2*** 
Wednesday	The students in the 5th grade class at Weathersby Elementary fill 2 $\frac{1}{2}$ busloads for their field trip. If $\frac{2}{3}$ of the students on each bus are boys, how many busses would it take to carry only the boys on the trip?	Find the surface area of a cube with side length of 2.4 in.	***Problem 2*** 

Thursday	Cersei lives at point (0, 0), She walks to school at point (4, 0), after school she goes to the YMCA at point (4,3), she meets her mom for dinner at (0, 3), and then walks home. How far did she travel today? 	Answer the following questions for the expression. $7a + 5b + 2c + 6 + d$ How many terms does it have? What are the variables? What are the coefficients? What is the constant?	***Problem 1*** 
Friday	Cara puts all of the allowance she earns each week into her savings account. If she has $105 now and earns $12.50 each week in allowance, how much will be in the account in six weeks?	What is the difference between the area and perimeter of a rectangle with side lengths 8in and 6in?	***Problem 1*** 

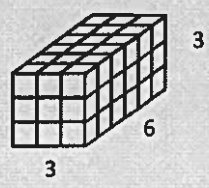
Using V = Bh = lwh

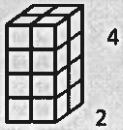
- What is the volume of each of these prisms?

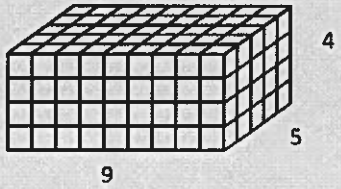
V = 3 x 6 x 3
= 54

V = 2 x 2 x 4
= 16

V = 9 x 5 x 4
= 180







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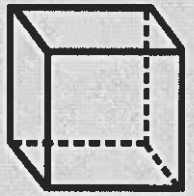
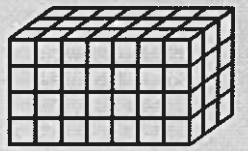
Finding Missing Dimensions if Given Volume





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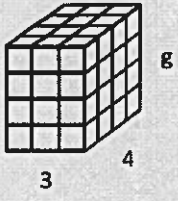
13

How about working backwards?

- How would the process change if we were given the volume but were missing a dimension?

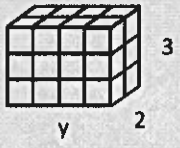
V = 48

$V = lwh$
$48 = 3 \times 4 \times g$
$48 = 12 \times g$
$\frac{48}{12} = \frac{12g}{12}$
$4 = g$



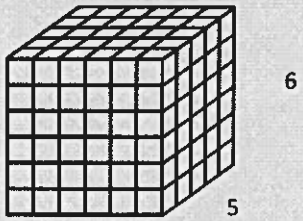
V = 24

$V = lwh$
$24 = y \times 2 \times 3$
$24 = y \times 6$
$\frac{24}{6} = \frac{6y}{6}$
$4 = y$



V = 180

$V = lwh$
$180 = m \times 5 \times 6$
$180 = m \times 30$
$\frac{180}{30} = \frac{30m}{30}$
$6 = m$



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Let's review the formula for volume of a prism.

- V = Bh, where B is the area of the base.
- For a rectangular prism, the base is a rectangle, so B = lw.
- This means the volume of a rectangular prism is V = Bh = lwh.

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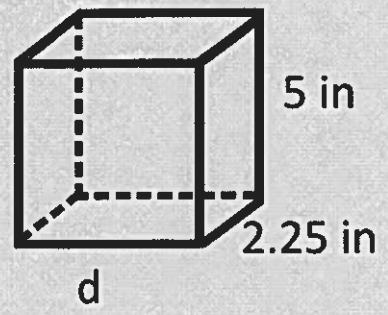
Now you try . . . .

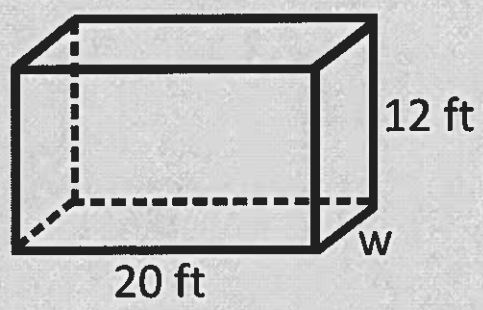
V = 45 in^3



$$V = lwh$$

But what if there aren't any boxes?

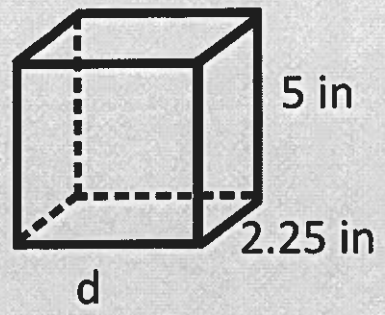
V = 1680 ft^3



$$V = lwh$$
$$1680 = 20 \times w \times 12$$
$$1680 = 240 \times w$$
$$\frac{1680}{240} = \frac{240w}{240}$$
$$7ft = w$$

Now you try . . . .

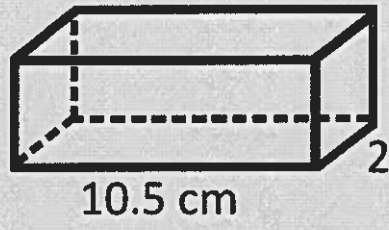
V = 45 in^3



$$V = lwh$$
$$45 = d \times 2.25 \times 5$$
$$45 = d \times 11.25$$
$$\frac{45}{11.25} = \frac{11.25d}{11.25}$$
$$4\ in = d$$

But what if there aren't any boxes?

V = 78.75 cm^3



$$V = lwh$$
$$78.75 = 10.5 \times 2.5 \times y$$
$$78.75 = 26.25 \times y$$
$$\frac{78.75}{26.25} = \frac{26.25y}{26.25}$$
$$3\ cm = y$$

Now you try . . . . .

V = 68.25 km^3

$V = lwh$

Created by E. Nash

Now you try . . . .

V = 68.25 km^3

$V = lwh$

$68.25 = x \times 3 \times 13$

$68.25 = x \times 39$

$\frac{68.25}{39} = \frac{39x}{39}$

$1.75\ km = x$

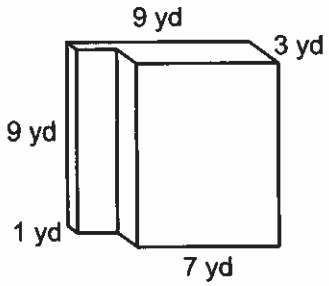
Created by E. Nash

Calculating Volume

Name: _____ **Date:** _____

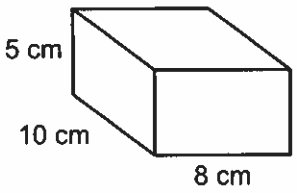
Calculate the volume of each solid.

(1)



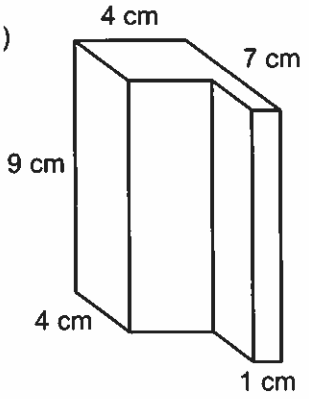
Volume: _____

(2)



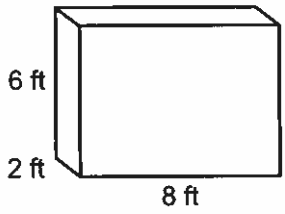
Volume: _____

(3)



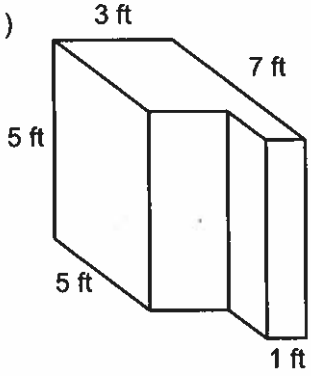
Volume: _____

(4)



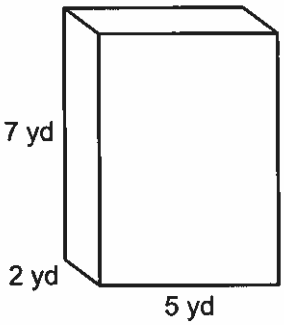
Volume: _____

(5)



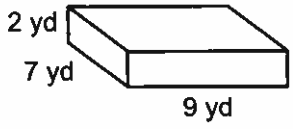
Volume: _____

(6)



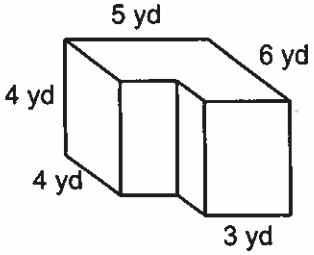
Volume: _____

(7)



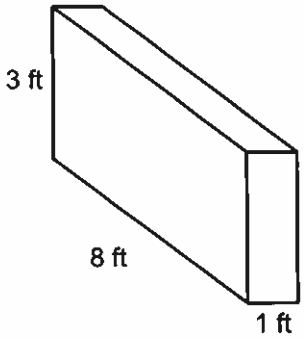
Volume: _____

(8)



Volume: _____

(9)



Volume: _____

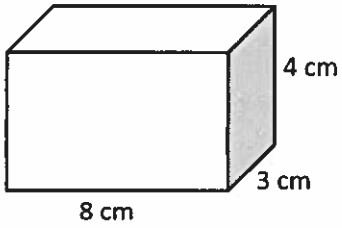
Unit 12 Video 2 Notes Name _____ Date _____

Volume of Rectangular Prisms

Volume	
V=lwh	V=Bh

Ex 1) Find the volume of the rectangular prism with the following dimensions:

3cm, 8cm, 4cm



Volume:_____

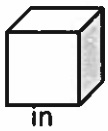
Ex 2) Ben wants to find the volume of his fish tank that is in the shape of the rectangular prism. He knows the base of the fish tank is 6 and the height is . What is the volume of a Ben's fish tank?

Volume:_____

Ex 3) A rectangular box has a volume of 120 . If a cube has a dimension of 2m, how many cubes can you pack in the rectangular box?

Cubes:_____

Ex 4) Josh wants to pack 1350 dice into a box. The dice have a dimension of *in.* What is the volume of the box that the dice are being packed in?

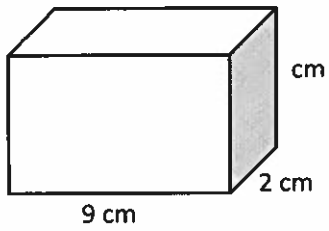


Volume:_____

In Class Practice Problems

1) Find the volume of the rectangular prism with the following dimensions:

2cm, 9cm, 6cm



Volume:_____

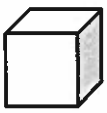
2) Sarah has a shoebox she wants to fill with different items. She needs to find the volume of the shoe box. The shoe box has a base with an area of 12 and the height is . What is the volume of the shoe box?

Volume:_____

3) A rectangular box has a volume of 135 . If a cube has a dimension of 3*m*, how many cubes can you pack in the rectangular box?

Cubes:_____

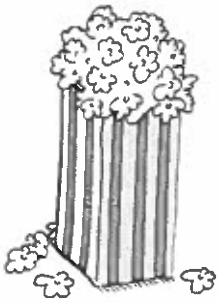
4) Josh wants to pack 768 dice into a box. The dice have a dimension of *in*. What is the volume of the box that the dice are being packed in?



Volume:_____

Popcorn Prisms Anyone?

NAME _____

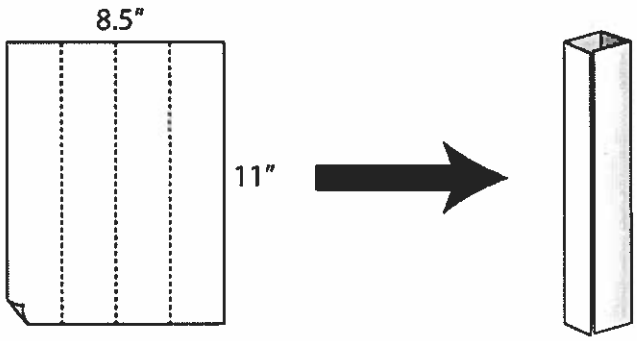


For this activity you will be comparing the volume of 2 prisms created using the same sheet of paper. You will be determining which can hold more popcorn. To do this, you will have to find a pattern for the dimensions for containers.

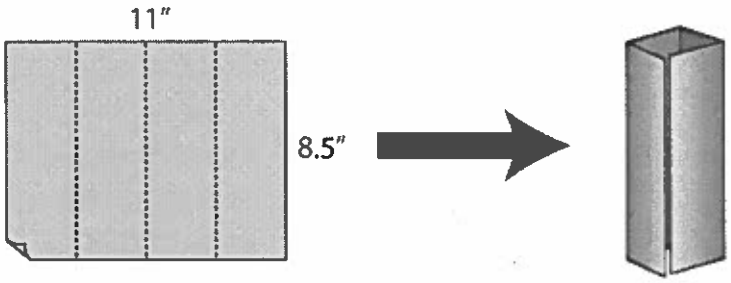
Materials:

- 8.5×11 in. white paper
- 8.5×11 in. colored paper
- Tape
- Popcorn
- Plate
- Cup
- Ruler

Take the white paper and fold it in half the long way. Do this a 2nd time. You are forming a baseless rectangular prism that is tall and narrow. Do not overlap the sides. Tape along the edge. Measure the length, width, and height of each dimension with a ruler. Record your data below and on the rectangular prism. Label it Prism A.



Take the colored paper and fold it in half the wide way. Do this a 2nd time. You are forming a baseless rectangular prism that is short and stout. Do not overlap the sides. Tape along the edge. Measure the length, width, and height of each dimension with a ruler. Record your data below and on the rectangular prism. Label it Prism B.



1.

DIMENSION	PRISM A	PRISM B
LENGTH (in.)		
WIDTH (in.)		
HEIGHT (in.)		

2. Do you think the two prisms will hold the same amount? Do you think one will hold more than the other? Which one? Why?

3. Place Prism B on the paper plate with Prism A inside it. Use your cup to pour popcorn into Prism A until it is full. Carefully, lift Prism A so that the popcorn falls into Prism B. Describe what happened. Is Prism B full, not full, or overflowing?

As you share your popcorn snack, answer the questions below.

4. **a)** Was your prediction correct? How do you know?

b) If your prediction was incorrect, describe what actually happened.

5. **a)** State the formula for finding the volume of a prism.

b) Calculate the volume of Prism A? Label the dimensions in the figure.

c) Calculate the volume of Prism B? Label the dimensions in the figure.

d) Explain why the prisms do not hold the same amount. Use the formula for the volume of a prism to guide your explanation.

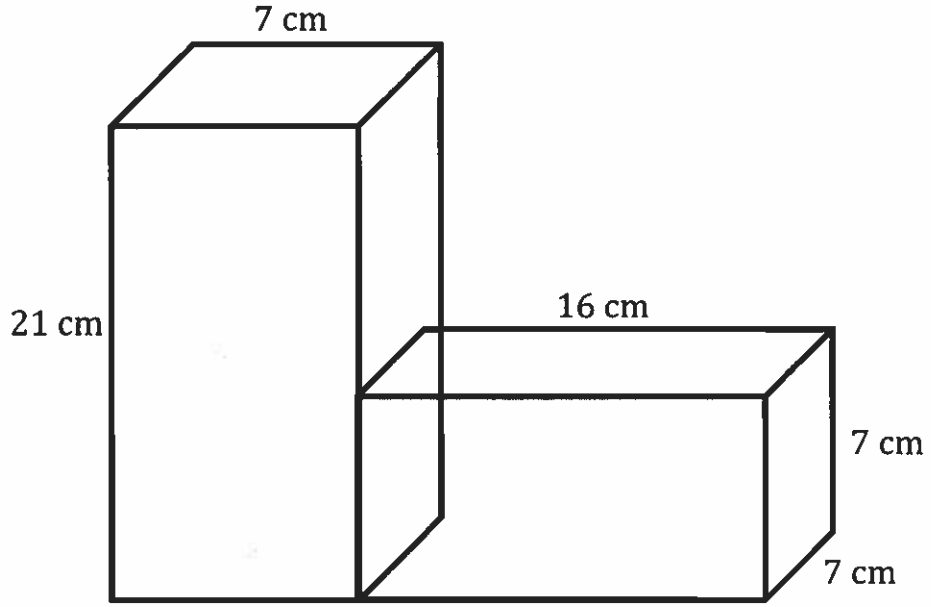
6. **a)** What do you notice about the length and the width?

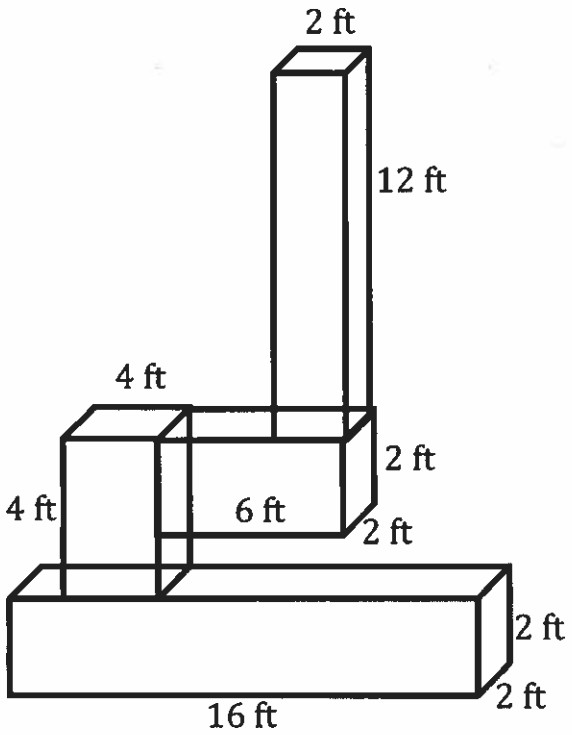
b) Rewrite the formula with only two variables to reflect this observation.

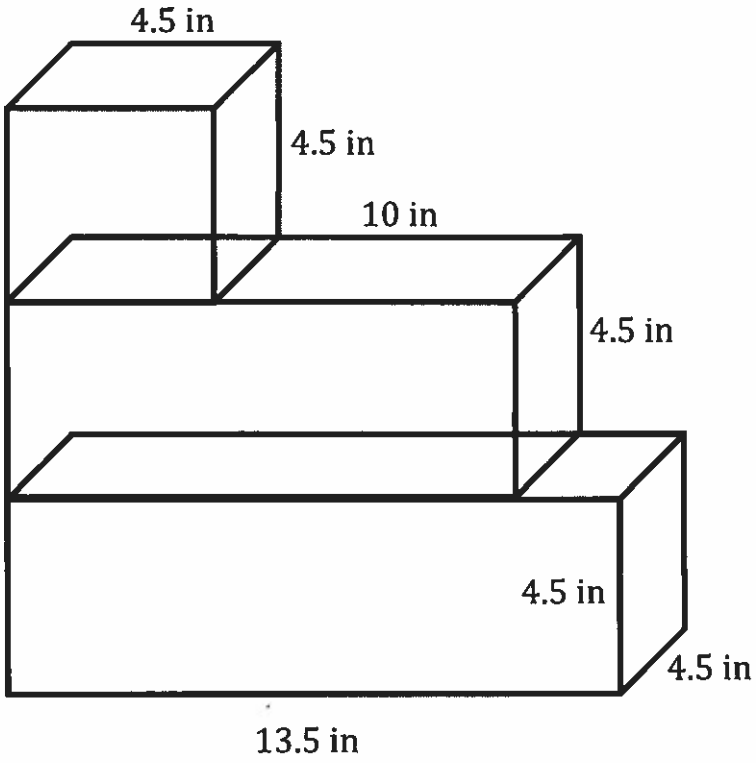
7. By how much would you have to decrease the height of Prism B to make the volumes of the two prisms equal?

Practice with Volume of Prisms & Composite Shapes

Find the volume of each composite shape.







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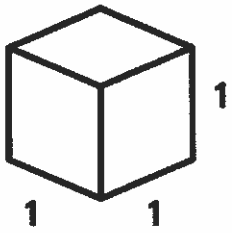
Unit 12. Video 3 Notes

Block Part-y

The cube shown to the right represents the unit cube.
It has the dimensions 1 by 1 by 1.



Color the faces of the unit cube *blue*.

What is the volume of the cube?

1 x 1 x 1 = _____ cubic unit

The rectangular prism in *Figure 1* is made up of some unit cubes as well as other cubes that have been cut in half.

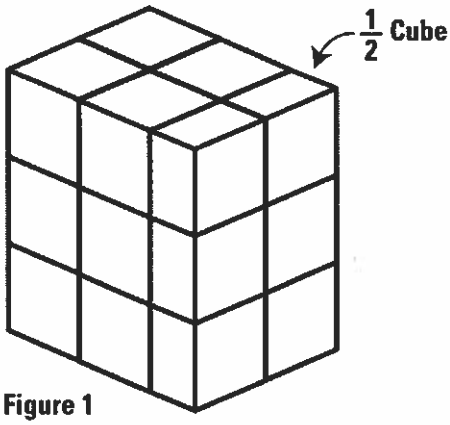


Figure 1

What are the dimensions of Figure 1?

2½ by _____ by _____

Color the faces of the unit cubes *blue*.
Color the faces of the ½ cubes *green*.

How many uncut (unit) cubes are in the figure? _____

How many ½ cubes are in the figure? _____

Without using the formula for finding volume, explain how you could find the volume of the prism.

Now show how to find the volume using the formula.

The rectangular prism in *Figure 2* is made up of some unit cubes, some ½ cubes and some ¼ cubes.

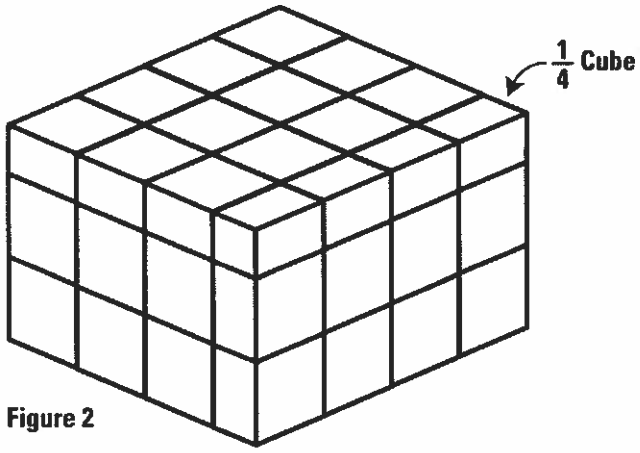


Figure 2

What are the dimensions of Figure 2?

_____ by _____ by 2½

Color the faces of the unit cubes *blue*.
Color the faces of the ½ cubes *green*.
Color the faces of the ¼ cubes *red*.

How many unit cubes are in the figure? _____

How many ½ cubes are in the figure? _____

How many ¼ cubes are in the figure? _____

Without using the formula for finding volume, explain how you could find the volume of the prism.

Now show how to find the volume using the formula.

The rectangular prism in *Figure 3* is made up of unit cubes, ½ cubes, ¼ cubes and 1/8 cubes.

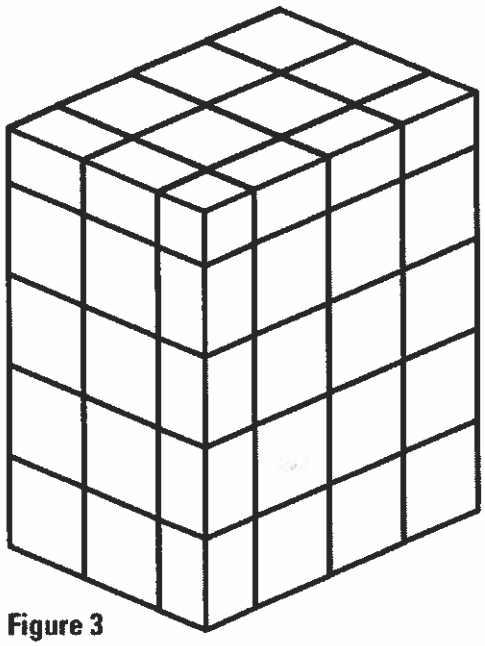


Figure 3

What are the dimensions of Figure 3?

_____ by _____ by 4½

Color the faces of the unit cubes *blue*.
Color the faces of the ½ cubes *green*.
Color the faces of the ¼ cubes *red*.
Color the faces of the 1/8 cube *yellow*.

How many unit cubes are in the figure? _____

How many ½ cubes are in the figure? _____

How many ¼ cubes are in the figure? _____

How many 1/8 cubes are in the figure? _____

Without using the formula for finding volume, explain how you could find the volume of the prism.

Now show how to find the volume using the formula.

A rectangular prism with the dimensions of 2 by 3 by 4 has a volume of 24. Name at least 3 other rectangular prisms (length, width, and height) *with at least one fractional dimension* that have a volume of 24.

Fractional Volume Problem

A right rectangular prism has edges of $1\frac{1}{4}$", 1" and $1\frac{1}{2}$". How many cubes with side lengths of $\frac{1}{4}$ would be needed to fill the prism? What is the volume of the prism?

Fractional Volume Word Problems Part I

1. A right rectangular prism has edges of, 2 in, 2 in and in. How many cubes with lengths of in would be needed to fill the prism? What is the volume?

2. Find the volume of a rectangular prism with dimensions in in and in .How many cubes with lengths of in would be needed to fill the prism?

3. A follower box is 3feet long, 1 feet wide, and feet deep. How many cubic feet of dirt can it hold?

Name: _____ Date: _____ Period: ____

Directions: Please describe and correct the errors that Matt made in solving the problem below.

A right rectangular prism has edges of, $3\frac{1}{2}$ ft, 2 ft, and $1\frac{3}{4}$ ft. How many cubes with lengths of $\frac{1}{2}$ ft would be needed to fill the prism?

Matt's work:

Volume of rectangular prism = $3\frac{1}{2} \cdot 2 \cdot 1\frac{3}{4} = 6\frac{3}{8}$ ft^3 Volume of cube = $\frac{1}{2}$ ft^3

To find out how many cubes fill the prism: $6\frac{3}{8} \div \frac{1}{2} = 12\frac{3}{4}$

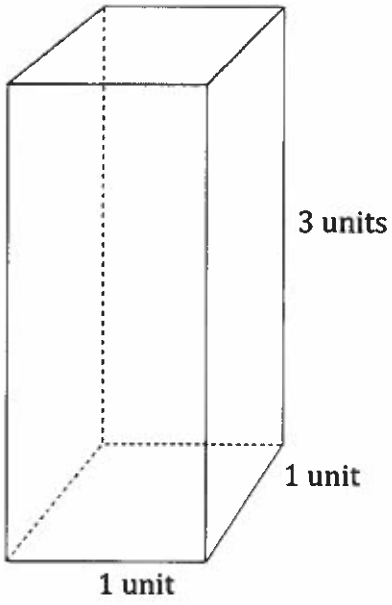
$12\frac{3}{4}$ cubes fit inside the right rectangular prism.

Unit 12 Video 4 Notes
Surface Area & Volume
Volume Fractional Units

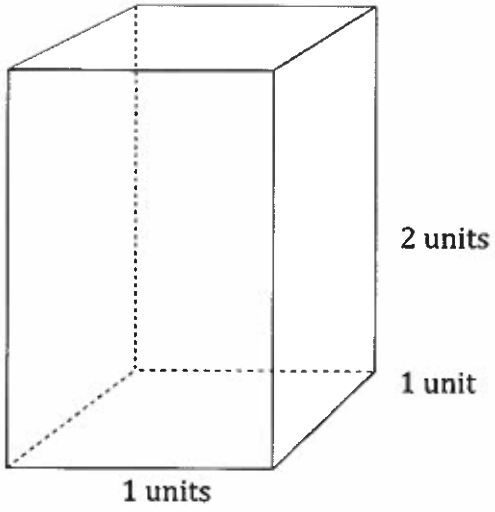
Name: _____
Date: _____ Core: _____

Find the volume of these rectangular prisms with fractional unit measurements.
1st Step: Change the measure of each dimension to a fractional measurement (improper fraction.)
2nd Step: Diagram the fractional units on each of the prisms (to the best of your ability.)
3rd Step: Multiply the three fractional units together, each measure representing a dimension.
4th Step: How many whole cubic units and fractional cubic units will each of these prisms hold?

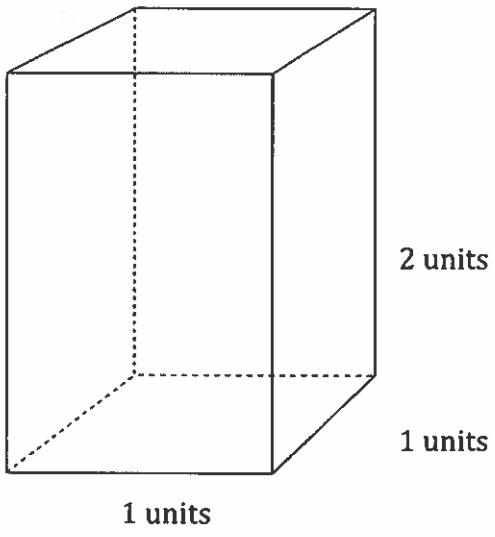
1.)



2.)



3.)

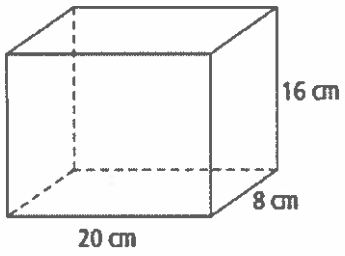


Unit 12 Video 5 Notes
Surface Area & Volume
Surface Area & Nets

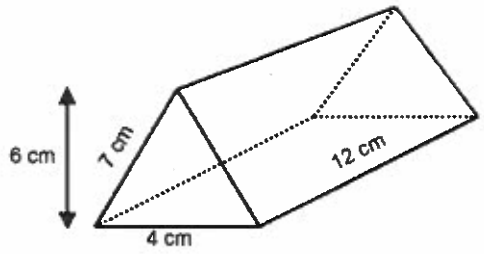
Name: _____
Date: _____ Core: _____

1st Step: Diagram a net for each 3-D object. Label the dimensions of each polygon (face.)
2nd Step: Find the area of each face.
3rd Step: Total the areas of each face to find the total surface area.

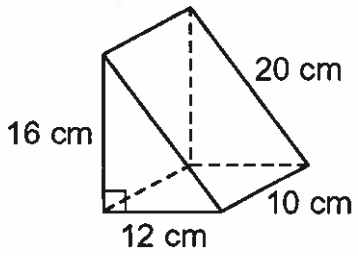
	3-D Object	Net Diagram	Total Surface Area
1.)			



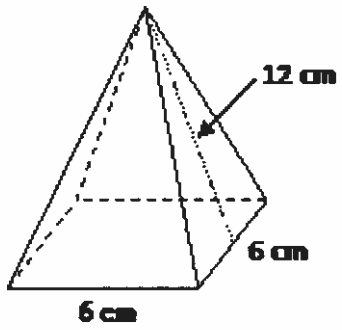
2.)



3.)



4.)



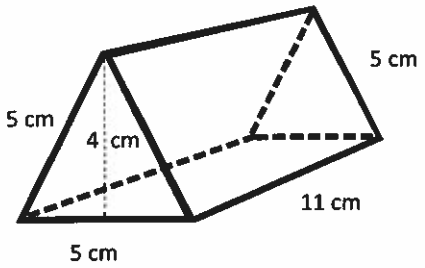
Surface Area and Nets Vocabulary

Term	What I **think** the word means…	What the word means…
Area		
Net		
Surface area		
Face		
Edge		
Vertices		
Pyramid		
Rectangular prism		

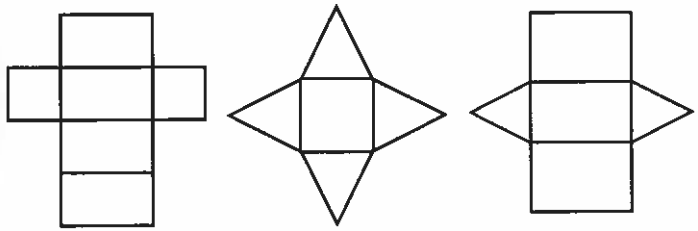
3-1

Draw the net.
Then find the surface area.

A



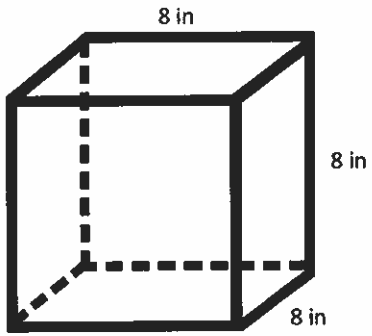
Surface Area of Rectangular & Triangular Prisms & Pyramids



32

Draw the net.
Then find the surface area.

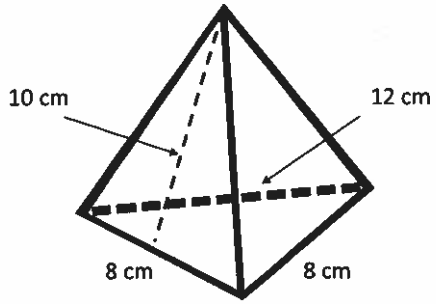
B



This Power Point can be used as a presentation, or slides can be printed and used as task cards. If you choose to use it as task cards, a recording sheet is provided.

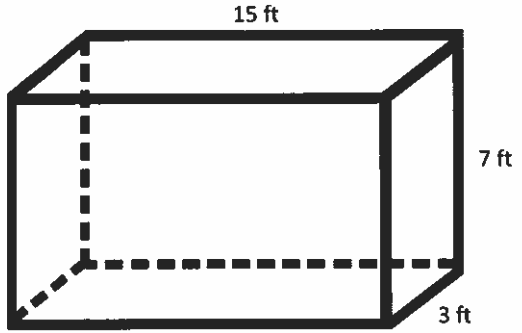
Draw the net.
Then find the surface area.

E



Draw the net.
Then find the surface area.

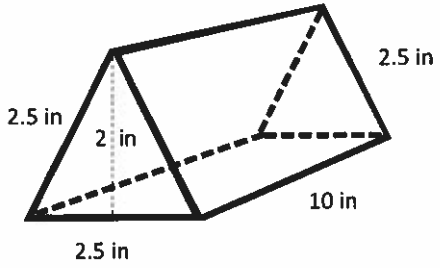
C



3

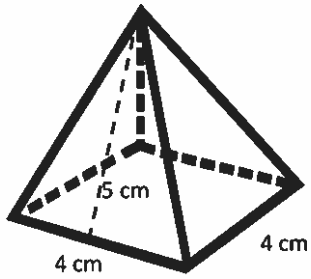
Draw the net.
Then find the surface area.

F



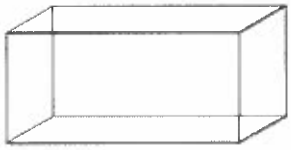
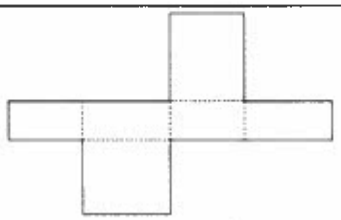
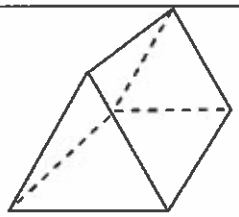
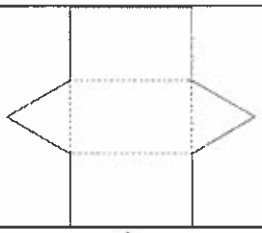
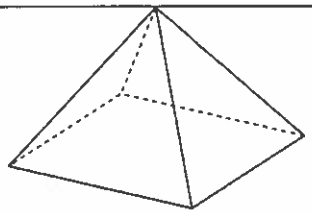
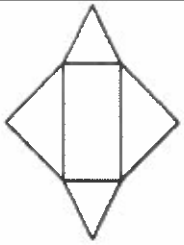
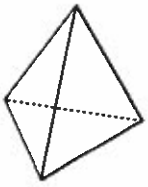
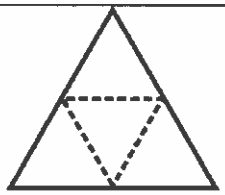
Draw the net.
Then find the surface area.

D

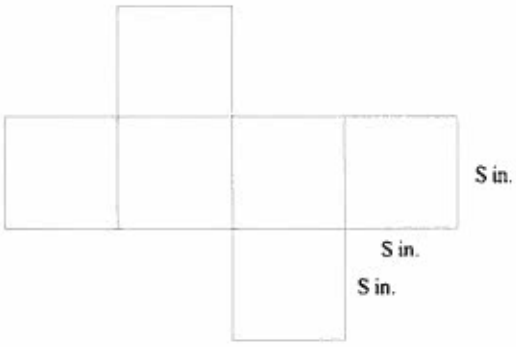


 Name _____ Date _____

Nets and Surface Area

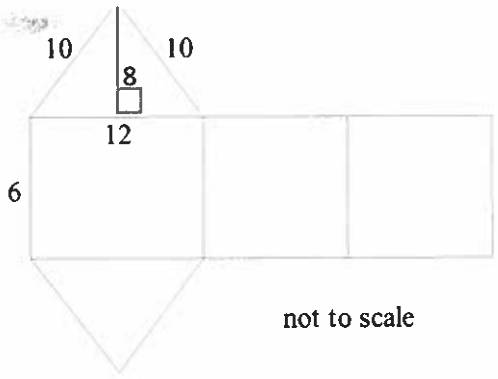
		
		
		
		

Ex 1) Find the surface area of the cube when s = 7.



Area 1: _____ + Area 2: _____ + Area 3: _____ + Area 4: _____ + Area 5: _____ + Area 6: _____ = SA _____

Ex 2) Find the surface area of the triangular prism.

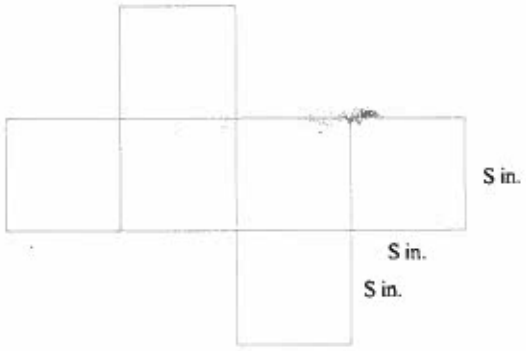


not to scale

Area 1: _____ + Area 2: _____ + Area 3: _____ + Area 4: _____ + Area 5: _____ = SA _____

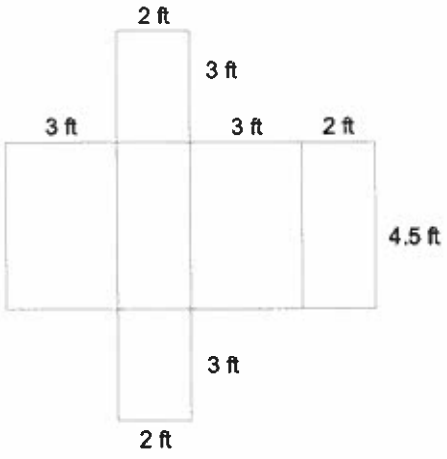
In Class Practice Problems:

1) Find the surface area of the cube when s = 5.



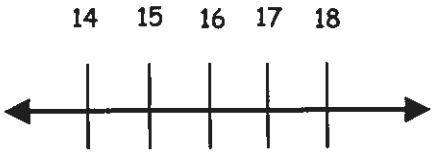
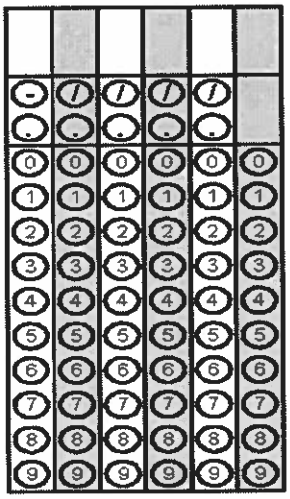
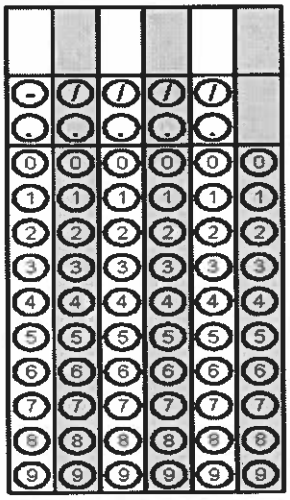
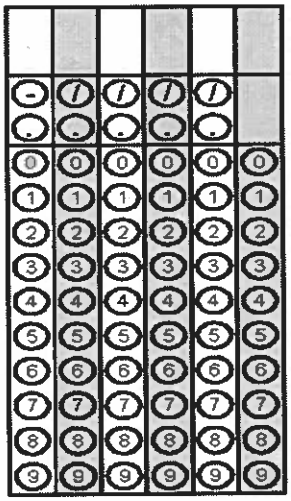
Area 1: _____ + Area 2: _____ + Area 3: _____ + Area 4: _____ + Area 5: _____ + Area 6: _____ = SA _____

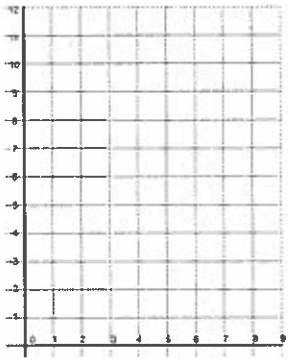
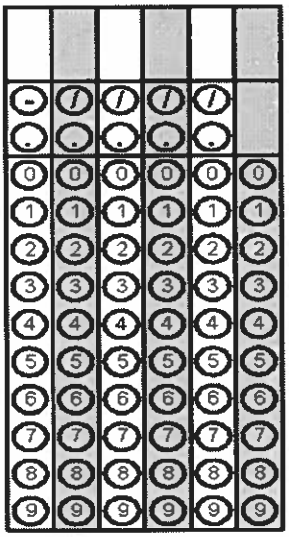
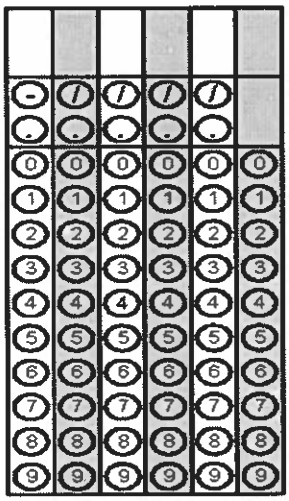
2) Find the surface area of the rectangular prism. HINT: Find the area of each rectangle and add them all up.



Area 1: _____ + Area 2: _____ + Area 3: _____ + Area 4: _____ + Area 5: _____ + Area 6: _____ = SA _____

Additional Work Space

	Problem 1	Problem 2	Gridded Response
Monday	In the United States, citizens must be at least 16 to operate a vehicle. Write and graph an inequality to represent this situation if a represents age. 	Find the volume of a cube with side length of 2.7 cm.	***Problem 2*** 
Tuesday	At Office Supplies a dozen office pens cost $4.49 or you can get four dozen for $18. Which purchase of pens would be the better buy?	Clark is making a quilt. If he has a square piece of fabric that is 5 feet long by 5 feet wide and wants to cut it to make five equal pieces of fabric, what will be the area of each piece of fabric?	***Problem 2*** 
Wednesday	What is the vertex angle in an isosceles triangle with base angles that each measure 35°?	Write a ratio in simplest form comparing the number of apples to oranges in the cafeteria if Jonah counts 32 apples and 48 oranges.	***Problem 1*** 

Thursday	Find the area of a triangle formed by the points (0, 0), (5, 0), and (0, 4)? *Use the graph provided, if needed.* 	Simplify $\left(\frac{7}{15}\right)^0$.	***Problem 1*** 
Friday	If it takes Lulu 35 minutes to bake 2 dozen cookies, how long will it take her to bake 8 dozen cookies?	Write an expression to represent the phrase "twice the sum of x and y decreased by one-third of x."	***Problem 1*** 

Name_____ Date:_____ Period:_____

Nifty Nets

Follow the steps to complete each activity.

Rectangular Prism

1. Draw a net for a rectangular prism. Use the following dimensions: 6 in x 4 in x 2 in. Label the three dimensions.

2. What is the formula to find the volume of a rectangular prism?

3. Find the volume of the rectangular prism.

4. What is the formula to find the surface area of the rectangular prism?

5. Find the surface area of the rectangular prism.

Rectangular Pyramid

1. Draw a net for a rectangular pyramid. Use the following dimensions: base 9 in by 5 in and height of 11 in. Label the three dimensions.

2. What is the formula to find the volume of a rectangular pyramid?

3. Find the volume of the rectangular pyramid.

Create your own Rectangular Prism

1. List the dimensions of your prism. Your dimensions must be different from the rectangular prism given on this page.

2. Draw the net of your rectangular prism.

3. Find the volume.

4. Find the surface area.

5. Design the outside of the net and cut it out.

Name_____

Rubric for Nifty Nets

Activity	Possible Points	Actual Points
Net of Rectangular Prism	10	
Volume Formula	5	
Volume	5	
Surface Area Formula	5	
Surface Area	5	
Net of Rectangular Pyramid	10	
Volume Formula	5	
Volume	5	
Net of your own	20	
Volume	10	
Surface Area	10	
Design/Cut out	10	
TOTAL	**100**	

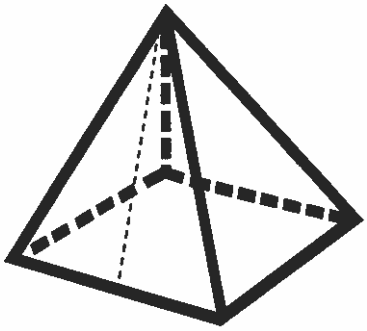
Please paper clip the rubric to the front of your packet. After the rubric, staple the following items in the order listed: question sheet, rectangular prism net, rectangular pyramid net, and your net. The rectangular prism that you created needs to have your name in a visible location.

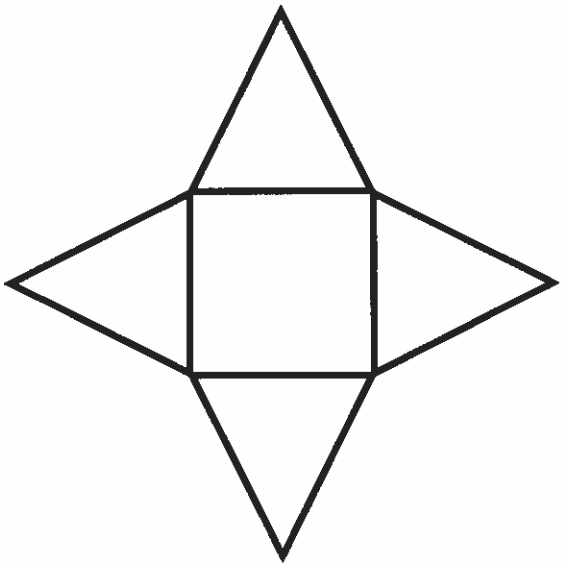
40

Independent Practice on Finding Surface Area

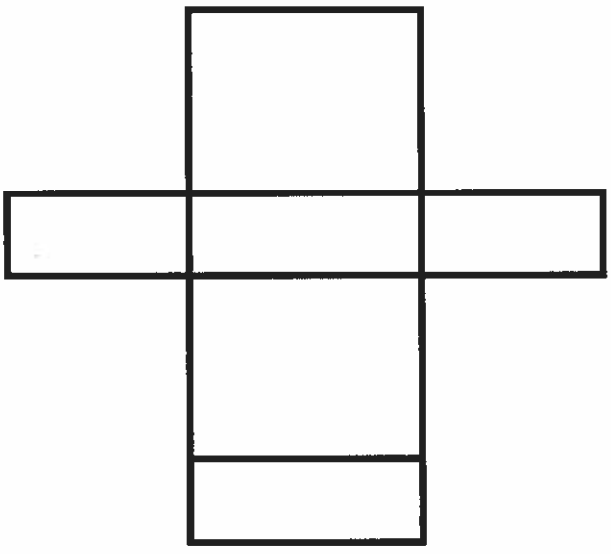
For each shape, label the 3D shape. Then label its net. Finally, find its total surface area.

A square pyramid with base length 15 cm and slant height 22 cm



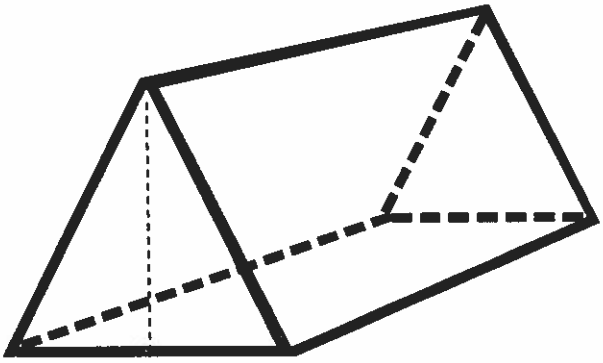


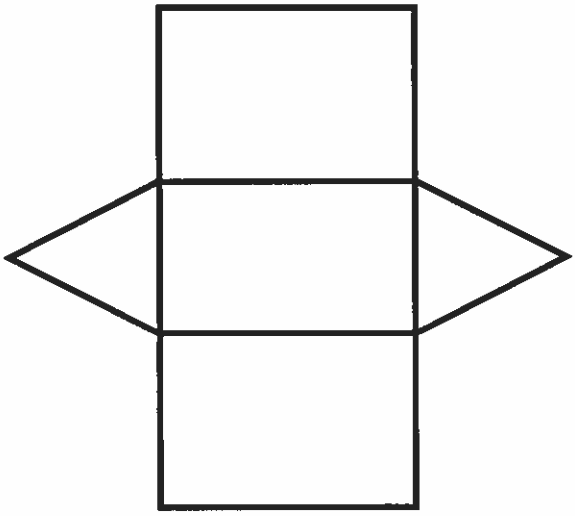
A rectangular prism with dimensions $2\frac{1}{4}$ in, $4\frac{3}{4}$ in, and $1\frac{1}{2}$ in



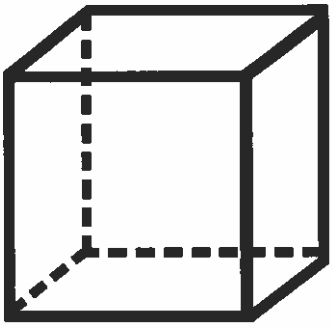
Created by E. Nash

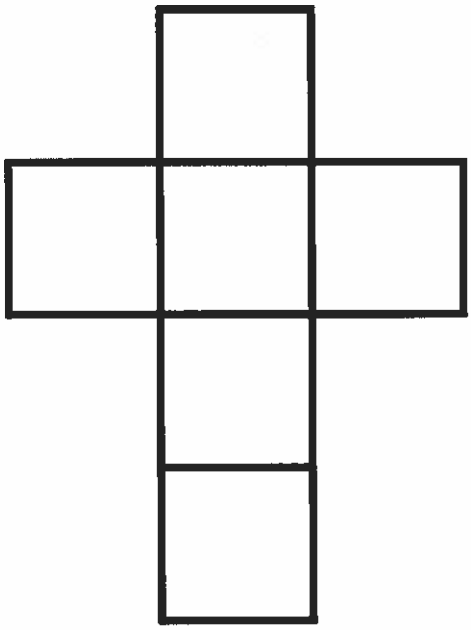
An equilateral triangular prism with triangle side length 3 ft, triangle height 2.5 ft, and prism height 9 ft

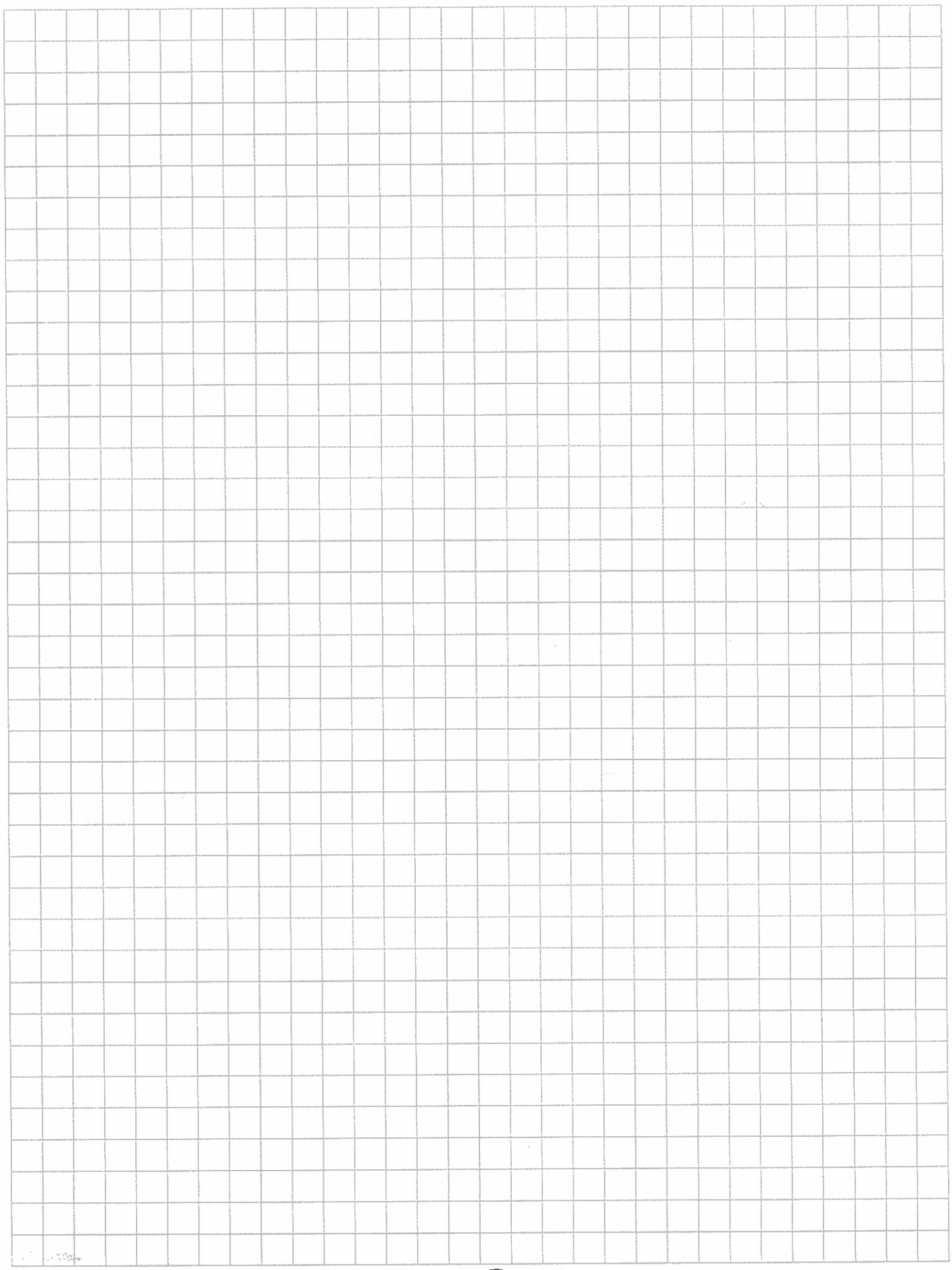




A cube with side length $5\frac{1}{3}$ km





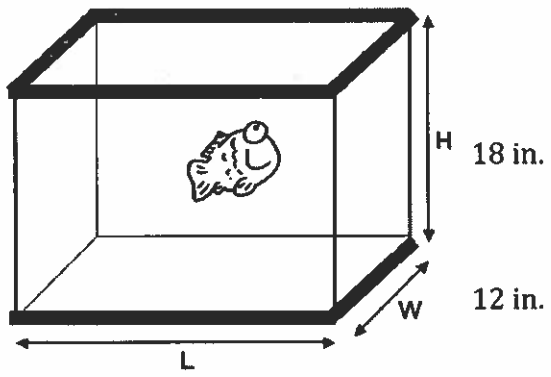


Unit 12 Video 7 Notes
Surface Area & Volume

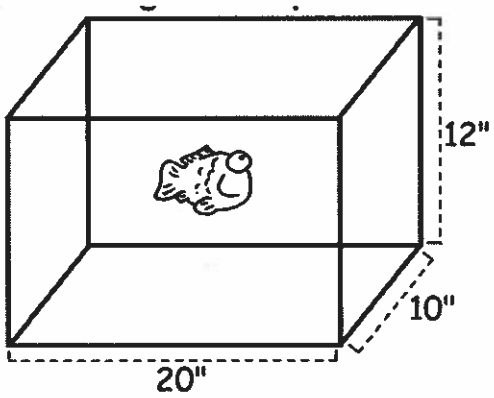
Name: _____
Date: _____ Core: _____

For all problems: Find the amount (surface area) of glass needed for each aquarium, as well as the capacity (volume), in gallons, that each aquarium will hold. Don't forget that the lid (top base) will need glass as well. (Hint: 231 in^3 = 1 gallon, first find the volume in cubic inches, then convert to gallons.)

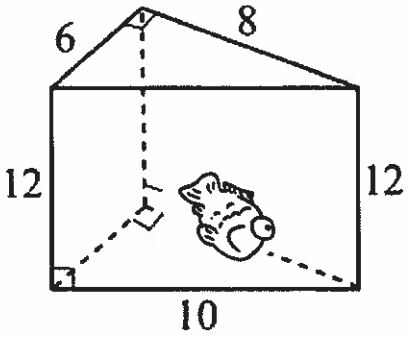
1.)



2.)



3.) Students in CCM6 and CCM6 Plus do not have to know the formula for volume of a triangular prism, but should be able to use a formula when given. V = Bh or

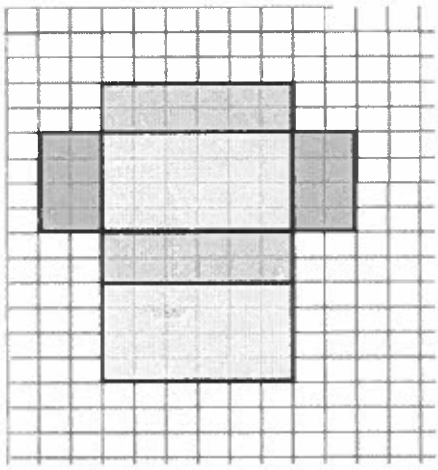


Surface Area Task Review Recording Sheet

1.	2.	3.
4.	5.	6.
7.	8.	9.

Name: _____ Date: _____ Period: _____

Directions: Determine the dimensions of the net and solve for the surface area of this rectangular prism.

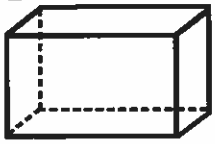


Show your work here:

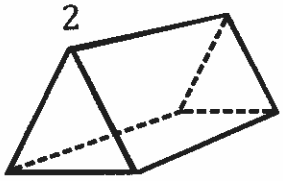
Surface Area Review Homework Sheet

Match the 3D shape to the net.

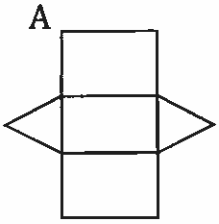
1



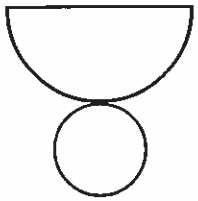
2



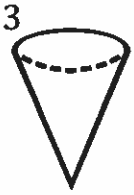
A



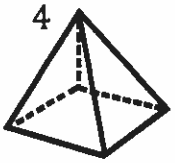
B



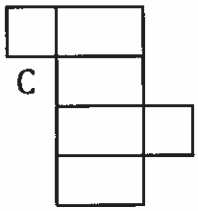
3



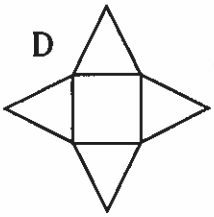
4



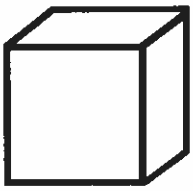
C



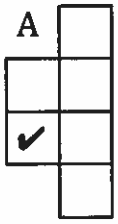
D



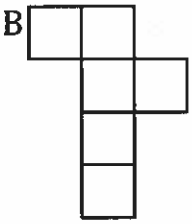
5 Which net <u>cannot</u> be used for this shape?



A



B



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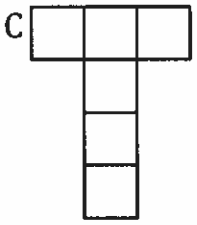

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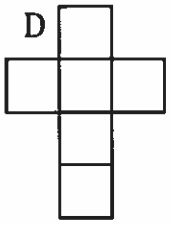
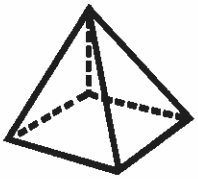
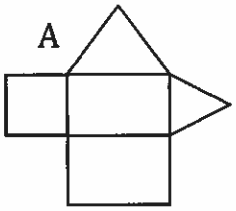


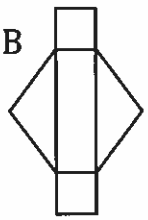
6 Which net <u>can</u> be used for this shape?



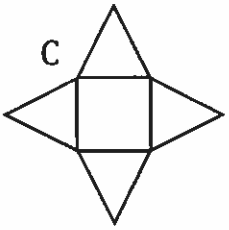
A



B



C



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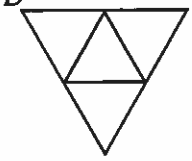
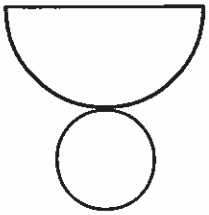


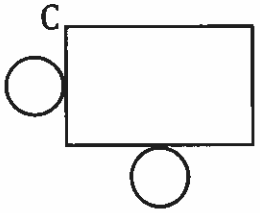
7 Which net <u>can</u> be folded to make a 3D shape?

A

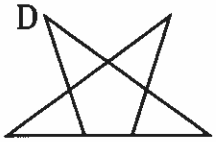


B

C



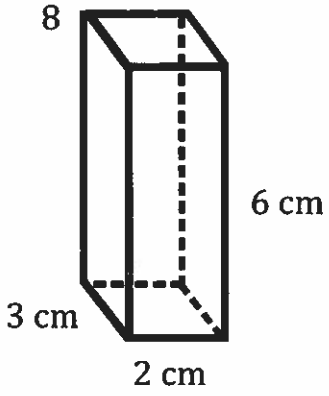
D

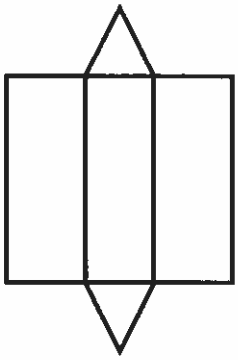


Created by E. Nash

Find the total surface area of the shape. Nets are provided to help you (but they're not in the right order).

8





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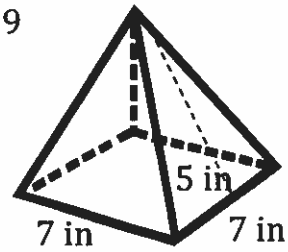

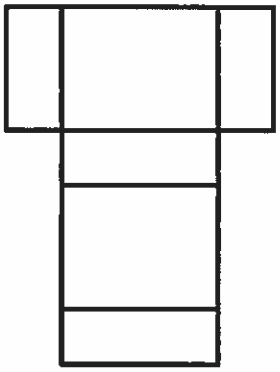

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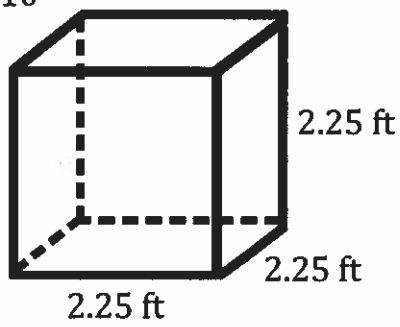

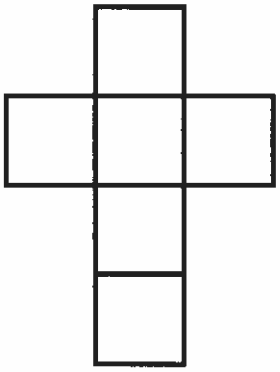

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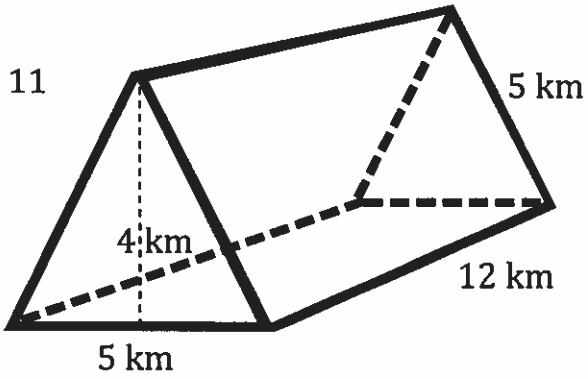
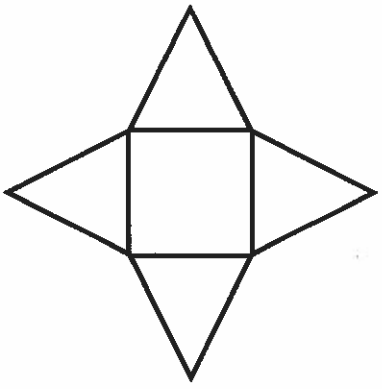




Name: _____ Date: _____ Period: _____

Use your knowledge of volume and surface area to answer each problem.

1. Quincy Place wants to add a pool to the neighborhood. When determining the budget, Quincy Place determined that he would also be able to install a baby pool that requires less than **15** cubic feet of water. Quincy Place has three different models of a baby pool to choose from.

Choice One: **5 ft.** × **5 ft.** × **1 ft.**

Choice Two: **4 ft.** × **3 ft.** × **1 ft.**

Choice Three: **4 ft.** × **2 ft.** × **2 ft.**

Which of these choices is best for the baby pool? Why are the others not good choices?

2. A packaging firm has been hired to create a box for baby blocks. The firm was hired because it could save money by creating a box using the least amount of material. The packaging firm knows that the volume of the box must be **18 cm** .

a. What are possible dimensions for the box if the volume must be exactly **18 cm** ?

b. Which set of dimensions should the packaging firm choose in order to use the least amount of material? Explain.

3. A gift has the dimensions of **50 cm** × **35 cm** × **5 cm**. You have wrapping paper with dimensions of **75 cm** × **60 cm**. Do you have enough wrapping paper to wrap the gift? Why or why not?

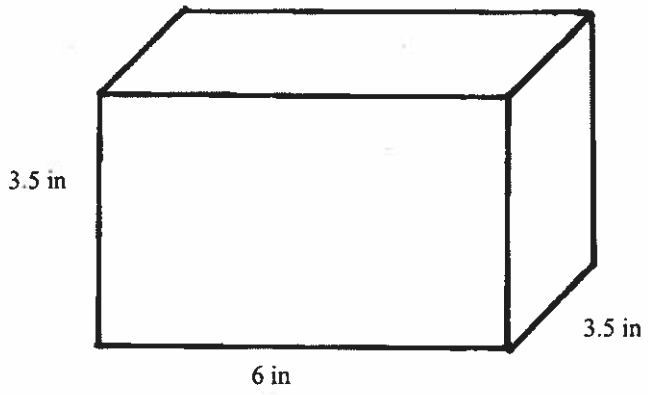
4. Tony bought a flat-rate box from the post office to send a gift to his mother for Mother's Day. The dimensions of the medium-size box are **14 inches** × **12 inches** × **3. 5 inches**. What is the volume of the largest gift he can send to his mother?

5. A cereal company wants to change the shape of its cereal box in order to attract the attention of shoppers. The original cereal box has dimensions of **8 inches** × **3 inches** × **11 inches**. The new box the cereal company is thinking of would have dimensions of **10 inches** × **10 inches** × **3 inches**.

a. Which box holds more cereal?

b. Which box requires more material to make?

6. Cinema theaters created a new popcorn box in the shape of a rectangular prism. The new popcorn box has a length of **6** inches, a width of **3. 5** inches, and a height of **3. 5** inches but does not include a lid.



a. How much material is needed to create the box?

b. How much popcorn does the box hold?

Name: _____ Date: _____ Period: _____

Exit Ticket: Solve the word problem below.

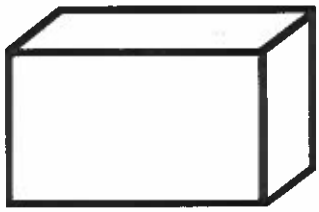
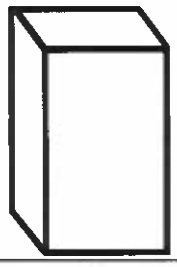
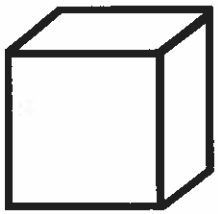
Kelly has a rectangular fish aquarium that measures 18 inches long, 8 inches wide, and 12 inches tall.

a. What is the maximum amount of water the aquarium can hold?

b. If Kelly wanted to put a protective covering on the four glass walls of the aquarium, how big does the cover have to be?

Application of Surface Area and Volume Homework

Margo and her mom have developed the world's best chocolate chip cookie dough recipe. They are ready to start selling their yummy creation, but they are struggling to find the best way to package it for shipping. Their options for different sized cartons are below.

Option	Length	Width	Height	How much does it hold?	How much label is needed?
1 	8 in	3 in	3 in		
2 	3 in	4 in	6 in		
3 	4 in	4 in	4 in		

1. Which option holds the most cookie dough inside? Is this surface area or volume?

2. Which option would use the least amount of label, assuming they covered the entire outside of the carton with a label? Is this surface area or volume?

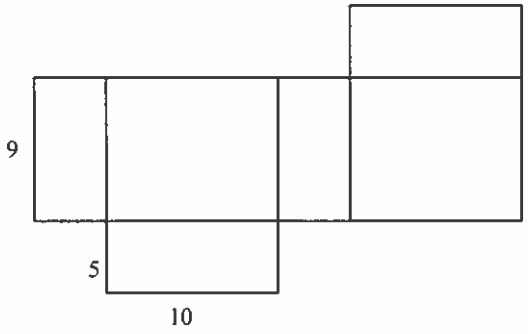
3. Which carton would you use? Justify your answer.

Created by E. Nash

Volume and Surface Area

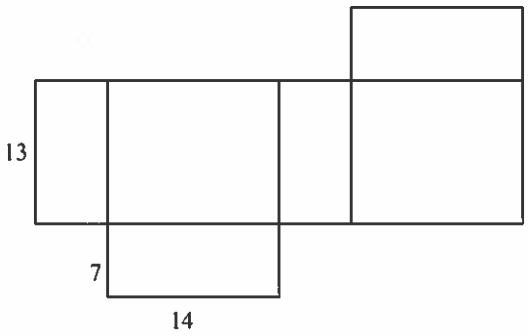
Independent Questions

1. How will the surface area of the figure represented by the net change if the length increases by 9 feet? The original figure has dimensions of $l = 10$ feet, $w = 5$ feet, and $h = 9$ feet as shown below.



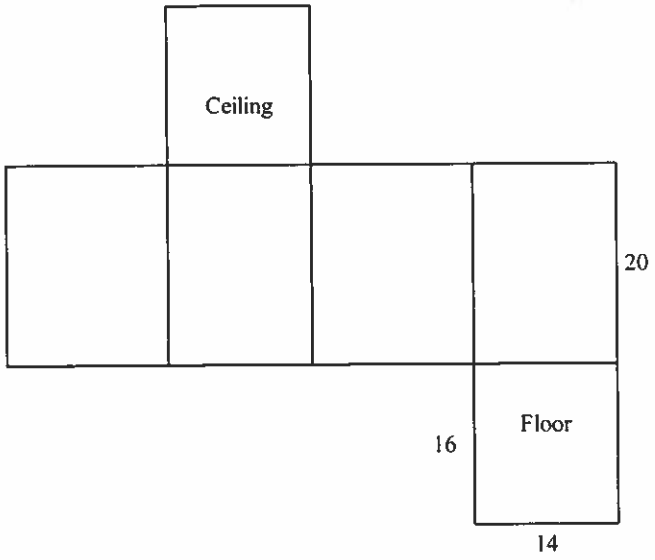
a. The surface area increases by 252 square feet.
b. The surface area increases by 370 square feet.
c. The surface area increases by 81 square feet.
d. The surface are increases by 622 square feet.

2. The net below has dimensions $l = 14$ feet, $w = 7$ feet, and $h = 13$ feet. How will the surface area of the figure change if the width decreases by 2 feet?



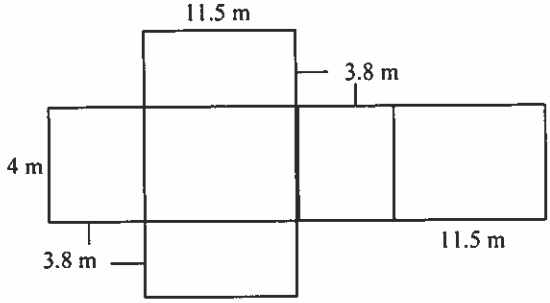
a. The surface area increases by 742 square feet.
b. The surface area decreases by 634 square feet.
c. The surface area decreases by 108 square feet.
d. The surface area increases by 108 square feet.

3. Ryan is going to paint the room represented by this net. One gallon of the paint covers 350 square feet. Determine the number of gallons of paint Ryan needs to buy. (Hint: The ceiling and floor will not be painted.)



a. 6 gal of paint
b. 3 gal of paint
c. 4 gal of paint
d. 5 gal of paint

4. Find the surface area of the prism formed by the net.



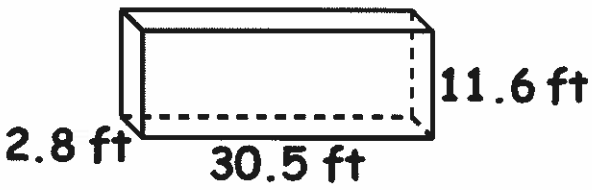
a. 104.9 m^2
b. 209.8 m^2
c. 174.8 m^2
d. 69.2 m^2

Name: _____ Date: _____ Period: _____

Directions: Find the surface area of each figure

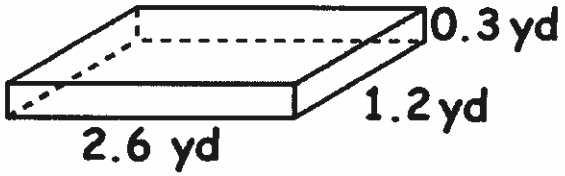
1.

Find the surface area of the prism.



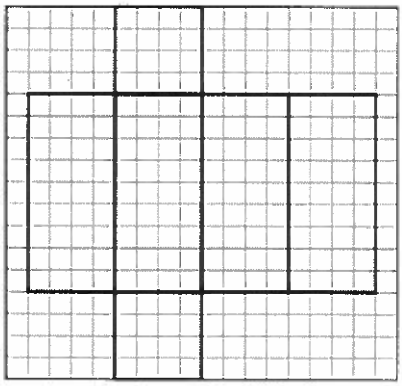
2.

Find the surface area of the prism.



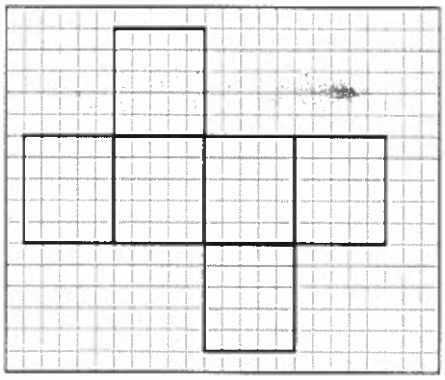
3.

Find the surface area of the prism.



4.

Find the surface area of the prism.



5.

Ms. Green is painting the outside of a wooden box that is 9 feet long, 4.5 feet wide and 6 feet tall. If one cup of paint can cover up to 20 feet2, how many cups of paint will Ms. Green need?

6.

The length of the base of a square prism is 5.5 m. If the height of the prism is 6.75 m, what is the surface area of the figure in centimeters?

6th Unit 12 - Surface Area and Volume
Performance Task 3

Standard(s) Addressed:

6.NS.1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

6.G.2: Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.4: Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Standards for Mathematical Practice:

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

Task:

A standard fidget cube measures approximately $1\frac{1}{2}$ inches on each side. You work at Amazon and someone just ordered 60 fidget cubes for their school. Your boss wants you to figure out the best box for shipping all 60 cubes without leaving any extra space inside the box. No packing peanuts or bubble wrap will be used. What are the dimensions of the shipping box that will hold all 60 fidget cubes? You must provide at least <u>two options</u> for your boss.

To be most cost efficient, your boss also wants to use the least amount of cardboard when making the shipping box. Which of your two options will use the least amount of cardboard?

Evidence 3: Candy Net Task

1) Find the dimensions of each shape of your net. Color the base ___ and the height ___.
2) Find the area of each shape of your net and label the area.
3) Cut out your net figure.
4) Design the blank side of your net how you want your candy box to look.
5) Fold the shapes and tape them together to make your 3-D cube.
6) What is the length, width, and height of your 3-D object.

Area Formula for one shape: _____ Evaluate: _____ Answer: _____	What is the area of all shapes combined: _____ _____ This is the **SURFACE AREA**

B _____
_____
h _____

VOLUME = B h = _____
_____

A) If you were to wrap this candy box for a gift, the price of the wrapping paper is 3 cents per square cm. How much money would it cost to wrap each candy box? *Hint: this is a surface area problem.

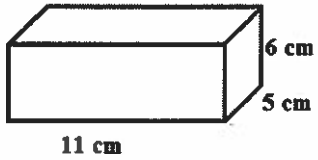
You would like to ship a package of candy boxes to soldiers in Afghanistan. The package is a box in the shape of a rectangular prism with a length of 100 cm, width of 40 cm, and a height of 35 cm.

B) Find the volume of the truck _____
C) How many full candy boxes will fit on the truck? _____

Unit 12 Study Guide

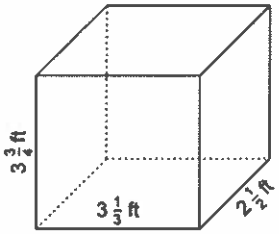
Name: Class: Date:

Question #1: The rectangular box is used to ship mp3 players to an electronics store.



If each mp3 player is a cube with 1-inch edges, how many of these mp3 players could fit into the shipping box?

Question #2: A rectangular container will be completely filled with a liquid for a science experiment. During the experiment, a certain amount of liquid will evaporate.

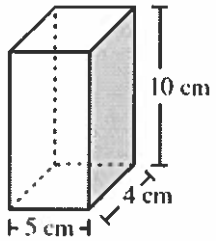


After the experiment, there are 25 cubic inches of water remaining in the container. How much liquid evaporated during the experiment?

Question #3: Will is packing cubes with side lengths that are ¼ foot long into a box, which is 4 ¼ feet long, 2 ¾ feet wide, and 1 ½ feet tall.

How many of the cubes will fit into the box?

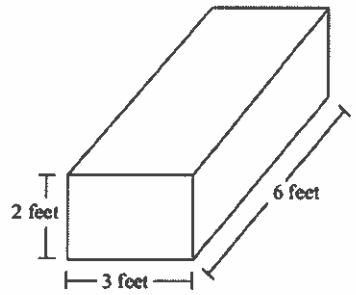
Question #4: A rectangular prism is given.



What is the volume of the prism?

Question #5: The dimensions of the dog bath at the pet spa is shown. The bath is drained and refilled every week.

What volume of water is required to fill the pool?



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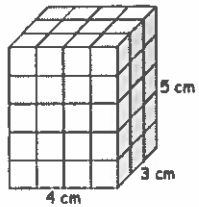
Question #6: The right rectangular prism shown is made up of 16 cubes. Each cube has an edge length of ⅓ cubic inch.

What is the volume of this prism?

Question #7: The right rectangular prism is made up of 60 cubes. Each cube has an edge length of ¾ cubic inches.



What is the volume of this prism?

Question #8: The dimensions of a rectangular prism are shown.

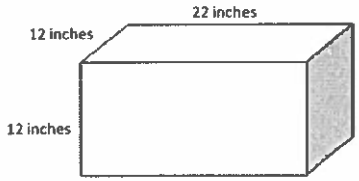
$h = 13$

$l = 15$

$w = 20$

What is the surface area of the prism?

Question #10: Sarah is wrapping a present. The dimensions of the present are 12 in. by 12 in. by 22 in., as shown.

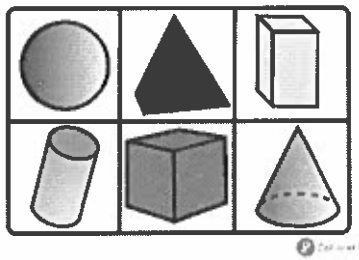


How much wrapping paper does Sarah need to wrap the entire present?

Question #11: A rectangular sofa cushion measures 42 cm by 33 cm by 29 cm. How many cushions can be covered with 49,854 square centimeters of material?

Questions #12: Label each 3 dimensional shape.

Word bank: Pyramid, Cube, Sphere, Cone, Cylinder, Rectangular Prism/Cuboid



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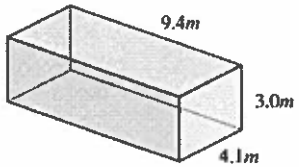
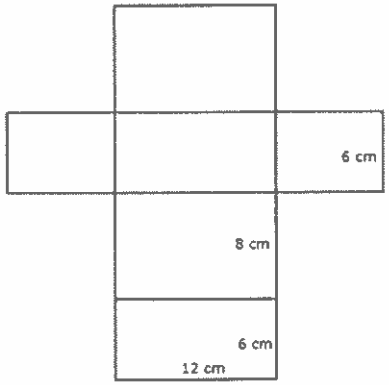
Question #13: A tissue box has the dimensions shown.

What is the surface area of the tissue box?

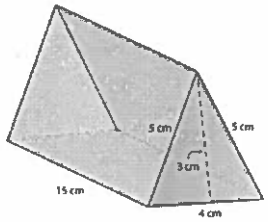


Question #14: John unwrapped the packing paper on a gift box and laid it out flat as shown below. The gift box was the shape of a rectangular prism.



What is the surface area of the gift box?

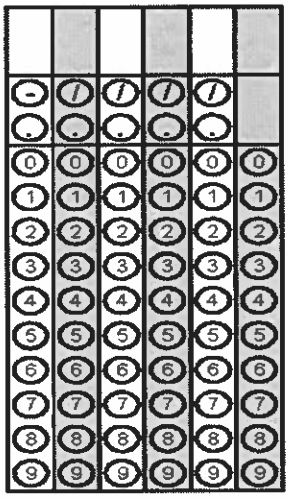
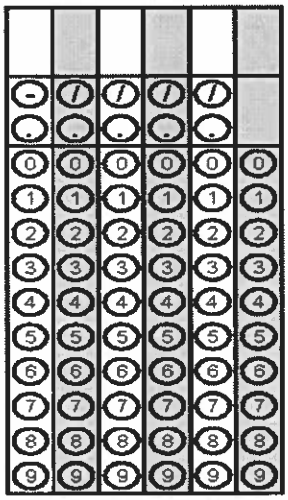
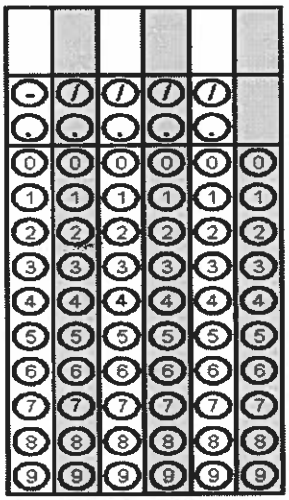
Question #15: Joey has a fish tank in the shape of a triangular prism.

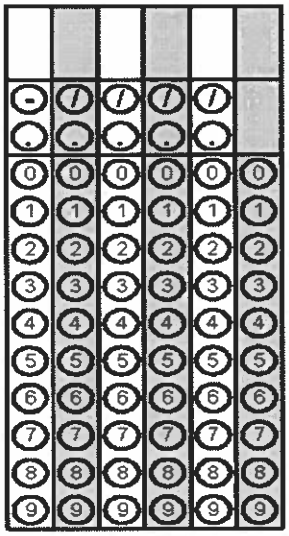
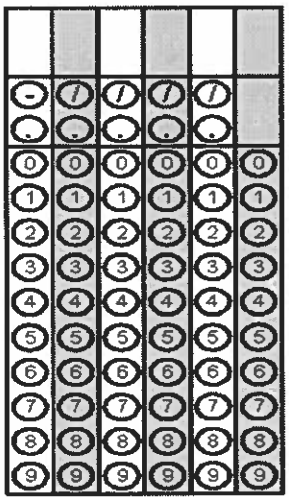


What is the surface area of the fish tank?

9

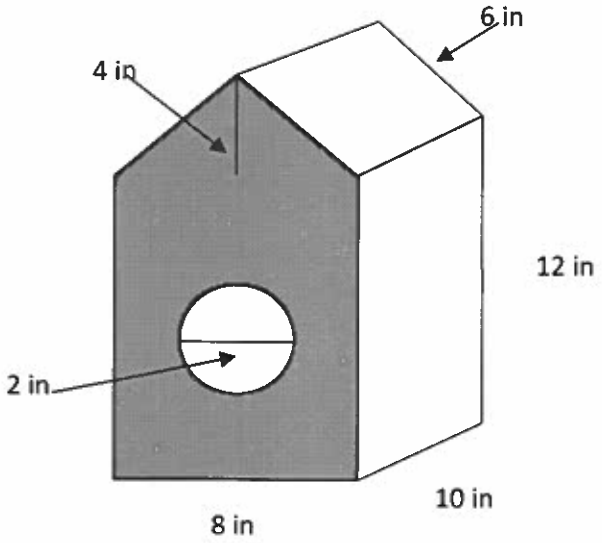
Additional Work Space

	Problem 1	Problem 2	Gridded Response
Monday	If there are 8 ounces in one cup of milk, how many ounces are in a half-cup of milk?	A large pizza has a diameter of 5 inches and sells for $10.99. A medium pizza has a diameter of 3 inches and sells for $7.50. Find the area of each pizza and determine which pizza size is the better deal?	***Problem 1*** 
Tuesday	If Box Tops for Education gives schools $0.15 for each Box Top the school sends, how much will a school raise if they send in 1200 Box Tops?	In which quadrant will you find the point (-3, 2)?	***Problem 1*** 
Wednesday	Simplify. $\frac{5}{4}\left(\frac{1}{3} \div \frac{5}{3}\right) + \frac{7}{12}$	Janice has a 20% off coupon and a $10 off coupon. Which coupon would give her the better deal when purchasing a pair of boots that cost $45.99?	***Problem 1*** 

Thursday	Which is greater? 5^0 or $\left(\frac{1}{2}\right)^3$	Find the average amount the Nichols family spent on groceries this month if they spent $275 the first week, $168 the next week, $208 the third week, and $203 the last week.	***Problem 2*** 
Friday	The table below shows the cost for movie tickets. How much will it cost for Charlie's family to see a movie if his family consists of 2 adults, 1 grandparent, and 2 children. **Menu Item** / **Price** Child — $5.50 Adult — $11.75 Senior Citizen — $8.00 College Student — $7.25	Simplify. $\frac{3}{7} \times \frac{7}{18} \div \frac{2}{27} \div \frac{9}{16}$	***Problem 2*** 

Birdhouse Activity:

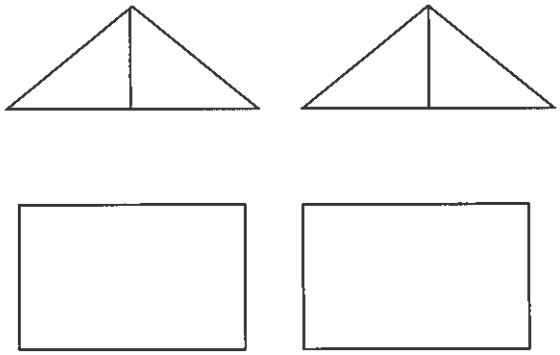
Ryan and his father make birdhouses to sell for extra money. All outer surfaces of the birdhouses are painted bright blue. A half gallon of paint will cover 25 square feet. How many birdhouses could be painted using a half-gallon of paint?



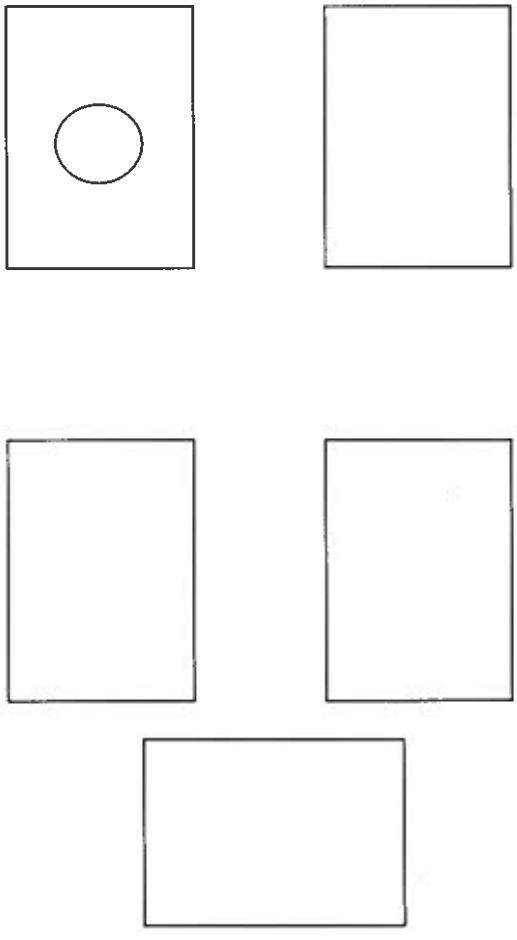
Questions to consider:	Work Space:
1. Paint covers the area in **square feet**. The birdhouse dimensions are given in inches. How will I represent my dimensions as fractional portions of a foot?	2 inches is _____ft 4 inches is _____ft 6 inches is _____ft 8 inches is _____ ft 10 inches is _____ft 12 inches is _____ft
2. How can I break down the birdhouse into 2-D figures that I know how to calculate the areas of?	
3. How do I handle the opening for the birds? That portion will not get painted, so how do I account for that?	

4. I need to draw each section that will be painted and label them with the correct dimensions

Roof sections:



Lower portions:



I need to find the areas of each 2-D section and record them in my workspace.	Areas of figures shown above:
I need to calculate the total surface area of one birdhouse in square feet. (Don't forget to subtract out the area of the circular opening that won't be painted.)	
Now that I know the surface area for one birdhouse, I need to find out how many could be painted with a half-gallon of paint.	

Unit 13 Video 1 Name _____ Date _____

Statistical Questions

A **statistical question** is one that can be answered by collecting data that vary (i.e., not all of the data values are the same).

There are two types of data: **numerical** and **categorical**. In a _____ data set, every value in the set is a number. _____data sets can take on non-numerical values, such as names of colors, labels, etc.

Ex 1) For each of the following, determine whether or not the question is a statistical question. Give a reason for your answer.

a. Who is my favorite movie star?

b. What are the favorite colors of 6th graders in my school?

c. How many years have students in my school's band played an instrument?

d. What is the favorite subject of 6th graders at my school?

e. How many brothers and sisters does my best friend have?

Ex 2) Explain why each of the following questions is not a statistical question.

a. How old am I?

b. What's my favorite color?

c. How old is the principal at our school?

Ex 3) Ronnie, a 6th grader, wanted to find out if he lived the farthest from school. Write a statistical question that would help Ronnie find the answer.

Ex 4) Change the following question to make it a statistical question: "How old is my math teacher?"

In Class Practice Problems

1) For each of the following, determine whether or not the question is a statistical question. Give a reason for your answer.

a. How many letters are in my last name?

b. How many letters are in the last names of the students in my 6th grade class?

c. What are the colors of the shoes worn by the students in my school?

d. What are the heart rates of the students in a 6th grade class?

e. What color is your notebook for math?

2) Explain why each of the following questions is not a statistical question.

a. How many pages are in our math book?

b. Can I do a handstand?

c. How many points did our school soccer team score in their last game?

3) Rebecca, a 6th grader, wanted to find out how many pets her classmates have. Write a statistical question that would help Rebecca find the answer.

4) Change the following question to make it a statistical question: "How many pets does your teacher have?"

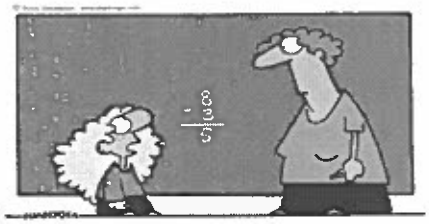
Vocabulary Word	Definition
Algebraic Expression	An expression made up of three things: numbers, variables, and operation signs
Base	When a number is raised to a power, the number that is used as a factor is the base.
Cube *(in Algebra)*	A number raised to the third power
Evaluate	To evaluate an algebraic expression, substitute a number for each variable and perform the arithmetic operations
Expanded Form	A way to write a number by showing the value of each individual digit forming the number
Exponents	The number that indicates how many times the base is used as a factor
Numerical Expression	An expression that consists of only numbers and operation symbols
Order of Operations	The rules that say which calculation comes first when simplifying an expression
Power	A number produced by raising a base to an exponent
Square	A number raised to the second power
Standard Form	The usual way of writing numbers with digits
Variables	A letter or symbol that stands for a change in quantity

Name: _____ Class: _____ Date: _____

Unit 13 Glossary	
Statistics	
Data	
Distribution	
Dot plot (also known as line plot)	
Histograms	
Box plots	
Median	
Mean	
Frequency tables	
Cluster	
Peak	
Gap	
Inter-quartile range (IQR)	
Measures of center	

Measures of variability	
Mean Absolute Deviation (M.A.D.)	
Quartiles	
Lower quartile (1^{st} quartile or Q_1)	
Upper quartile (3^{rd} quartile or Q_3)	
Interval	
Five-Number Summary	
Minimum	
Outlier	
Maximum	

Numerical Data



"What gives anyone the right to take 3 away from 8? Why should 8 be diminished to the lesser value of 5 just to satisfy someone's obsession with math?"

Standards: 6.SP.1 6.SP.2 6.SP.4 6.SP.5a 6.SP.5b

Uses data and statistical measures for a variety of purposes

Essential Question: ***How can you summarize and display numerical data?***

Statistics

...is the process of collecting, organizing, and interpreting data.

...is used to plan and make future decisions and to answer statistical questions.

What are statistical question?

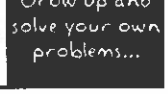
They are questions that have many different, or variable, answers. **You expect to get a variety of answers.

Which of the following questions is a statistical question?

1. How tall is the town's mayor?
2. What are the heights of the players on the school basketball team?

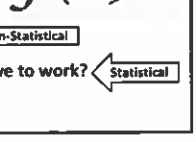
Only one answer.

You expect to get many answers



On your paper, make two headings. One side label Statistical Questions and the other side label Non-Statistical Question. As the questions are shown, place them under the correct heading.

1. What is Mike's shoe size? Non-Statistical
2. What are the shoe sizes of students my age? Statistical
3. How tall are my classmates? Statistical
4. How tall is Joanie? Non-Statistical
5. How old is Chris's pet? Non-Statistical
6. How old are my friends' pets? Statistical
7. How far does Terrence drive to work? Non-Statistical
8. How far do the employees of this store drive to work? Statistical



Reflect: *Choose one of the statistical questions from the list. How might you find the answers to this question? What units might the answer be in?*

Example: "How tall are my classmates?": Measure each classmate or ask classmates their heights; feet and/or inches.

Ways to Collect Data

Questionnaires or surveys

Interviews

Logs or diaries

Census

Observation

Internet Research

With your shoulder partner...Brainstorm a list of statistical questions. Be ready to write your responses on the board.

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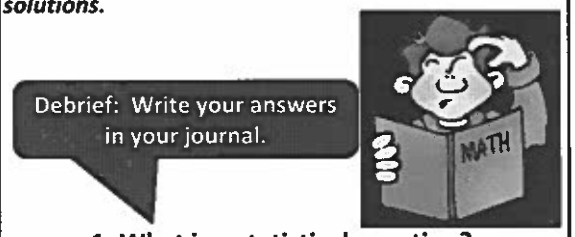
With a group of three... answer the questions on "Statistical Questions". Be prepared to share your solutions.



1. What is a statistical question?
2. How did you decide on the statistical question?

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Name _____ Date _____Core _____

Intro to Statistics

What is Statistics? _____

_____

Why is it important? _____

What are statistical questions? _____

_____

The teacher will show you a variety of questions. Determine whether the question is statistical or non-statistical and write the questions under the correct heading.

Statistical	Non-Statistical

Chose one of the statistical questions from the list above and determine how you might find the answer to this question.

What are ways in which you can collect data?

1.

2.

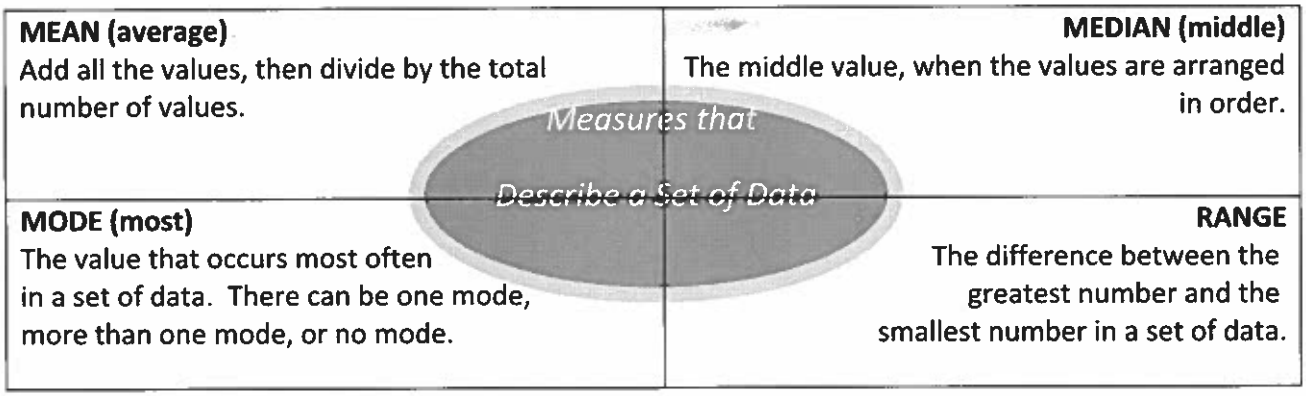
3.

4.

5.

6.

The **mean**, the **median**, the **mode**, and the **range** are measures that describe a set of data. This picture will help you learn about each measure.



Tim's bowling scores for the past 5 games are listed below:

89 98 110 98 105

Write ***mean, median, mode, or range*** to answer the following questions about Tim's scores.

1. The number 98 indicates which measure? _____
2. Tim added up all his scores and divided by 5. Which measure did he find? _____
3. Tim found that the difference between his highest and lowest score was 21 points. That measure is called the _____
4. Tim noticed that he got a score of 98 twice. Which measure is Tim focusing on? _____

Terry's test scores for the past 5 assessments are listed below. Calculate the range, mean, median, and mode.

Terry's Test Scores	76	81	94	81	78

Range: _____ Mean: _____

Median: _____ Mode: _____

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Asking Statistical Questions Activity

For each question indicate whether the question is a statistical or non-statistical question and indicate a reason for your answer.

Question	Stat (Y/N)	Reason
1. What colors are our shoes?		
2. How many pockets do I have on my clothes?		
3. How many different languages are spoken at our school?		
4. How far can I jump?		
5. Who likes McDonald's happy meals?		
6. Is my last name the longest name in class?		
7. What is the favorite lunch among all 5th graders at school?		
8. Can I roll my tongue?		
9. Are cars speeding in our school zone?		
10. Does salt affect the time it takes water to boil?		
11. Who was the oldest president of the USA?		
12. Which gum holds its flavor longer?		

Name: _____

Unit 13 Video 2 Notes: Mean, Median, Mode, Range & Outliers

Mean	
Median	
Mode	
Range	
Outlier	

Solve:

1. Find the mean, median, mode, and range of the following: 8, 15, 9, 7, 4, 5, 9, 11

2. Circle the outlier: 43, 69, 49, 78, 88, 54, 73, 194, 54, 59, 70

3. Tony has a score of 89 on his first 3 science quizzes. The score on his fourth quiz is 92. What score does he need on his fifth quiz to have an average of 90?

You Try:

1. Find the mean, median, mode, and range of the following: 70, 61, 28, 40, 60, 72, 25, 31, 64, 63

2. Circle the outlier: 40, 62, 47, 68, 12, 78, 49, 65, 52, 63

3. Cara scored the following on her first 4 tests in health class: 81, 85, 82, 73. What does she need to score on the 5th test to get an average of 80?

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Basic Statistics Notes Name _____ Date _____

Basic Statistics

Measures of Center are only **Mean, Median, and Mode**

Mean	Median	Mode	Range	Minimum (Min)	Maximum (Max)
Add your data points together then divide by the number of data points listed.	Order your data points from least to greatest. Identify the data point in the middle. If there are two data points in the middle, take the average of the two data points.	The most often occurring number in the data set.	Largest data point minus the smallest data point. OR Min to Max	The smallest number (least value) of the data set.	The largest number (greatest value) of the data set.

Mean, Median, and Mode (Three measures of center)

Data set:	Mean:	Median:	Mode:	Range:	Min:	Max:
2, 3, 2, 5, 3						
9, 1, 4, 3, 0, 1						

Practice Problems:

Data set:	Mean:	Median:	Mode:	Range:	Min:	Max:
3, 2, 0, 1, 4, 5, 6						
4, 1, 2, 1, 7, 6, 3, 0						

Name_____ Date:_____

MEAN GAME

"Mean" is another word for average. The number of points a basketball player scores per game is called average per game. You can also say mean number of points per game. Here is an example of how you find the average.

If Jim scored 23 points in game one, 25 points in game two, 40 in game three and 17 in game four, what is his mean score for all four games(average).

Step One: Add the scores!

$$\begin{array}{r} 23 \\ 25 \\ 40 \\ +17 \\ \hline 105 \end{array}$$

Step Two: Divide the scores by the number of scores you added.

$$\begin{array}{r} 26 \\ 4\overline{)105} \\ -8\downarrow \\ \hline 25 \\ -24 \\ \hline 1 \end{array}$$

Step Three: If you have a remainder like the problem above. make the remainder into a decimal just like the following.

$$\begin{array}{r} 26. \\ 4\overline{)105.} \\ -8\downarrow \\ \hline 25 \\ -24 \\ \hline 1 \end{array}$$

Automatically add a decimal to these two places.

$$\begin{array}{r} 26.\mathbf{2} \\ 4\overline{)105.\mathbf{0}} \\ -8\downarrow \\ \hline 25 \\ -24\downarrow \\ \hline \mathbf{10} \\ \mathbf{-8} \\ \hline 2 \end{array}$$

After you add a decimal, add a zero to the end of this number and bring your zero down!

If you have another remainder, add another extra zero to your number and continue dividing. If you still have a remainder after that you may stop and round to the nearest hundredth.

$$\begin{array}{r} 26.\mathbf{25} \\ 4\overline{)105.\mathbf{00}} \\ -8\downarrow \\ \hline 25 \\ -24\downarrow \\ \hline 10 \\ -8\downarrow \\ \hline \mathbf{20} \\ \mathbf{-20} \\ \hline 0 \end{array}$$

Jim scored 26.25 points over a four game span!

Name_____ Date:_____

Directions: Solve each of the following and round to the nearest hundredth if necessary.

1) Here are the points Ameshia scored over five games:

14 34 23 19 21 What is the mean score?

---

2) Here are the points per game that Jeremy scored over seven games:

12 14 18 40 5 35 13 Find the mean.

---

3) Sandra scored 34 12 2 5 8 and 15 points over six games.
What was her average score?

---

4) Courtney scored the following points over ten games:
12 15 13 12 22 35 7 5 11 28 Find Courtney's average score.

---

5) Ricky scored the following points over eight games.
2 6 2 1 23 15 12 24 Find the mean score of the eight games he played.

---

6) Noelle scored the following points over 5 games. 32 25 22 28 32

What was her average score?

---

7)Jamison scored 22 2 12 30 50 15 10 12 points.
What is his average score?

---

8) Brandon scored 23 25 25 32 10 points over five games.
What is his average.

---

9) Sabrina scored 10 12 20 24 8 10 12 20 points over eight games.

what was her average?

---

10) Travis scored the following points over six games: 4 22 4 35 25 18.
What was his average.

Name _____ Date _____

MEDIAN MADNESS

Directions: Put the following data sets in order and find the median of each of them.

1) 34, 32, 30, 35, 35, 36, 45, 46, 43, 29, 50, 55, 52, 54, 58, 61, 60, 21, 29

2) 21, 45, 45, 100, 102, 10, 13, 23, 89, 45, 34, 43, 25, 26, 27, 28, 35, 90, 45, 46, 43

3) 12, 13, 11, 11, 14, 11, 20, 16, 17, 9, 9, 13, 11

4) 0, 50, 100

5) 21, 22, 23,23,23, 24, 25, 26, 27, 28

6) 102, 116, 103, 102, 99, 98, 104, 103, 102, 111, 107, 102, 103, 102, 101

7) 54, 58, 65, 43, 56, 65, 65, 68, 54, 61, 60, 85, 32, 65, 20, 45, 69, 48, 34, 21, 49

8) 51, 66, 60, 60 , 61, 55 , 52 , 56, 62 , 69 , 65 , 52 , 68 , 62 , 62 , 62 , 51 , 63 , 52 , 60 , 73

9) 48 , 66 , 60 , 60 , 61 , 55 , 52 , 56 , 62 , 69 , 65 , 52 , 68 , 62 , 62 , 62 , 51 , 63 ,52 , 60 , 69

10) 67, 68, 98, 100, 102, 79, 65, 64, 63, 67, 68, 69, 66, 65, 64, 63, 103, 89, 93, 39, 44, 61, 60

Exit Ticket: Mean, Median, Mode, Range Name:_____

Find the Mean, Median, Mode, and Range for the following data sets:	
9, 15, 18, 25, 18, 20, 24, 26, 18	99, 105, 67, 73, 88, 81, 88
Mean: _____	Mean: _____
Median: _____	Median: _____
Mode: _____	Mode: _____
Range: _____	Range: _____

Match the definition with the vocabulary word. Circle the word that is NOT a measure of center.

____ 1. Range	A. The value that occurs most often in a set of data. There can be one, more than one, or none of these.
____ 2. Median	B. Add all the values, then divide by the total number of values.
____ 3. Mean	C. The middle value, when the values are arranged in order. If there are two data values in the middle, then add the values and divide by two to find the exact middle.
____ 4. Mode	D. The difference between the greatest number and the smallest number in a data set.

Name: _____

Unit 13 Video 3 Notes: Mean and Median with and without Outliers

Mean	
Median	
Outlier	
Measures of Center	

Solve:

1. Shoe prices at REI: $20, $45, $48, $31, $20, $122, $37, $20 Outlier:

	With the Outlier	Without the Outlier	Affects of the Outlier
Mean			
Median			

2. The calories in different flavor cookies: 124, 177, 180, 210, 195, 200 Outlier:

	With the Outlier	Without the Outlier	Affects of the Outlier
Mean			
Median			

You Try:

1. The times (in minutes) it takes 6 students to travel to school: 8, 10, 10, 15, 20 and 45 Outlier:

	With the Outlier	Without the Outlier	Affects of the Outlier
Mean			
Median			

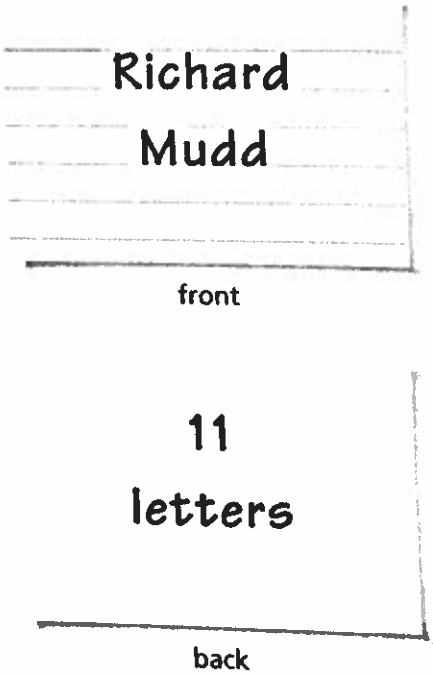
Experimenting With the Median

You can use the median and the mode of a set of data to describe what is typical about the distribution. They are sometimes called *measures of center.*

Use the following ten names. Write each name on an index card. On the back of each card, write the number of letters in the name. A sample index card is shown below.

Student Name Lengths

Name	Number of Letters
Thomas Petes	11
Michelle Hughes	14
Shoshana White	13
Deborah Black	12
Tonya Stewart	12
Richard Mudd	11
Tony Tung	8
Janice Wong	10
Bobby King	9
Charlene Greene	14



Order the cards from shortest name length to longest name length, and identify the median of the data.

Problem Experimenting With the Median

Use your cards to complete each task below. Keep a record of your work.

A. Remove two names from the original data set so that

1. the median stays the same.
2. the median increases.
3. the median decreases.

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B. Add two new names to the original data set so that

1. the median stays the same.

2. the median increases.

3. the median decreases.

C. How does the median of the original data set change if you add a name

1. with 16 letters?

2. with 1,019 letters?

ACE Homework starts on page 21.

Did You Know?

Names from many parts of the world have special origins. European family names (last names) often came from the father's first name. For example, Ian Robertson was the son of Robert, Janos Ivanovich was the son (vich) of Ivan, and John Peters was the son of Peter.

Family names also came from words that described a person's hometown or job. This resulted in such names as William Hill and Gilbert Baker.

Family names in China and Vietnam are almost always one-syllable words that are related to names of ruling families. Chang is one such example.

You can read more about names in books such as *Names from Africa* by Ogonna Chuks-Orji and *Do People Grow on Family Trees?* by Ira Wolfman.

Go Online PHSchool.com **For:** Information about names **Web Code:** ame-9031

Name_____ Date_____

FINDING THE MEAN

Whole Number Answers

Directions: Read each of the following problems and solve. Each answer will be a whole number.

1) Kyle , Blake and Mariah had to collect butterflies for a science project. Here are the number of butterflies each one of them collected.

Kyle - 12 Blake - 8 Mariah - 13

What was the mean number of butterflies collected by each person?

2) The following table shows the high temperatures each day last week. What was the mean high temperature last week?

DAY	HIGH TEMP.
Monday	79°
Tuesday	84°
Wednesday	80°
Thursday	78°
Friday	85°
Saturday	79°
Sunday	75°

3) A photography class was offered by the local community college. Here are the ages of all of the students enrolled in that class:

18 , 18 , 19 , 21 , 21 , 24 , 24 , 26 , 28 ,

30 , 30 , 31 , 32 , 32 , 34 , 36 , 40 , 40

What is the mean age of the students enrolled in the photography class?

4) The following information shows the amount of rainfall received last week:

Monday - 2 inches
Tuesday - 1 inch
Wednesday - 2 inches
Thursday - 0 inches
Friday - 4 inches
Saturday - 2 inches
Sunday -3 inches

Find the mean amount of rainfall per day.

5) Scott was growing 16 different plants for an experiment he was conducting about fertilizer. He concluded his experiment after 6 months. Here are the heights of each of the plants in inches:

18 , 19 , 21 , 23 , 24 , 24 , 26 , 28

30 , 32 , 32 , 34 , 34 , 36 , 38 , 45

What was the mean plant height of each plant at the end of the experiment?

6) At a local fishing tournament, Hank caught 12 fish. Here are the lengths of each fish he caught in inches:

24 , 25 , 25 , 26 , 28 , 32

32 , 32 , 33 , 34 , 34 , 35

What was the mean length of each fish that Hank caught?

Name: _____

Unit 13 Video 4 Notes: Five Number Summary

Five Number Summary	
Lower Extreme (or minimum)	
Lower (or 1st) Quartile	
Median	
Upper (or 3rd) Quartile	
Upper Extreme (or maximum)	
Inter-quartile Range	

Solve:

1. Find the five number summary of the following: 8, 15, 9, 7, 4, 5, 9, 11

2. Find the five number summary of the following: 43, 69, 49, 78, 88, 54, 73, 94, 54, 59, 70

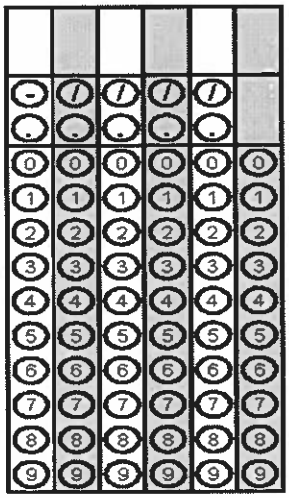
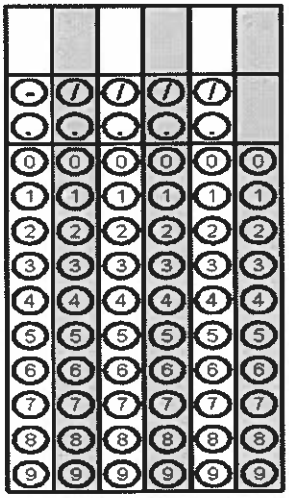
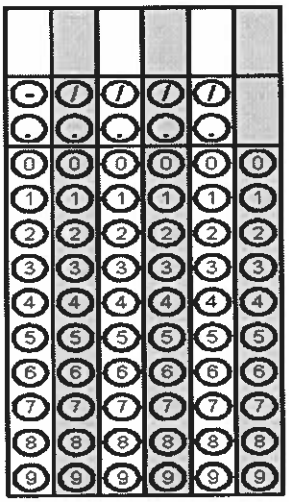
3. Find the IQR of the following: 3, 5, 6, 7, 8, 11, 15, 19, 19, 20, 25, 26, 29, 31, 35

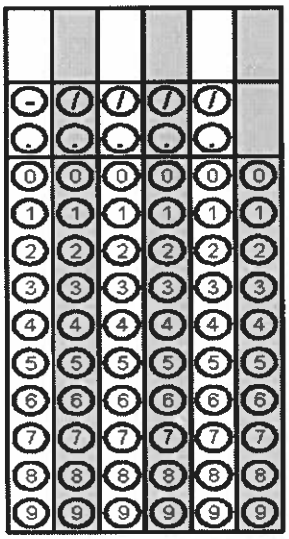
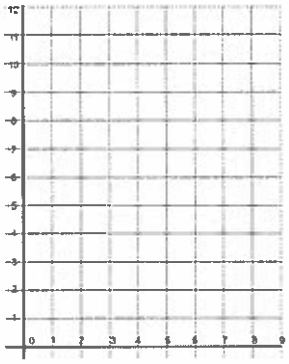
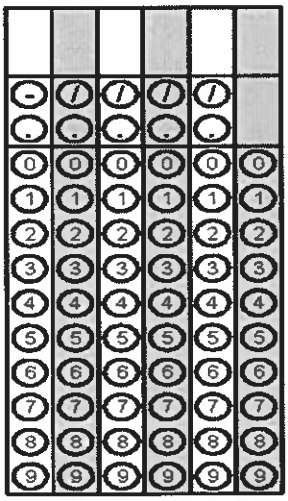
You Try:

1. Find the five number summary of the following: 70, 61, 28, 40, 60, 72, 25, 31, 64, 63

2. Find the five number summary of the following: 98, 100, 84, 92, 80, 100, 72, 78, 86, 96, 80, 82, 100

3. Find the IQR of the following: 15, 16, 7, 8, 5, 5, 3, 4, 8, 12, 10, 9, 6, 13

	Problem 1	Problem 2	Gridded Response
Monday	Mr. Rice drives 40 miles in 45 minutes. Mrs. Rice drives 30 miles in 40 minutes. Using the equation $Speed = \frac{distance}{time}$, who has the faster average speed?	Raven's class made 355 cupcakes for their school's bake sale. If Raven made 55 cupcakes, what percent of the total cupcakes were made by Raven? *Round your answer to the nearest whole percent.*	***Problem 2*** 
Tuesday	Max's younger sister loves her sandbox. The sandbox is $1\frac{1}{2}$ ft deep, $4\frac{1}{2}$ ft long, and $2\frac{1}{2}$ ft wide. If play sand comes in bags that have $\frac{7}{8}$ ft^3 of sand, how many bags of play sand will they need to fill the sandbox?	Douglas buys his mother a pair of earrings for her birthday. The jewelry box is in the shape of a cube, with side length 2 inches. If wrapping paper costs $0.04 a square inch, how much will it cost Douglas to wrap the jewelry box?	***Problem 2*** 
Wednesday	Angle A has a measure of 50°. Angle B is supplementary to Angle A. Find the measure of Angle B.	Julie makes custom bows for wrapping presents. She usually starts with a 6 foot long piece of ribbon. How many $\frac{4}{5}$ ft pieces of ribbon can she cut from this 6 foot piece of ribbon?	***Problem 1*** 

Thursday	Joe is helping his grandma move some boxes to her attic. A box with photos measures 12in x 4in x 4in. Joe stacks a second box measuring 11in x 5in x 6in on top of the photo box. What would be the total space these boxes take up in his grandma's attic?	Using the same information from problem 1, if Joe stacked 3 boxes with the same dimensions as her photo box, what would be the total volume?	***Problem 1*** 
Friday	Find the area of the figure formed by connecting the points (4, 2), (7, 2), (8, 6) and (5, 6)? 	At a professional basketball game every 10th fan receives a free t-shirt and every 3rd fan receives a free popcorn. If there are 105 fans that enter the game during 7:00pm and 7:30pm, how many of these fans will get a free t-shirt and popcorn?	***Problem 1*** 

NAME _____

Lesson 7.6 Finding Measures of Center

The **mean** is the average of a set of numbers. To find the mean, add all the numbers and divide by the number of values in the set.

The **median** is the middle number of a data set. If there are two middle numbers, the median is the average of the two.

The **mode** is the number that appears most often in a data set.

Example: 12, 15, 18, 23, 8, 10, and 12
Mean: $12 + 15 + 18 + 23 + 8 + 10 + 12 = 98$ $\quad \frac{98}{7} = 14$

To find the median, arrange the numbers in order. 8, 10, 12, 12, 15, 18, 23
Median: 12 Mode: 12

Find the mean, median, and mode of each data set. Show your work.

	a	b
1.	32, 35, 25, 43, 43	8, 12, 23, 12, 15
	mean _____	mean _____
	median _____	median _____
	mode _____	mode _____
2.	10, 18, 12, 14, 12, 12	17, 15, 15, 28, 20, 26
	mean _____	mean _____
	median _____	median _____
	mode _____	mode _____
3.	52, 61, 79, 78, 56, 79, 71	37, 50, 67, 83, 34, 49, 37
	mean _____	mean _____
	median _____	median _____
	mode _____	mode _____

NAME _____

Lesson 7.7 Using Measures of Center

Measures of center can be used to describe a data set. Each measure of center allows for different observations about the set.

The **mean** is the most popular measure of center. It is the average, so it provides the clearest picture of the center of the data, but only if there are no outliers (values that are far away from the majority of the numbers in the set).

The **median** is the most useful measure when the data set contains outliers.

The **mode** is the most useful measure when the values in the data set are non-numerical.

Tell which measure of center would be best for describing each data set.

	a	b
1.	3, 4, 5, 5, 7, 6, 21	62, 65, 72, 68, 66
	_____	_____
2.	54, 72, 85, 67, 93, 85, 61, 89	red, blue, green, red, blue, yellow, blue
	_____	_____
3.	$14.60, $7.25, $15.70, $15.25, $14.90	8, 25, 19, 19, 25, 9, 9, 18, 25, 9, 8, 7, 10
	_____	_____
4.	0, 1, 3, 5, 5, 5, 7, 9, 9, 11, 15, 99	A, B, C, A, B, C, D, A, B, B
	_____	_____

Unit 13 Video 5 Notes Name _____ Date _____

Box Plots

A _____ is a display that shows how the values in a data set are distributed, or spread out. To make a box plot, you first find five values for the data set:

1. Least Value
2. Lower Quartile-the median of the lower half of the data
3. Median of the entire data set
4. Upper Quartile-the median of the upper half of the data
5. Greatest Value

The _____ (IQR) is the difference of the upper quartile and the lower quartile. Subtract 4 - 2

The _____ is the difference between the greatest value and the least value in a set of data.

Subtract 5 - 1

EX1) The heights of several students are shown. Make a box plot for the data.

Students' Heights (in)					
60	58	54	56	63	61
65	61	62	59	65	68

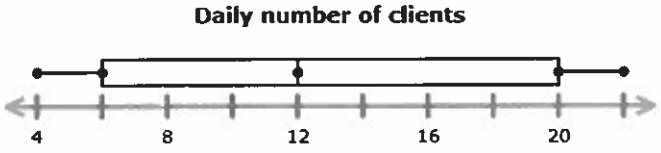
Step One: Order your data from least to greatest and find the needed values

Step Two: Draw a number line and box plot that includes all the data values

EX2) a. What is the Interquartile Range (IQR) of the data above? ____ - _____ = _____ (IQR)

b. What is the Range of the data above?_____ - _____ = _____(Range)

EX3) Maggie was planning to start a hair salon and wanted to know how many clients to expect, so she tracked the daily client count at several other hair salons. This box plot shows the results. Use the box plot to answer question parts a-e.



a. What is the median of the data?_____

b. What is the lower quartile?_____

c. What is the upper quartile?_____

d. What is the interquartile range?_____

e. What is the range?_____

Practice Problems:

1) Anthony recorded the number of points his football team scored in each of the ten games of the season. The points are listed below.

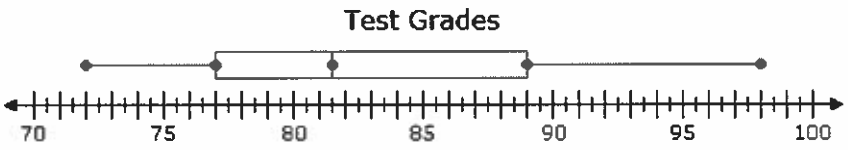
28, 13, 45, 7, 30, 24, 42, 56, 14, 33

Create a box plot to represent this data?

2) a.What is the Interquartile Range (IQR) of Anthony's data above? _____ - _____ = _____(IQR)

b. What is the Range of Anthony's data above?_____ - _____ = _____(Range)

3) The box plot below shows the data from a 6th grade class' math test. Use the box plot to answer question parts a-e.



a. What is the median of the data?_____

b. What is the lower quartile?_____

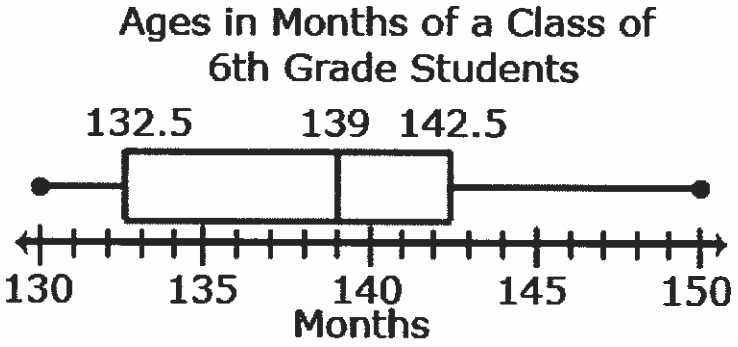
c. What is the upper quartile?_____

d. What is the interquartile range?_____

e. What is the range?_____

Name: _____ Date: _____ Period: _____

Look at the following box and whisper plot. Make observations and write down your observations and what you know about the data. Once you have wrote down your observations, turn and talk to your table group to compare notes. You can make changes to your notes as needed.



"The Five Magic Numbers"

In a box and whisker plot there are "Five Magic Numbers".

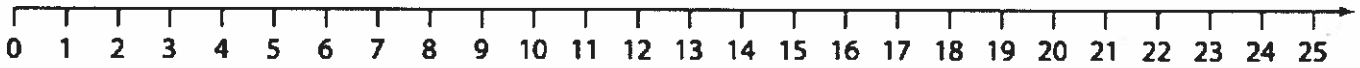
1 = **Lower Extreme** (the smallest number in the data)
2 = **Upper Extreme** (the largest number in the data)
3 = **Median** (the middle number in the data – this number cuts the data in half – 50% lower 50% higher)
4 = **Lower Quartile** (the median of the lower half – this number cuts the lower 50% in half)
5 = **Upper Quartile** (the median of the upper half – this number cuts the upper 50% in half)

You need these "five magic numbers" to create a box and whisker plot.

- Circle the "five magic numbers" in the data below.

8 , 12 , 14 , 16 , 18 , 20 , 20 , 21 , 22 , 24 , 25

- Plot the "five magic numbers" on the number line below. Then draw the box and whisker plot using those numbers.



A box and whiskers plot divides data into four equal parts. The **median** splits the data in half. You have 50% of the data to the left of the median and 50% of the data to the right of the median.

- What percent of the data is less than 20? What fraction of the data is less than 20?
- What percent of the data is greater than 20? What fraction of the data is greater than 20?

The lower half of the data is to the left of the median. The **lower quartile** splits the lower 50% in half, making each part 25%.

- What is the lower quartile on the box and whisker plot above?
- What percent of the data is less than 14?
- What percent of the data is between 14 and 20?

The upper half of the data is to the right of the median. The **upper quartile** splits the upper 50% in half, making each part 25%.

- What is the upper quartile on the box and whisker plot above?
- What percent of the data is more than 22?
- What percent of the data is between 20 and 22?

A box and whisker plot splits data into four equal parts, even though they may not look even. There is the same amount of numbers in each part, 25%. The box and whisker plot may not look even because of the way the data is distributed. This means that part 1 may have a bigger range than parts 2,3, or 4.

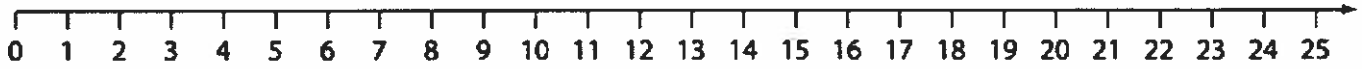
- If there are 12 numbers in a set of data, how many numbers are in each part of the box and whisker plot?

98

"Box and Whisker Plot Activity Sheet"

1. Make a box and whisker plot of the data below.

2, 3, 3, 5, 6, 8, 10, 12, 13, 14, 14, 15, 18, 18, 21, 22, 23, 23, 24



2. What is the lower extreme?
3. What is the upper extreme?
4. What is the range of the data?
5. What is the lower quartile?
6. What is the upper quartile?
7. What is the interquartile range (this is the range of the quartiles, the size of the box)?
8. How many parts are there to a box and whisker plot?
9. What percent is each part of the box and whisker plot?
10. What percent of the data is below 6?
11. What percent of the data is above 14?
12. What percent of the data is represented by the box?
13. What fraction of the data is below the median?
14. What fraction of the data is above 6?
15. What fraction of the data is higher than 14?

99

Name: _____

Unit 13 Video 6 Notes: Box Plot

Five Number Summary	
Lower Extreme (or minimum)	
Lower (or 1st) Quartile	
Median	
Upper (or 3rd) Quartile	
Upper Extreme (or maximum)	
Inter-quartile Range	
Box Plot	

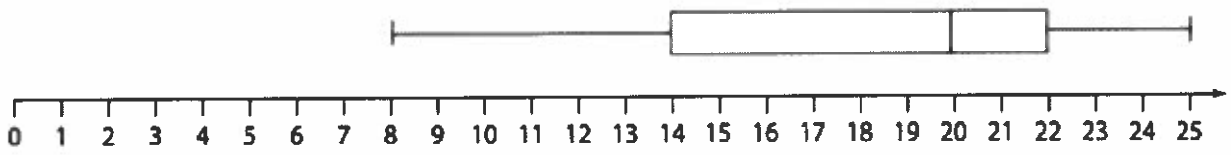
VIC #1	

Solve:

1. Create a box plot of the following: 8, 15, 9, 7, 4, 5, 9, 11

2. Create a box plot of the following: 43, 69, 49, 78, 88, 54, 73, 94, 54, 59, 70

3. Using the box plot below, answer the following questions:

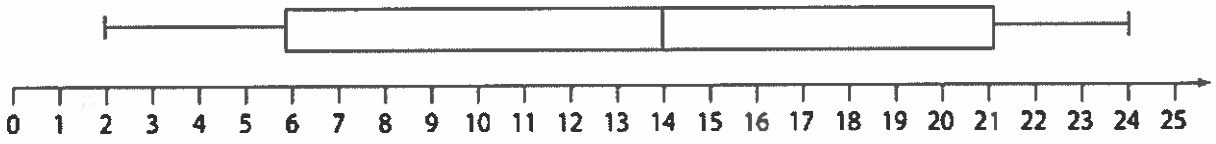


a. What is the IQR?
b. What percent of the data is under 14?
c. What percent of the data is 20 or more?

You Try:

1. Create a box plot of the following: 98, 100, 84, 92, 80, 100, 72, 78, 86, 96, 80, 82, 100

2. Using the box plot below, answer the following questions:



a. What is the IQR?
b. What percent of the data is under 21?
c. What percent of the data is 6 or more?

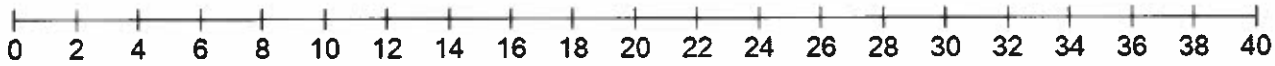
Name: _____ Date:_____ Core:_____

Box Plots

Use the data below to find the five-number summary, draw the box and whisker plot, and answer the following questions.

6, 8, 2, 40, 22, 4, 17, 12, 26, 11, 9, 24

Minimum: Lower Quartile: Median: Upper Quartile: Maximum:



What is the line in the middle of the box?

What is the range of the data values?

How many pieces of the data lie within each 25%?

a.) Between 2 and 7? b.) Between 7 and 11.5?

c.) Between 11.5 and 23? d.) Between 23 and 40?

What percent of the data lies between:

a.) 2 and 7?	e.) 2 and 11.5?
b.) 7 and 11.5?	f.) 7 and 23?
c.) 11.5 and 23?	g.) 7 and 40?
d.) 23 and 40?	

What is the range between:

The minimum and lower quartile? The lower quartile and the median?

The median and the upper quartile? The upper quartile and the maximum?

What do you think that the distance between the minimum and lower quartile is so different from the upper quartile and the maximum?

What is the interquartile range (IQR)?

Created by: E.Duffy

"I'm Loving It Your Way"

Using another sheet of paper, organize the percentage of fat for each restaurant in order from least to greatest. Next use the data to draw a box and whisker plot for each restaurant on a sheet of graph paper. Start your graph at 20 and go to 60 numbering by 2's. Place the plot for McDonald's above the graph and the one for Burger King below the graph. Answer the questions below when you have finished your graphs.

Percentage of Fat in Fast Food

McDonald's		Burger King	
Item	**% of Fat**	**Item**	**% of Fat**
Hamburger	32	Hamburger	37
Cheeseburger	37	Cheeseburger	42
Double Cheeseburger	48	Double Cheeseburger	51
Quarter Pounder with Cheese	45	Whopper with Cheese	56
McChicken	42	Original Chicken Sandwich	56
Grilled Chicken Sandwich	21	Tendergrill Chicken Sandwich	39
Crispy Chicken Sandwich	34	Tendercrisp Chicken Sandwich	52
Big Mac	48	BK Stacker	57
Filet-O-Fish	45	BK Big Fish	45
Medium French Fries	45	Medium French Fries	43
Southwest Grilled Chicken Salad	25	Tendergill Chicken Salad	30
Southwest Crispy Chicken Salad	42	Tendercrisp Chicken Salad	50
Sausage, Egg, and Cheese Biscuit	57	Sausage, Egg, and Cheese Biscuit	59
Bacon, Egg, and Cheese Biscuit	50	Bacon, Egg, and Cheese Biscuit	52
Hashbrown	53	Hashbrowns	58
Baked Hot Apple Pie	44	Dutch Apple Pie	37
Vanilla Triple Thick Shake	22	Vanilla Milkshake	38

Use your graphs to answer the following questions. Do not use the nutrition guides above, only your graphs.

1. What is the interquartile range for McDonald's?

2. Which restaurant had the highest upper quartile?

3. Compare the lower quartile for both restaurants. What conclusion can you draw from the data?

4. Which data is more distributed and why?

5. What percent of McDonald's foods are above 33% fat?

6. What fraction of Burger King's foods are between 38.5% and 56%?

7. Is the data for Burger King distributed equally? Why or why not?

8. For McDonald's, are there more numbers in the 1st part of the graph or the 3rd part of the graph?

9. What is the range for Burger King?

10. Which restaurant is higher in fat, McDonald's or Burger King? Why?

Exit Ticket: Box Plots Name:_____

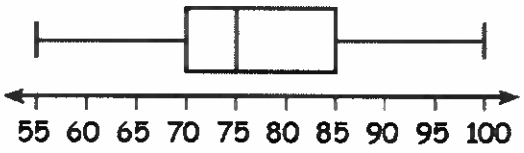
Find the 5-number summary:

Number of Pets Owned by 6th Graders:

0, 2, 1, 6, 2, 3, 4, 5, 6, 3, 3, 15, 2, 1

Lower Extreme	Lower Quartile	Median	Upper Quartile	Upper Extreme

What is the IQR of the following plot?



This box and whisker plot shows the morning and evening commute of Target employees:

Which commute shows more variability?

Tom says that 75% of the evening commute for Target employees is 35 minutes or longer. Is he correct?

If 60 employees were surveyed, how many have a morning commute shorter than 25 minutes?

Unit 13 Video 7 Notes Name _____ Date _____

Histograms

A _____ is a type of bar graph whose bars represent the frequencies of numeric data within intervals.

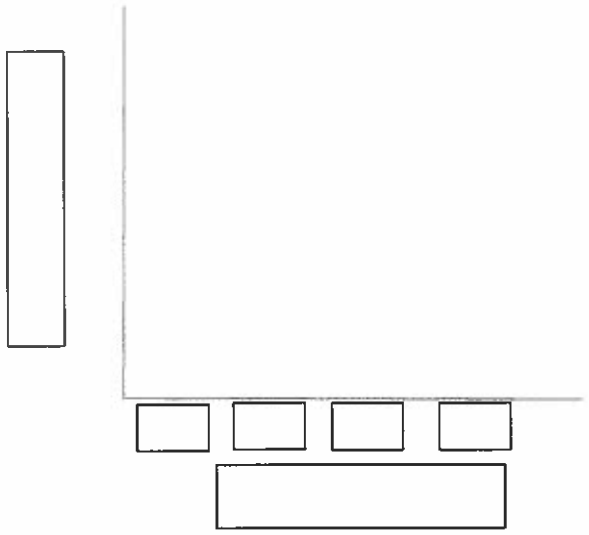
EX1) A birdwatcher counts and records the number of birds at a birdfeeder every morning at 9:00 for several days.

12, 3, 8, 1, 1, 6, 10, 14, 3, 6, 2, 1, 3, 2, 7

Make a histogram of the data.

Step 1: Make a frequency table. Divide the data into equal-sized intervals (we will do 4 in this case).
Step 2: Make a histogram. The intervals are listed along the horizontal (x) axis and the frequencies are listed along the vertical (y) axis.

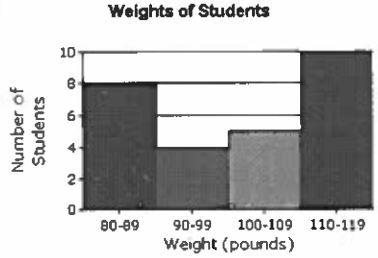
Interval	Frequency
1-4	
5-8	
9-12	
13-16	



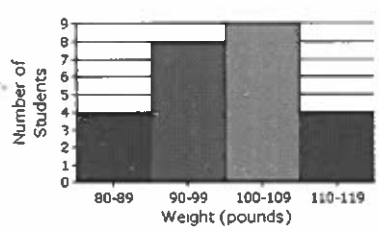
EX2) The table below shows the number of students are their weights. Which histogram matches the table?

Weight (pounds)	80-89	90-99	100-109	110-119
Number of Students	4	8	10	5

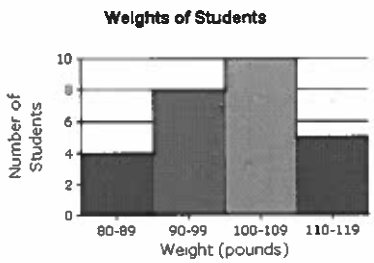
○ A



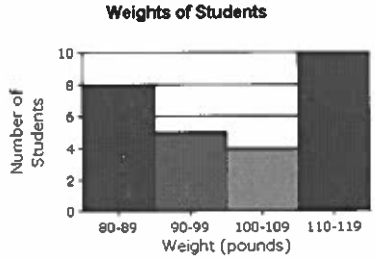
○ B.



○ C.



○ D.

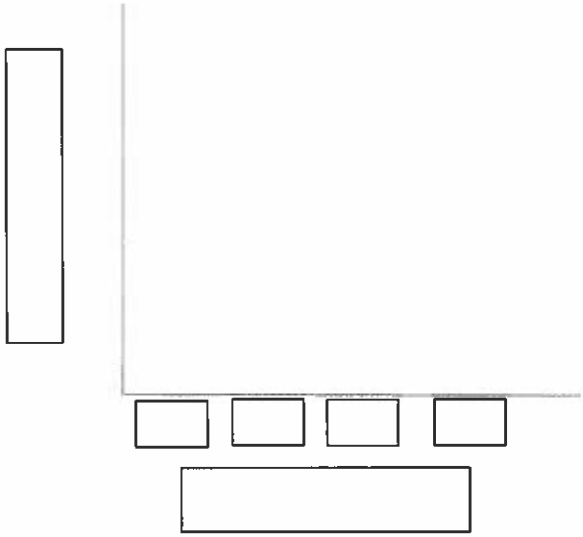


In Class Practice Problems:

1) Wendy kept track of the number of text messages she sent each day for three weeks. Complete the frequency table and create a histogram based on her data.

0, 5, 5, 7, 11, 12, 15, 20, 22, 24, 25
25, 27, 27, 29, 29, 32, 33, 34, 35, 35

Interval	Frequency
0-9	
10-19	
20-29	
30-39	

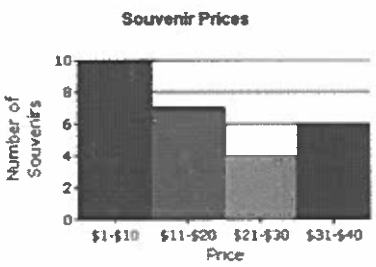


2)

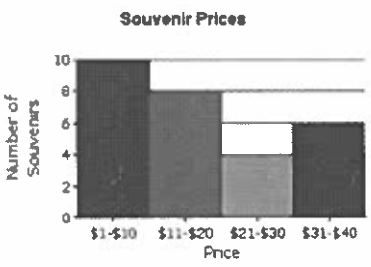
The Disney Store has a number of different souvenirs. The table below shows the number of souvenirs and their price. Which histogram matches the table?

Price	$1-$10	$11-$20	$21-$30	$31-$40
Number of Souvenirs	10	8	4	6

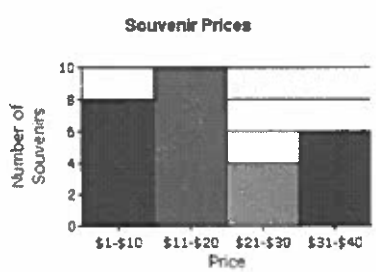
○ A.



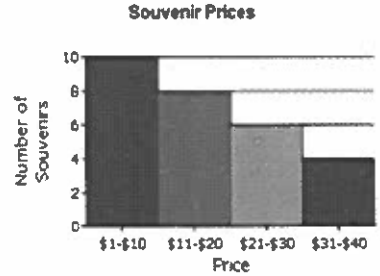
○ B.



○ C.



○ D.



Name: _____ Class: _____ Date: _____

Histograms

Histogram:

_____

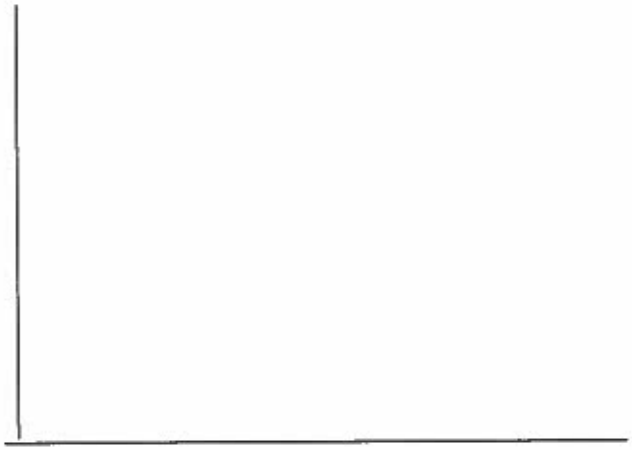
_____

Constructing a Histogram

Mrs. Pittman gave her class a history test. The class of 16 students had the following scores: 75, 80, 65, 80, 95, 85, 65, 80, 90, 80, 70, 85, 90, 70, 85, 70. Construct a histogram to represent this data.

Frequency Chart

Interval	Tally	Frequency



1. Listed below are the daily high temperatures (°F) for the first 20 days of April. Choose appropriate intervals to group the data, make a frequency table for the data, and construct a histogram for the data.

55	62	68	75	69	78	82	79	85	88
65	60	58	75	80	82	74	78	78	72

Frequency Chart

Interval	Tally	Frequency

2. Thirty people in Max's neighborhood participated in a Walk-A-Thon fundraiser. The ages of the walkers were as follows:

12	8	32	35	15	47	9	15	52	55	70	18	36	29	12
11	16	45	44	19	62	60	8	23	27	10	34	74	13	59

a. Make a histogram for the set of data.

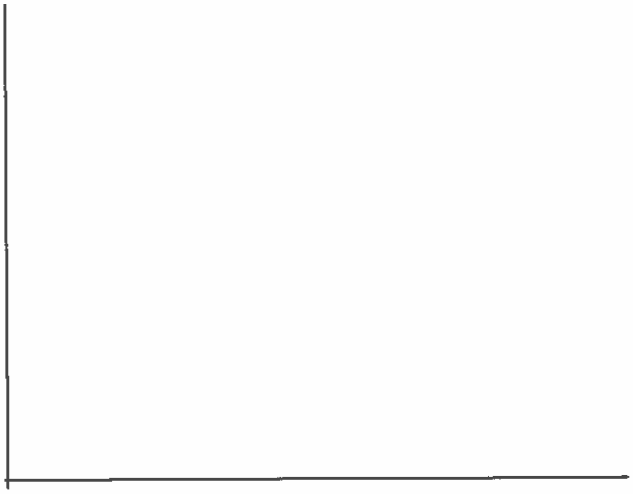
b. Determine the mean and median for this data set.

c. Explain how the median for this data relates to the graph of the data.

d. If the seven youngest participants did not walk and seven members of the Golden Oldies Club (over 70 years of age) took their place, how would this change the graph of the data? Determine the mean and median for this new data set.

Frequency Chart

Interval	Tally	Frequency



Name: _____ Class: _____ Date: _____

Histogram Homework WS #1

1. Listed below are the daily high temperatures (°F) for the first 20 days of April. Choose appropriate intervals to group the data, make a frequency table for the data, and construct a histogram for the data.

55	62	68	75	69	78	82	79	85	88
65	60	58	75	80	82	74	78	78	72

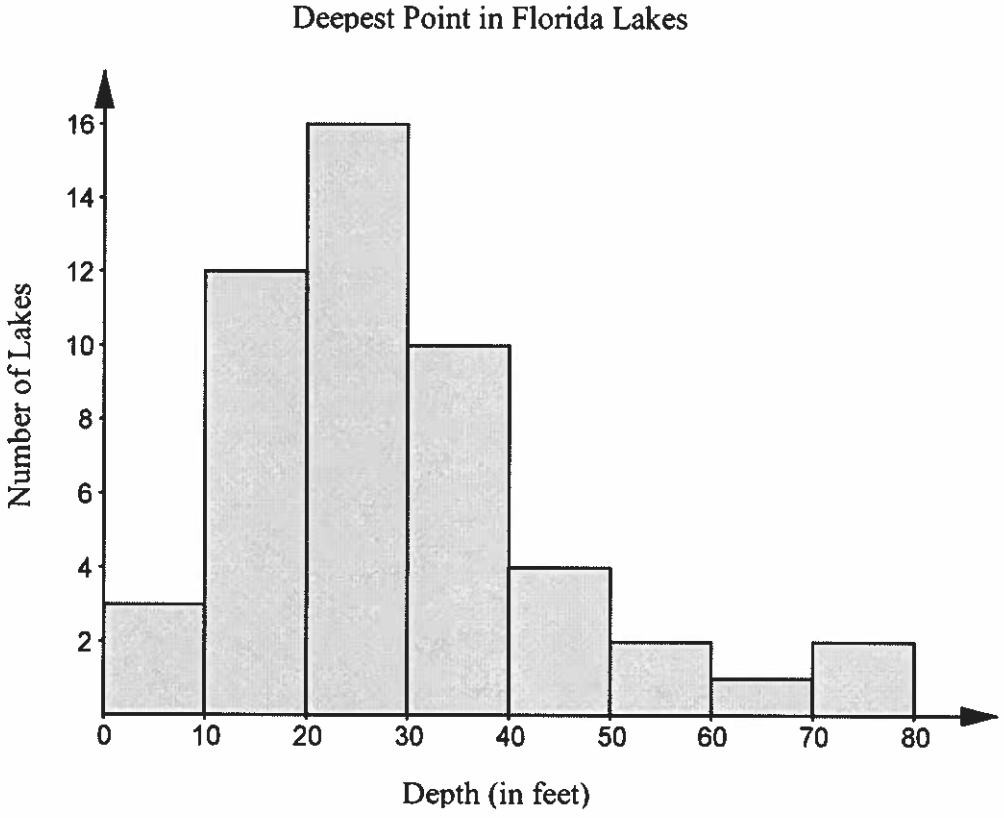
Name _____ Date_____

1. Every year the Florida Sharks basketball team plays 82 games. During the past decade the number of wins each year was:

42, 54, 51, 72, 67, 61, 43, 38, 53 , 57

Make a histogram to summarize the data.

2. The histogram below shows the results of a scientific study of a random sample of large lakes in Florida.



1. What is the variable under investigation in this study? How was it measured?

2. How many lakes are represented in the histogram? Explain how you found your answer.

Name:_____Date:_____Period:_____

Module 16: Formative

MAFS.6.SP.1.1- Recognize a statistical question as one that anticipates variability in the data.

1. Which question is a statistical question?
   a. How tall is the oak tree?
   b. How much did the tree grow in one year?
   c. What are the heights of the oak trees in the schoolyard?
   d. What is the difference in height between the oak tree and the pine tree?

2. Determine whether each question can be classified as a statistical question. Select **Yes** or **No** for each question.

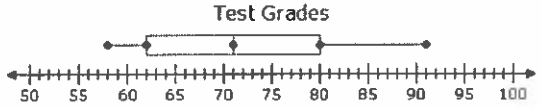
	Yes	No
How many hours a week do people exercise?	☐	☐
How many hours are there in a day?	☐	☐
How many rainbows have students seen this month?	☐	☐

MAFS.6.SP.1.2-

3. The dot plot below shows how many apple slices each girl at Kayla's part ate.

Which of the following represents the median of the amount of apple slices eaten?
A. 4.5 B. 5 C. 5.5 D. 6

4. The quiz grades of 10 different students were used to create the box plot below.



Which of the following represents the median of the set of grades?
a. 70 b. 71 c. 80 d. 62

MAFS.6.SP.1.3- Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while variation describes how its values vary with a single number.

5. Which measure would best describe a center?
   A. Mode
   B. Outlier
   C. Mean Absolute Deviation
   D. Range

MAFS.6.SP.2.4- Display numerical data in dot plots, histograms, and box plots.

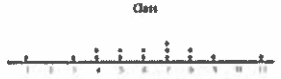
6. *A class is surveyed with data as shown.*

1, 4, 4, 5, 5, 5, 6, 6, 7, 7, 7, 8, 8, 9, 11

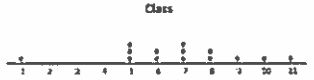
Which dot plot represents the class?

A.

C.



B.

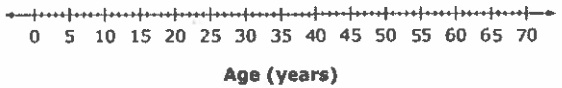


D.

7. The ages, in years, of the 28 members of a gym class are listed.

19, 21, 22, 27, 29, 31, 31, 31, 33, 34, 37, 38, 39, 39,
39, 41, 43, 45, 46, 47, 49, 49, 51, 51, 52, 54, 56, 63

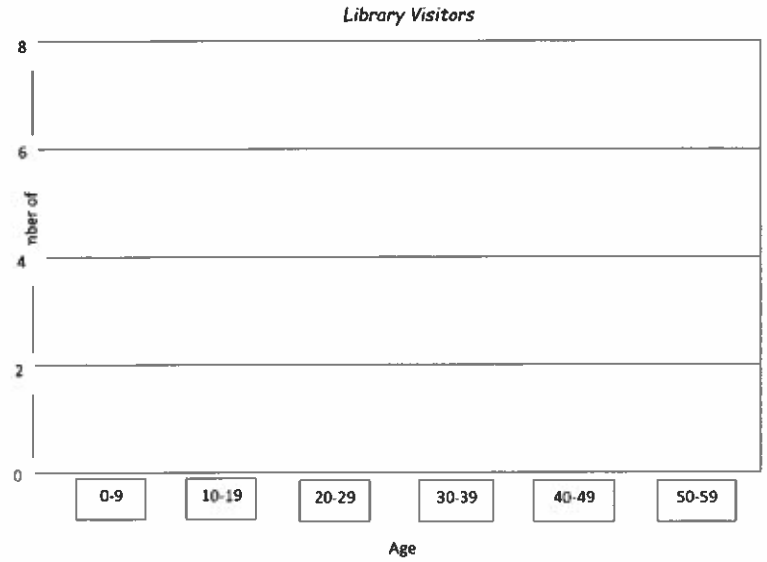
Construct a box plot of the data in the list.



8. *This table shows the ages of 20 visitors at a library.*

15	*27*	*53*	*9*	*48*
3	*56*	*12*	*10*	*15*
18	*15*	*2*	*31*	*20*
21	*33*	*6*	*52*	*56*

Create a histogram that represents the data. Draw your histogram bars to the appropriate height.



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MAFS.6.SP.2.5- Summarize numerical data sets in relation to their context.

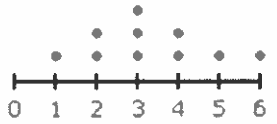
9. Mark has recorded the high temperatures each day for a week. The daily high temperatures were the following:

68 74 66 78 72 80 74

What best describes 74.

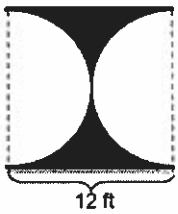
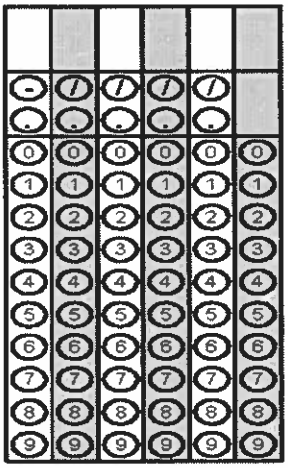
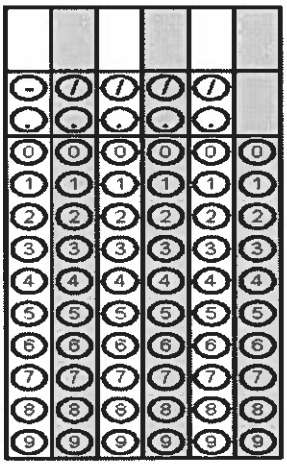
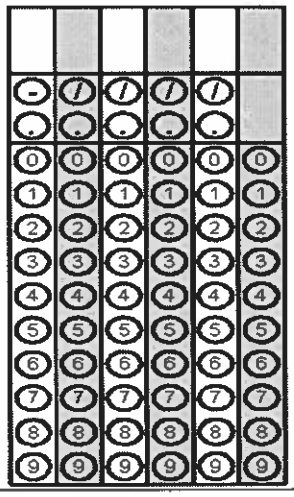
a. Mean and Mode
b. Mode only
c. Median and Mode
d. Median only

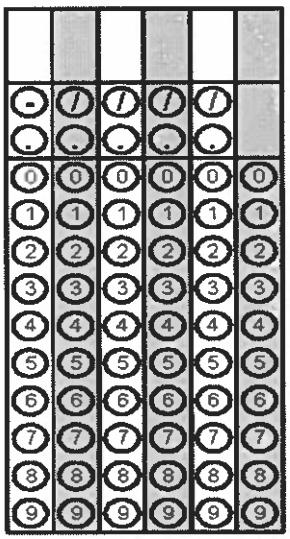
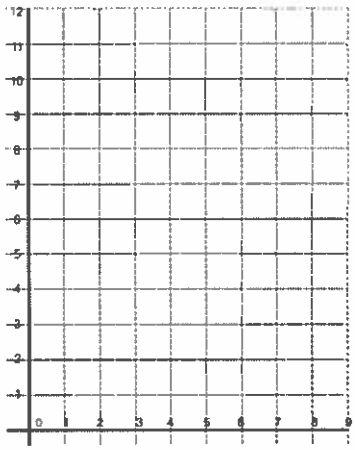
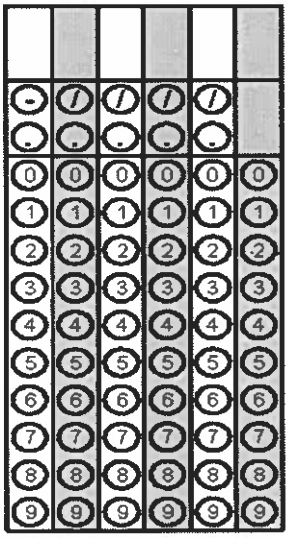
10. The dot plot below shows how many customers purchased different numbers of shirts at a sale last weekend.



What is the interquartile range of the data set shown?

a. 6
b. 2
c. 3
d. 5

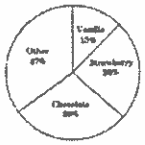
	Problem 1	Problem 2	Gridded Response
Monday	Using 3.14 for π, find the area of the shaded region.  	Simplify. $2(3x + 5) + 4(5 + x) - 10$	***Problem 1*** 
Tuesday	Ben buys 3 burgers, 1 container of french fries, and 2 drinks. If he pays with a $20 bill, how much change will he receive? Item / Price Slice of pie — $1.25 French fries — $0.75 Drink — $1.05 Burger — $4.25	Cards Express sends packs of greeting cards in a box that has a volume of 45 in^3. Ann owns a gift shop and orders several of these greeting card packs. They arrive in a container that has a volume of 720 in^3. How many greeting card boxes did she order?	***Problem 1*** 
Wednesday	A recipe calls for $2\frac{1}{4}$ cups of sugar and $1\frac{2}{3}$ sticks of butter to make 3 dozen cookies. How many cups of sugar would be needed to make a half dozen cookies?	Magic Middle orders 12 dozen doughnuts and 96 bottles of juice for their character awards. If each student receives the same number of donuts and bottles of juice and all items are given away, what is the greatest number of students that can be rewarded?	***Problem 1*** 

Thursday	The point $(-3\frac{1}{2}, 4)$ is reflected over the x-axis, what are the coordinates for its reflection?	If there are 10,560 feet in 2 miles, how many feet are in 12 miles?	***Problem 2*** 
Friday	Misty is asked to graph a triangle with an area of 12 units^2. If she plots points at (2,2) and (5,2), where should she plot the final point? 	Evaluate. $(\frac{3}{4})^3$	***Problem 2*** 

Name:
Class:
Date:

Question #1

In the circle graph 158 students were surveyed.



Approximately how many of the students surveyed prefer chocolate ice cream?

A 28 students

B 44 students

C 56 students

D 79 students

Question #2

Sean wants the ratio of boys to girls at his party to be 4 to 3.

How many girls will have to come to the party if there will be 16 boys?

A 8

B 10

C 12

D 14

Question #3

In a poll of 1,000 potential voters, 500 said they would vote for Senator Smith in the fall election. A total of about 600,000 people are expected to vote in the election.

About how many people will vote for Senator Smith?

A 30,000

B 45,000

C 300,000

D 450,000

Question #4

If 2 inches on a map represents 75 miles, how many miles does 8 inches represent?

A 150 miles

B 300 miles

C 600 miles

D 1,200 miles

Question #5

A rectangular table has an area of $\frac{1}{5}$ square meter. The length of the table is $\frac{2}{3}$ meters.

What is the width, in meters, of the table?

A $\frac{3}{10}$ meter

B $\frac{1}{3}$ meter

C $\frac{1}{2}$ meter

D $\frac{2}{3}$ meter

Question #6

How many $\frac{5}{3}$ cup servings are in $\frac{3}{1}$ cup of pudding?

A $1\frac{2}{5}$

B $1\frac{1}{5}$

C $\frac{2}{5}$

D $\frac{1}{5}$

Question #7

Joanna has $\frac{2}{1}$ of a gallon of milk left that has an expiration date in 6 days. If she splits the milk equally among her next 6 bowls of cereal, how much milk will she use in each bowl?

A $\frac{1}{9}$ gallon

B $\frac{1}{10}$ gallon

C $\frac{2}{9}$ gallon

D $\frac{1}{3}$ gallon

Question #8

Serjey wants to fence in his garden, which measures $35\frac{1}{1}$ ft. by $22\frac{1}{5}$ ft. The fence material costs $1.75 per foot.

How much will it cost to fence in Serjey's garden?

A $100.41

B $200.81

C $445.66

D $1,364.64

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Question #9

Jack and three of his friends shared a pizza. The total bill was $21.60. If the bill is split evenly, how much would each person have to pay?

A $7.20

B $6.40

C $5.40

D $5.00

Question #10

The table shows the total number of minutes Shannon used on her cell phone each month during a 5-month period.

Month	Minutes
June	260
July	252
August	255
September	253
October	258

If Shannon pays a monthly fee of $35.00 plus an additional $0.25 for each minute over her 250 minute plan, what is the total amount Shannon paid for the 5 months?

A $182

B $175

C $157

D $147

Question #11

During a 1-day sale, a grocery store reduced the cost per pound of organic apples from $4.10 to $3.95. The store sold 180 pounds of apples that day.

With the price decrease, how much less money did the grocery store earn on organic apples than before the price decrease?

A $27.00

B $711.00

C $735.00

D $1 440.00

Question #12

Marie is buying hot dogs and hot dog buns for a family cookout. Hot dogs are sold in packages of 10 and buns in packages of 12.

What is the least number of packages of hot dogs and hot dog buns that Marie can buy to have an equal number of hot dogs and buns?

A 5 packages of hot dogs and 4 packages of hot dog buns

B 6 packages of hot dogs and 5 packages of hot dog buns

C 6 packages of hot dogs and 4 packages of hot dog buns

D 4 packages of hot dogs and 5 packages of hot dog buns

Question #13

What point on the number line represents the number $-1\frac{1}{2}$?

A point A

B point B

C point C

D point D

Question #14

The low temperature Monday night was -3°C. The temperature rose 20° during the day on Tuesday but fell 12° that night.

What was the low temperature on Tuesday?

A -5°C

B 5°C

C 29°C

D 35°C

Question #15

Which list shows the values in order from *least* to *greatest*?

A |-5|, |-3|, |3|, 5

B |-5|, 5, |-3|, 3

C -3, -|-5|, -|3|, 5

D -5, -|-3|, 3, |-5|

Question #16

The average temperature in one season at the North Pole is -76°F, and in another season at the same location, it is -18°F.

Which inequality expresses the situation above?

A -76°F < -18°F

B -76°F > -18°F

C 76°F > 18°F

D 76°F < 18°F

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Question #17

What is the distance between (4, -7) and (4, 2)?

A 2

B 4

C 5

D 9

Question #18

What is the distance between the points $(1.3\frac{1}{2})$ and $(1, -2\frac{1}{4})$?

A $5\frac{1}{4}$ units

B $5\frac{1}{2}$ units

C $1\frac{1}{2}$ units

D $1\frac{1}{4}$ units

Question #19

What is the value of 273?

A 8343

B 343

C 321

D 67

Question #20

What is the value of $0.2^4 + 2.1 \times 0.5^2$?

A 0.2627

B 0.2641

C 1.0625

D 3.95

Question #21

The table shows the prices of pairs of socks from different clothing stores.

Store	Pairs of Socks	Price
American Raven	4	$10.40
Eternally 17	6	$16.50
Pineapple Republic	8	$19.60
Young Army	12	$28.20

Which store has the lowest price per pair of socks?

A American Raven

B Eternally 17

C Pineapple Republic

D Young Army

Question #22

A van with seven people drove 422 miles in six hours. *About* how many miles did they travel each hour?

A 70 miles

B 60 miles

C 7 miles

D 6 miles

Question #23

Which property is 7(4 + 8) = 7(4) + 7(8) an example of?

A Associative Property

B Commutative Property

C Distributive Property

D Multiplicative Inverse Property

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Question #24

Analyze this expression.

$5x + 2xy - 3x$

Which is the simplified form of the expression?

A $4xy$

B $10xy$

C $2x(1 + y)$

D $2x(4 + y)$

Question #25

Mrs. Johnson asked students to factor the expression $42x - 14$. Four students offered their answers.

Chip:	$2(21x - 7)$
Heather:	$4(13x - 10)$
Ivy:	$3(14x - 11)$
Jake:	$14(3x - 1)$

Which students expressions are equivalent to $42x - 14$?

Select *ALL* that apply.

A Chip

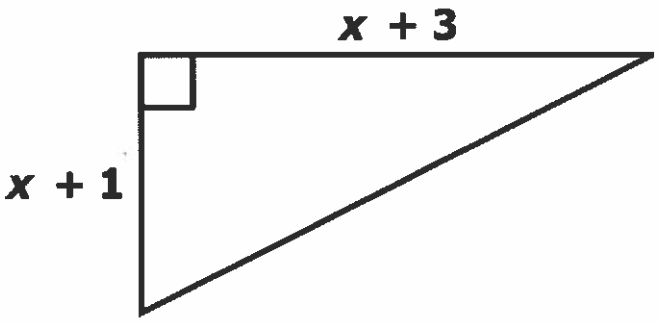
B Heather

C Ivy

D Jake

Question #26

A right triangle is shown.



Which choice is an expression for the area of the triangle?

A $2x + 4$

B $\frac{1}{2}(x + 1)(x + 3)$

C $(x + 1)(x + 3)$

D $x(x + 1)(x + 3)$

Question #27

A website offers mp3 downloads for a fee of $5 plus $0.15 for each song. Which choice gives an expression that shows the cost in dollars for purchasing s songs?

A $5 + 0.15s$

B $0.15 + 5s$

C $0.40s$

D $5.15 + s$

Question #28

Together Alfonso and Bonnie have 84 photos of their field trip to the aquarium. Bonnie has three times as many photos as Alfonso.

How many photos does Bonnie have?

A 252 photos

B 63 photos

C 42 photos

D 21 photos

Question #29

Alyssa spent $15 at the mall yesterday. She now has $30 left in her purse.
Which equation is set up correctly to determine how much money (m) Alyssa had in her purse before spending $15 at the mall?

A $m + 15 = 30$

B $m - 15 = 30$

C $m \times 15 = 30$

D $m \div 15 = 30$

Question #30

How much money should Yolanda get back when she uses $50.00 to pay for purchases totaling $27.15?

A $22.85

B $22.95

C $32.85

D $32.95

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Question #31

An inequality is represented on a number line.

Which inequality is represented?

A $x < 7$

B $x \leq 7$

C $x > 7$

D $x \geq 7$

Question #32

Karen records the relationship between the hours she walked and the amount of calories she burned in the table.

Hours Walked (h)	Calories Burned (c)
3.5	475
6	750

What equation *best* represents this relationship?

A $c = 110h$

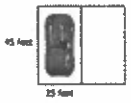
B $c = 110h + 90$

C $h = 110c$

D $h = 110c + 90$

Question #33

The Johnson family just bought a new car. They plan to double the area of their current driveway to make room for the new car.



What is the new perimeter of their driveway?

A 140 ft

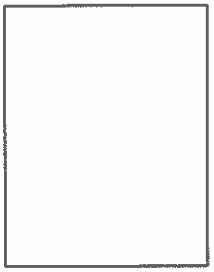
B 190 ft

C 1,125 ft

D 2,250 ft

Question #34

A standard-sized sheet of notebook paper has the dimensions shown. Shawn cuts a 2-inch strip off the right side of the paper.



How much *smaller* is the area of the sheet of paper after Shawn cuts off the strip than it was before Shawn cut off the strip?

A 11 in^2

B 13 in^2

C 17 in^2

D 22 in^2

Question #35

What is the maximum number of cubes with a side of 3 inches that can fit in the shape?

A 14 cubes

B 18 cubes

C 20 cubes

D 23 cubes

Question #36

The dimensions of a deck of cards is 2 cm by 6.5 cm by 9 cm, as shown.

What is the surface area of the deck of cards?

A 90 cm^2

B 130 cm^2

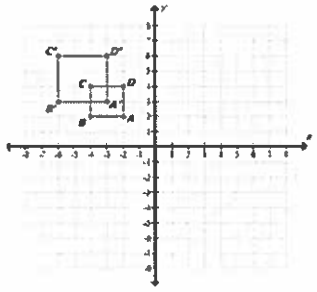
C 179 cm^2

D 189 cm^2

119

Question #37

Ana overlapped two pieces of fabric square to form the figure shown in the diagram.



What is the *approximate* perimeter of the figure Ana formed?

A 6 in.

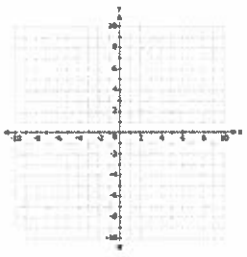
B 8 in.

C 11 in.

D 16 in.

Question #38

What is the area of the shape formed by connecting the points (-9, 3), (3, 3), and (-9, -5) on the coordinate grid if 1 unit = 1 yard?



A 24 square yards

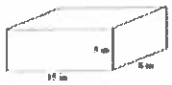
B 48 square yards

C 54 square yards

D 108 square yards

Question #39

What is the surface area of the rectangular prism?



A 31 in²

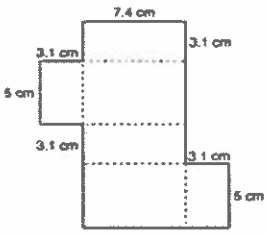
B 224 in²

C 235 in²

D 470 in²

Question #40

The net, when folded together, will form a rectangular prism.



What is the surface area of the net?

A 75.44 cm²

B 95.32 cm²

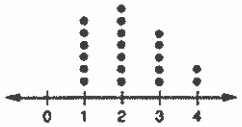
C 114.70 cm²

D 150.88 cm²

120

Question #41

Cody surveys his class about how many pets each student owns. He graphs his results in the line plot shown.



Cody forgot to ask 1 student who was absent the day of his survey. That student owns 7 pets.

Which value of Cody's data increased when adding in the last student's information?

A mean

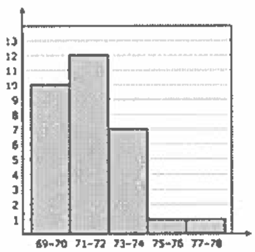
B median

C mode

D interquartile range

Question #42

The histogram shows how many games a basketball team scored different amounts of points.



How many games did the basketball team score over 72 points?

A 7 games

B 9 games

C 12 games

D 21 games

Question #43

Samantha took a survey in her class. She asked her classmates the total number of hours that they watch television in one week. The results of the survey are shown in the stem-and-leaf plot.

Stem	Leaves
0	5 5 6 7 8 8 9 9 9
1	0 0 1 1 1 2 4 5 6
2	0 0 0 1 1 2

According to the data, which statement is true about Samantha's stem-and-leaf plot?

A The median is 12

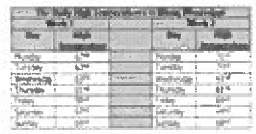
B The mean is 12.5

C The range is 18

D The mode is 11 and 3

Question #44

The daily high temperatures in Biloxi, Mississippi for the last two weeks are listed in the chart.



Which is the median high temperature for Biloxi over the two-week period?

A 63° F

B 64° F

C 65° F

D 71° F

Question #45

Use the chart to answer the question.

Student	Quiz 1	Quiz 2	Quiz 3	Quiz 4	Quiz 5
Isabella	92	93	98	89	88
Jai	85	90	89	90	94
Marco	86	87	90	89	91
Sharon	80	97	93	89	97

What is Jai's mean score on the science quizzes?

A 89

B 90

C 95

D 97

Question #46

The table below represents Henry's science test scores.

Henry's Science Test Scores			
Test 1	Test 2	Test 3	Test 4
89	93	90	

What must Henry receive on the fourth test in order to have an overall mean score of 92 for the four tests?

A 93%

B 94%

C 95%

D 96%

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Unit 13 Video 8 Notes Name _____ Date _____

Dot Plots

Ex 1) Create a Dot Plot for the set of data below and then answer the following questions below:

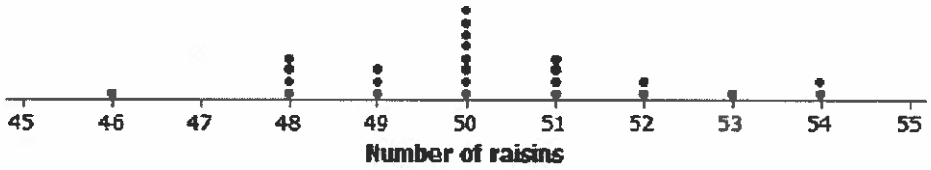
0 4 5 5 3 6 5 3 4 5

a. What are the smallest and largest data points?

b. What is the most common data point?

c. Describe your center of your data?

Ex 2) The dot plot below shows the numbers of raisins in 25 selected small boxes of raisins.



a. What were the most and least amount of raisins in all of the 25 boxes?

b. What was the most common amount of raisins counted?

c. What number of raisins describes the center of the data?

d. How many boxes had more than 51 raisins inside?

Practice Problems:

1) Create a Dot Plot for the set of data below and then answer the following questions below:

1 8 5 6 4 4 5 4 7 6

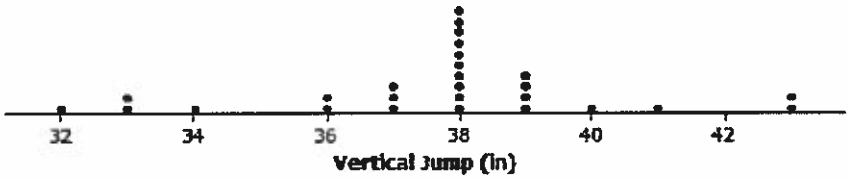
a. What are the smallest and largest data points?

b. What is the most common data point?

c. Describe your center of your data?

2) The dot plot below shows the vertical jump of some NBA players. A vertical jump is how high a player can jump from a stand still.

Dot Plot of Vertical Jump



a. What was the highest and lowest vertical jump by a player?

b. What was the most common vertical jump? How many players jumped that high?

c. How many players jumped higher than 40 inches?

d. How many NBA players did they get data from in all to complete this dot plot?

e. Another NBA player jumped 33 inches. Add a dot for this player on the dot plot. How does this player compare with the other players?

Name: _____ Date: _____ Period: _____

Puppy Weights

Task

Below are the 25 birth weights, in ounces, of all the Labrador Retriever puppies born at Kingston Kennels in the last six months.

13, 14, 15, 15, 16, 16, 16, 16, 17, 17, 17, 17, 17, 17, 17, 18, 18, 18, 18, 18, 18, 18, 18, 19, 20

a. Use an appropriate graph to summarize these birth weights.

b. Describe the distribution of birth weights for puppies born at Kingston Kennels in the last six months. Be sure to describe shape, center and variability.

c. What is a typical birth weight for puppies born at Kingston Kennels in the last six months? Explain why you chose this value.

Displaying Data Review

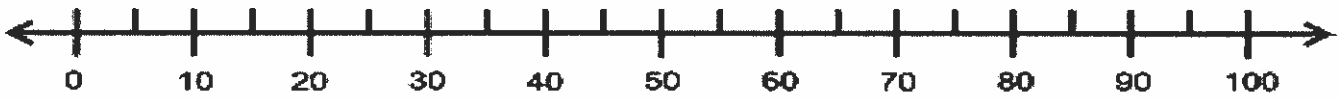
Read the problem below and then explore how to analyze the data.

Random samples of 6th graders were asked: On average, how many text messages do you send per day? Here are the results:

40, 80, 25, 40, 100, 80, 70, 0, 20, 45, 40, 30, 45, 30, 75, 40

Draw a dot plot to represent the data. Draw an "x" to represent each person's response.

Text Messages Spent per Day



How many teenagers were surveyed? How do you know? _____

_____

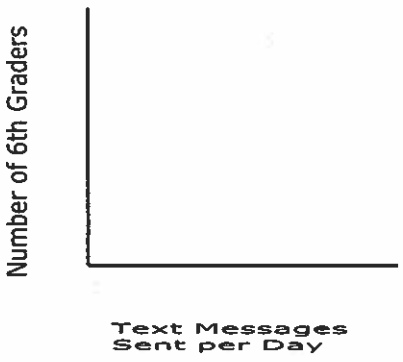
Describe the shape of the graph. _____

What conclusion can you draw from this dot plot? _____

_____

Create a histogram to display the number how many 6th graders send 50 or more text messages per day and how many send less than 50 text messages per day.

Text Messages Sent per Day	Number of Responses
0-49	
50-100	



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Explain the difference between a dot plot and a histogram.

_____

_____

_____

Calculate the following:

Mean _____ Median _____

Mode _____ Range _____

Use the same data from the previous page to create a box plot. List the 5 number summaries to help you create the box plot.

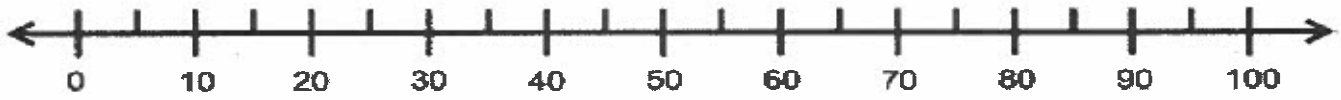
Minimum _____

Lower Quartile _____

Median _____

Upper Quartile _____

Maximum _____



Why is it important to display data in different ways?

_____

_____

_____

Analyze each graph and list 2 things that each graph can show.

Dot Plot –

Histogram –

Box Plot -

Unit 13 Video 9 Notes Name _____ Date _____

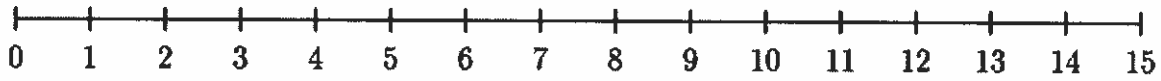
Mean Absolute Deviation (MAD)

The _____ _____ _____ (MAD) is the mean of the distances between the data values and the mean of the data set. In other words, on average, how far away are the points away from the mean.

Ex 1) Find the Mean Absolute Deviation for the following scenario:

The number of laps Shawna swam on 5 different days: 5, 6, 6, 8, 10

Mean:_____



Mean Absolute Deviation:_____

Steps to calculate the Mean Absolute Deviation (MAD)
1. Calculate the mean of the data.
2. For each data point in the set, find the distance from the mean. Subtract the mean and the data point.
3. To find the MAD, now find the mean of the distance (from step 2).

Ex 2)

Find the mean absolute deviation

1, 1, 3, 5, 5, 6, 8, 11

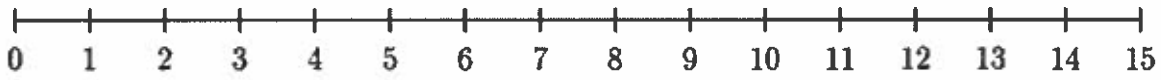
Data	Mean	Difference	Positive Value
1			
1			
3			
5			
5			
6			
8			
11			
		Sum:	
		Count:	
The average of the "Positive Value" column		Mean Absolute Deviation:	

Practice Problems:

1. Find the Mean Absolute Deviation for the following scenario:

The number of laps Lara swam on 5 different days: 1, 3, 7, 11, 13

Mean:_____



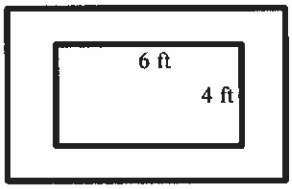
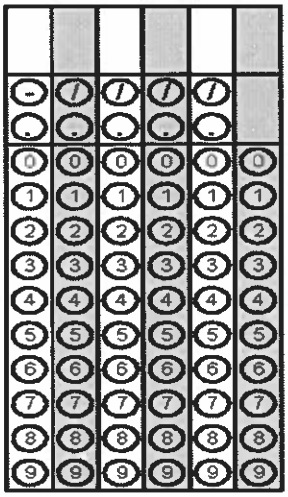
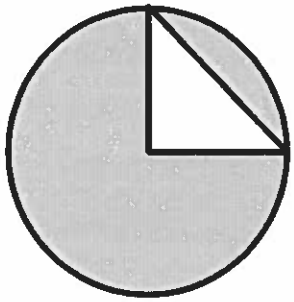
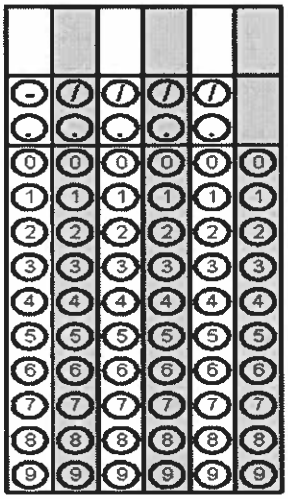
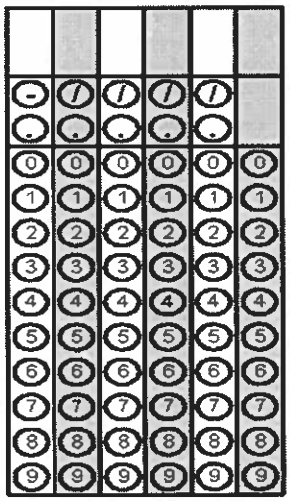
Mean Absolute Deviation:_____

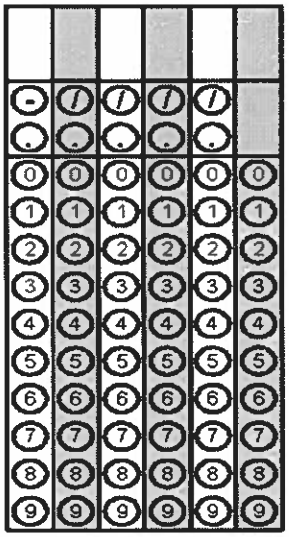
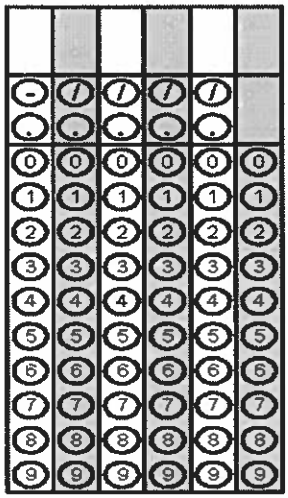
2.

Find the mean absolute deviation

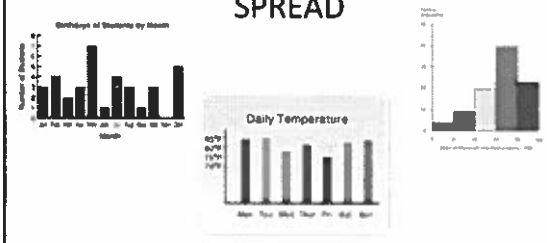
10, 7, 13, 10, 5

Data	Mean	Difference	Positive Value
		Sum:	
		Count:	
The average of the "Positive Value" column		Mean Absolute Deviation:	

	Problem 1	Problem 2	Gridded Response
Monday	The figure below shows a flower garden with a 2 feet wide walkway around the garden. What is the area of the walkway? 	If the bricks used for the walkway in Problem 1 cost $4.29 per square foot, how much will it cost to brick the walkway?	***Problem 2*** 
Tuesday	Wilmington is at an elevation of 31 feet. In the Graveyard of the Atlantic many shipwrecks can be seen by scuba divers at 125 feet below sea level. What is the absolute value in elevation from Wilmington to the shipwrecks?	The radius of the circle below is 4.5 in. Find the area of the shaded region if the triangle shares the same length as the radius of the circle. Use 3.14 for π. 	***Problem 1*** 
Wednesday	There are 8 chaperones for every 30 kids on the field trip. If there are a total of 304 people on the trip, how many of them are chaperones?	Complete the table for the following rule: *"y is equal to six less than five times the sum of x and 3."* | x | y | |---|---| | 1 | | | 3 | | | 5 | | | 11 | |	***Problem 1*** 

Thursday	30% of the 8th grade students at Mountain Middle School participate in an after school sport. If there are 12 classes of 35 students in the 8th grade, how many are athletes?	Cherries are on sale for $4.79 a pound. If Om buys four pounds of cherries with a $20 bill, how much change will he receive?	***Problem 2*** 
Friday	If the side length of a cube is tripled, what is the ratio of the volume of the original cube to the volume of the tripled cube?	Alex wants to raise his test average to a 90%. If his current test scores are 82, 94, 91, and 87, what grade must he score on his next test?	***Problem 2*** 

EXPLORING descriptions of SPREAD



Describing Data

There are two ways to describe a set of data:

- **Graphically**
  Dot plot – Bar Graph – Histogram – Boxplot
- **Numerically**-using a single number to describe the relationship of the data
  - **Measures of Center:** Mean and Median *review these descriptions in your notes*
  - **Measures of Spread**-
    Today we will focus on the numerical descriptions

Measures of Spread describe how much values typically vary from the center

These measures are:

- **Range** – a description of how far apart the distance from the highest to lowest data pieces; found using highest minus lowest data
- **Interquartile Range** (IQR) – a description of the middle 50% of the data ; found using Q3 – Q1
- **Mean Absolute Deviation** ***briefly view description in your notes and then continue with the PPT.***

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Now let's explore "deviations from the mean" as a way to determine how accurately the mean may describe "typical".

Thinking about the Situation

Consider the following test scores:

Student	Test 1	Test 2	Test 3	Test 4
Li	65	82	93	100
Bessie	82	86	89	83
Jamal	80	99	73	88

Who is the best student? How do you know?
Take a few minutes to decide with your partner

So with all students having the same mean, let's see if we can dig a little deeper in our comparison.

The MEAN ABSOLUTE DEVIAITON (MAD) will help us. Let's take a few minutes to explore MAD.

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Mean Absolute Deviation (MAD)
Add to notes

STEP 1: Find the mean

STEP 2: Subtract the mean from each piece of data

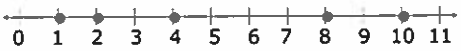
STEP 3: Find the absolute value of each difference

STEP 4: Find the mean of the new differences (deviations)

NOW WE WILL TRY THIS METHOD.

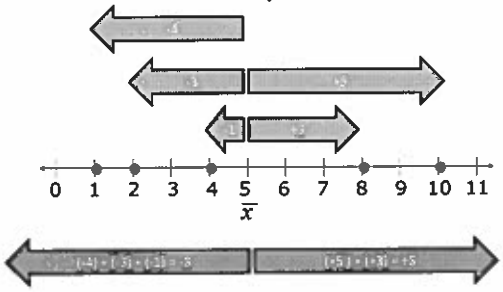
Mean Absolute Deviation

Write the list of numbers shown on the number line and then find the Mean Absolute Deviation



STOP AND COMPLETE CHART on NOTES

So what exactly is deviation?



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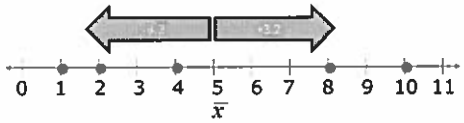
Mean Absolute Deviation



Notice that our Mean Absolute Deviation or MAD was 3.2 and *most* of our original data does fall within plus or minus 3.2 points of the mean of 5.

Highlight the following in your notes:

A low mean absolute deviation indicates that the data points tend to be very close to the mean and not spread out very far so the mean is an accurate description of "typical", and a high mean absolute deviation indicates that the data points are spread out over a large range of values.

Now take a few minutes to go back to our original question about the best student. Find the MAD score for each student and then make a decision based on all of your data about the best student. Be prepared to discuss.

Student	Test 1	Test 2	Test 3	Test 4
Li	65	82	93	100
Bessie	82	86	89	83
Jamal	80	99	73	88

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Now you try the CLASSWORK found on your handout.

When you and your partner have completed the work individually, check to see if you agree.

We will review this section together in a few minutes

Notes: Mean Absolute Deviation (MAD)

Mean Absolute Deviation: The average _____ between each data value and the _____ which helps describe the variability of a set of data.

Pointers:

- If a data set has a small mean absolute deviation (MAD), then this means that the data values are relatively close to the mean. (more consistent)
- If the mean absolute deviation is large, then the values are spread out and far from the mean. (more variability/less consistent)

STEP 1: Find the mean

STEP 2: Subtract the mean from each piece of data

STEP 3: Find the absolute value of each difference

STEP 4: Find the mean of the new differences (deviations)

Example: Given 3,5, 10, 6, 1 find the Mean Absolute Deviation (MAD)

1. Find the mean _____
2. Subtract the mean from each data value
3. Find the absolute value of each difference
4. Find the mean of those new values _____

Data	Data-mean	Absolute value
3		
5		
10		
6		
1		

Comparisons of MAD

The following students have their Math test scores in the following table. Decide who you think is the better academic student.

Student	Test 1	Test 2	Test 3	Test 4
Li	65	82	93	100
Bessie	82	86	89	83
Jamal	80	99	73	88

- Find their mean:

Li _____ Bessie _____ Jamal _____

- Find their median:

Li_____ Bessie _____ Jamal _____

- Find their MAD:

Li_____

Data	Data minus mean	Absolute value

Bessie _____

Data	Data minus mean	Absolute value

Jamal _____

Data	Data minus mean	Absolute value

Which student, using the data above, is the best academic student? Why? Use data to support your answer.

Practice

1. Find the mean absolute deviation for each set of data of the pulse rates for basketball players after a game.

80, 82, 82, 88, 90

94, 102, 104, 106

MEAN: _____ MAD:_____

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

2. Jason and Jill are two students in Mr. White's math class. On the last five quizzes, Jason scored an 80, 90, 95, 85, and 70. Jill scored a 70, 75, 90, 100, and 95. Find the mean and mean absolute deviation for each student.

Jason's Mean =_____
Jill's Mean = _____

Jason's MAD =_____
Jill's MAD = _____

Use your answers from #2 to answer the following:

3. Which student had the better average?

_____

4. Which student was more consistent?

_____

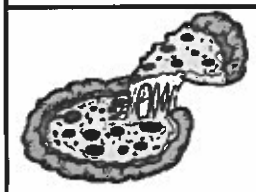
How do you know?

5. If Mr. White was to choose a student to be on the Math team, who should he choose? Why?

6. The Smith and Jones families each have six family members. They wanted to compare the differences in ages between the two families. The ages of the members of Smith family are 45, 43, 13, 11, 5, and 2, while the Jones family members are 45, 39, 17, 16, 4, and 1. Find the mean absolute deviation and range in ages for each family.

Smith Family MAD = _____ Jones Family MAD = _____
Smith Family Range = _____ Jones Family Range = _____

Which family has the greatest difference in ages? _____



7. Sherry has an after-school job at Papa John's. Her boss keeps track of how many pizzas she sells each day. During her last five days of work, she served 29, 58, 15, 75, and 22 pizzas.

What was the median number of pizzas Sherry sold? _____
What was the mean absolute deviation of the pizzas she sold? _____

Practice: Mean Absolute Deviation

1. How many pets do you have?

Find the mean absolute deviation.

0, 1, 5, 0, 3, 1, 0, 2, 2, 6

Mean: _____ MAD: _____

2. How many shoes do you own?

Find the mean absolute deviation.

3, 7, 2, 8, 3, 19, 5, 9

Mean: _____ MAD: _____

3. How many pages have you read?

Find the mean absolute deviation.

15, 20, 12, 16, 18

Mean: _____ MAD: _____

4. How many lawns have you mowed?

Find the mean absolute deviation.

31, 24, 32, 28, 29, 36

Mean: _____ MAD: _____

5. How many TV's are in your house?

Find the mean absolute deviation.

1, 4, 3, 3, 2, 1, 7

Mean: _____ MAD: _____

6. How many shots did you take?

Find the mean absolute deviation.

2, 1, 4, 2, 3, 0, 1, 0, 3, 2

Mean: _____ MAD: _____

7. What did you get on the quiz?

Find the mean absolute deviation.

85, 90, 68, 75, 79

Mean: _____ MAD: _____

8. What is your current heart rate?

Find the mean absolute deviati

65, 60, 75, 70, 70, 75, 80

Mean: _____ MAD: _____

Name: _____ Date: _____ Period: _____

MAD Exit Ticket

Find the mean absolute deviation for each set of data.

1. 80, 82, 82, 88, 90, 94, 102, 104, 106

MEAN: **MAD:**

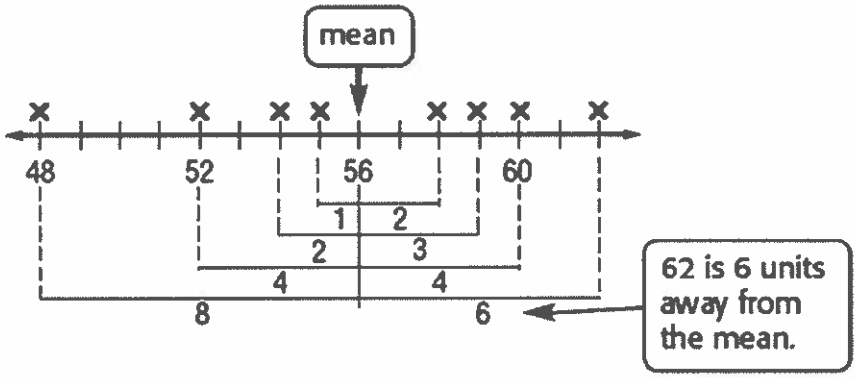
DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

Sum = **Sum =**

Name: _____

Unit 13 Video 10 Notes: Mean Absolute Deviation

Mean Absolute Deviation	
What does the MAD tell us?	LOW MAD: • HIGH MAD: •



Steps:	1. 2. 3. 4.

Solve:

1. Find the MAD of the following: 10, 4, 1, 2, 8
   Mean _____

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

TOTAL of VALUES:

MAD:

2. Mr. Mason records each students test scores in an excel spreadsheet. Below are three students test scores from second quarter

Li: 82 100 65 93
Brittany: 83 82 89 83
Jamal: 88 99 80 73

Find the mean absolute deviation for each student below.

Li

MEAN:

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

MAD:

Brittany

MEAN:

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

MAD:

Jamal

MEAN:

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

MAD:

In your opinion, who is the best student? Explain.

You Try:

Below are the maximum speeds of eight roller coasters at Carowinds:

58 72 88 66 40 80 60 48

- Find the mean: _____
- Find the distance between each data value and the mean:

DATA	DIFFERENCE Data – mean	ABSOLUTE VALUE

- Find the sum of the distances: _____
- MAD: _____ Is he MAD low or high? _____
- Describe what the MAD represents in the context of this problem:

Mean Absolute Deviation for Visual Learners

Fortner

Problem of the Day

Test Prep A copier is used to make 4,696 copies in 8 hours. If the copier makes the same number of copies each hour, how many copies does it make an hour?

Ⓐ 445 Ⓒ 510
Ⓑ 494 ● 587

Common Core Standard

Summarize and describe distributions.
CC 6.SP.5c Summarize numerical data sets in relation to their context, such as by giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

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Lesson Objective

Understand mean absolute deviation as a measure of variability from the mean.

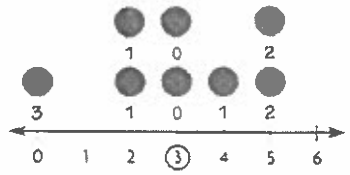
Essential Question

How do you calculate the mean absolute deviation of a data set?

Vocabulary mean absolute deviation

Mean absolute deviation:
The mean of the distances between the values of a data set and the mean of the data set.

Data set: 0, 2, 2, 3, 3, 4, 5, 5
Mean = 3



$$\frac{3 - 1 - 1 - 0 - 0 - 1 - 2 - 2}{8} = 1.25$$

The mean absolute deviation is 1.25.

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Mean Absolute Deviation

One way to describe a set of data is with the mean. However, two data sets may have the same mean but look very different when graphed. When interpreting data sets, it is important to consider how far away the data values are from the mean.

Investigate

Materials ■ counters, large number line from 0–10

The number of magazine subscriptions sold by two teams of students for a drama club fundraiser is shown below. The mean number of subscriptions for each team is 4.

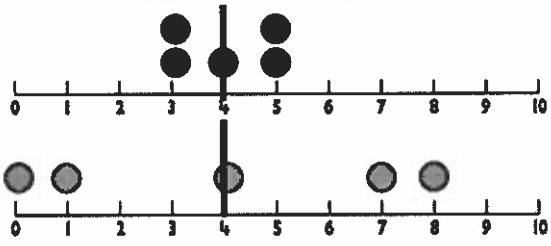
TEAM A				
3	3	4	5	5

TEAM B				
0	1	4	7	8

TEAM A				
3	3	4	5	5

TEAM B				
0	1	4	7	8

A. Make a dot plot of each data set using counters for the dots. Draw a vertical line through the mean.



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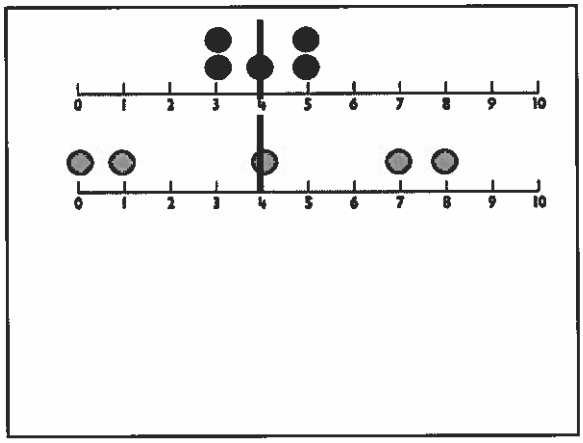
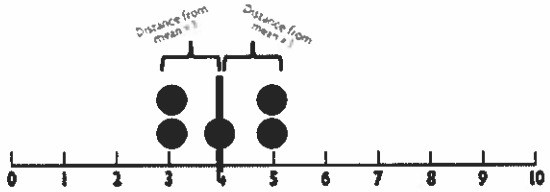


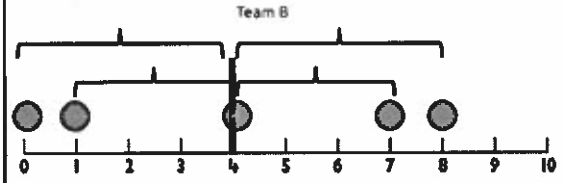
B. Count to find the distance between each counter and the mean. Write the distance underneath each counter.

Team A



$$\frac{1+1+0+1+1}{5} = \frac{4}{5} = 0.8$$

Team B



$$\frac{4+3+0+3+4}{5} = \frac{14}{5} = 2.8$$

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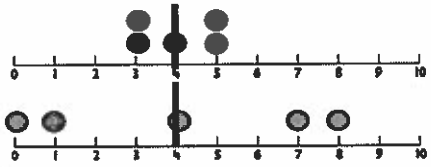
Draw Conclusions



1. Which data set, Team A or B, looks more spread out in your dot plots? Which data set had a greater average distance from the mean? Explain how these two facts are connected.

Team B; Team B: Possible explanation: The more spread out a data set is, the greater the mean of the distances of data values from the mean of the data set will be.

2. **Application** The table shows the average distance from the mean for the heights of players on two basketball teams. Tell which set of heights is more spread out. Explain how you know.

Heights of Players	
Team	**Average Distance from Mean (in.)**
Chargers	**2.8**
Wolverines	**1.5**

The heights of the players on the Chargers are more spread out. The average distance from the mean for the Chargers is 2.8 in., which is greater than the Wolverines.

Make Connections

The mean of the distances of data values from the mean of the data set is called the **mean absolute deviation**. As you learned in the Investigation, mean absolute deviation is a way of describing how spread out a data set is.

Mean absolute deviation:
The mean of the distances between the values of a data set and the mean of the data set.

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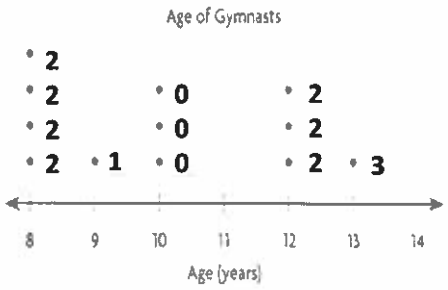
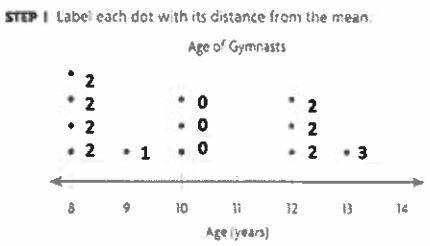
The dot plot shows the ages of gymnasts registered for the school team. The mean of the ages is 10. Find the mean absolute deviation of the data.

STEP 1 Label each dot with its distance from the mean.





STEP 2 Find the mean of the distances.

$$\frac{2+2+2+2+1+0+0+0+2+2+2+3}{12} = \frac{18}{12} = 1.5$$

So, the mean absolute deviation of the data is **1.5** years.

Math Talk Is it possible for the mean absolute deviation of a data set to be zero? Explain.

YES: Possible explanation: If every value in the data set is the same number, the mean is also that number, and the distances of all the values from the mean are zero.

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Share and Show

Use counters or a dot plot to find the mean absolute deviation of the data.

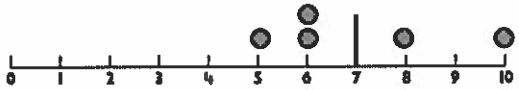
1. Find the mean absolute deviation for both data sets. Explain which data set is more spread out.

the number of laps Shawna swam on 5 different days:

5, 6, 6, 8, 10

mean = 7

MEAN ABSOLUTE DEVIATION: 1.6



$$\frac{2+1+1+1+4}{5} = \frac{8}{5} = 1.6$$

the number of laps Lara swam on 5 different days:

1, 3, 7, 11, 13

mean = 7

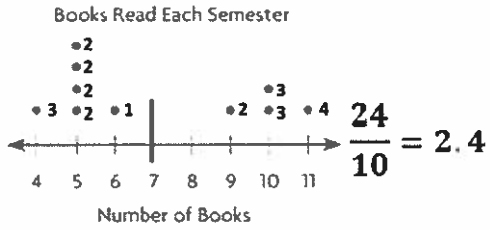
MEAN ABSOLUTE DEVIATION: 4

$$\frac{6+4+0+4+6}{5} = \frac{20}{5} = 4$$

The data set of **Laura's** laps is more spread out because the mean absolute deviation of her data is **higher**.

Use the dot plot to find the mean absolute deviation of the data.

2. mean = 7 books



$$\frac{24}{10} = 2.4$$

mean absolute deviation = **2.4 books**

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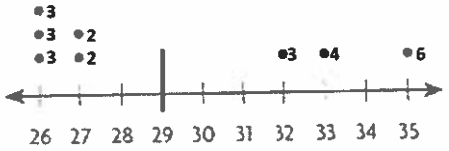
3. mean = 29 pounds

Packages Shipped on Tuesday



$\frac{26}{8} = 3.25$

mean absolute deviation = **3.25 lb**

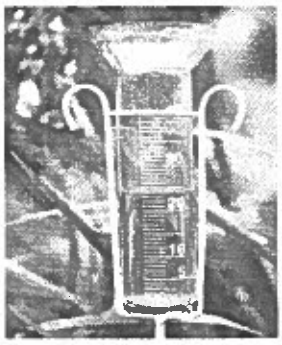
4. Write Math The mean absolute deviation of the number of daily visits to Scott's website for February is 167.7. In March, the absolute mean deviation is 235.9. In which month did the number of visits to Scott's website vary more? Explain how you know.

March; the mean absolute deviation is higher in March than it was in February

5. Algebra In April, the data for Scott's website visits are less spread out than they were in February. Use a to represent the mean absolute deviation for April to write an inequality to describe the possible values of a.

$a < 167.7$

Problem Solving



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6. Elijah recorded the number of days of precipitation each month.

Days of Precipitation

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10	12	13	18	10	3	7	6	16	14	8	10

The mean of the data is 11. What is the mean absolute deviation of the data?

3 days

7. Elijah collects precipitation data from a second year and finds that the mean absolute deviation of the data from the second year is 1.5 days. For which year are the data more spread out?

The first year is more spread out because the mean absolute deviation of the data is greater for that year.

8. H.O.T. Suppose all of the players on a basketball team had the same height. Explain how you could use reasoning to find the mean absolute deviation of the players' heights.

If the players all have the same height, then the mean would be the same value as all of the data points. The mean absolute deviation would be zero.

9. Write Math Tell how an outlier that is much greater than the mean would affect the mean absolute deviation of the data set. Explain your reasoning.

Possible explantion: An outlier much greater than the mean would make the mean absolute deviation larger because it would make the sum of all the deviations larger.

10. Test Prep Carlos plays the piano. The hours he practiced each week for 8 weeks were 2, 4, 4, 6, 6, 8, 9, 9. What is the mean absolute deviation of the data?

Ⓐ 8 hours Ⓒ 6 hours

Ⓑ 7 hours ● 2 hours

Make a dot plot of the following data. Use the dot plot to find the mean absolute deviation: 10, 10, 11, 12, 13, 13, 15.

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CHAPTER VOCABULARY

Box plot: A type of graph that shows how data are distributed by using the least value, the lower quartile, the median, the upper quartile, and the greatest value of the data set.

Distribution: The overall shape of the graph of a data set.

Interquartile range: The difference between the upper quartile and the lower quartile of a set of data.

Lower quartile: the median of the lower half of a data set.

Mean absolute deviation: The mean of the distances between the values of a data set and the mean of the data set.

Measure of variability: A single value used to describe how spread out a set of data values are.

Range: The difference between the greatest value and the least value in a data set.

Upper quartile: The median of the upper half of a data set.

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MAD Student Sheet Name: _____

1. Mean: _____ MAD: _____	2. Mean: _____ MAD: _____	3. Mean: _____ MAD: _____	4. Mean: _____ MAD: _____
5. Mean: _____ MAD: _____	6. Mean: _____ MAD: _____	7. Mean: _____ MAD: _____	8. Mean: _____ MAD: _____
9. Mean: _____ MAD: _____	10. Mean: _____ MAD: _____	11. Mean: _____ MAD: _____	12. Mean: _____ MAD: _____

6.SP.5c

Mean Absolute Deviation Homework

Name:_____

Date:_____Period:____

1. 160, 166, 170, 172, 178, 180, 190, 204, 260

MEAN: **MAD:**

DATA	DIFFERENCE Data minus Mean	ABSOLUTE VALUE

Sum = **Sum =**

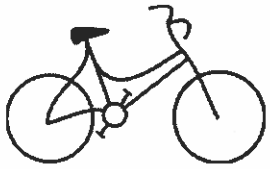
Copy the numbers from the card onto the sheet. Place the answer in the star in the bottom right corner. Round answers to the nearest tenth. Be sure to round accurately!

Name ____________________

Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations:: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:
Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:
Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:
Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:	Mean: ______ Deviations: ______ M.A.D.:

Name: _____ Date: _____ Period: _____

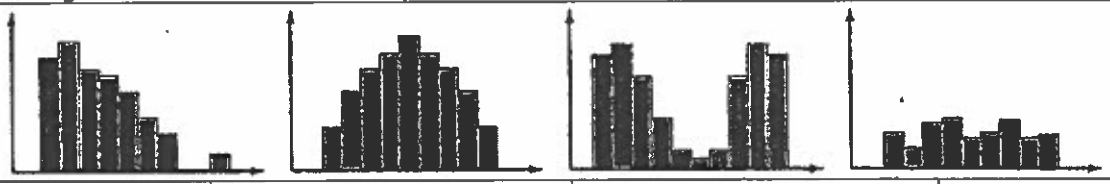
MAD Exit Ticket

1. How long did you exercise?	2. How many miles did you bike?
Find the mean absolute deviation. 	Find the mean absolute deviation. 
35, 5, 42, 9, 16, 3, 8, 12	**1, 5, 9, 3, 7, 15, 6, 9**
Mean: _____ **MAD:** _____	**Mean:** _____ **MAD:** _____

Entrance Ticket: **Summary Statistics**

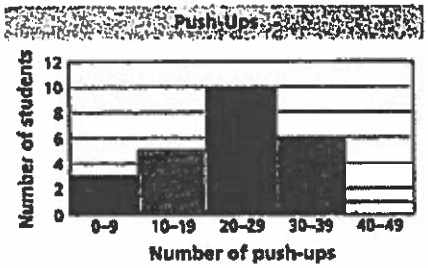
Name:_____

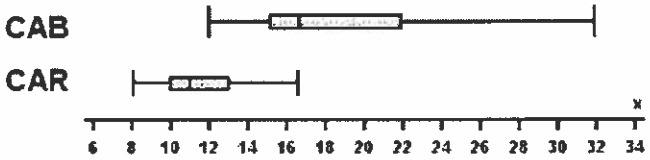
Match the following distributions with it's shape.

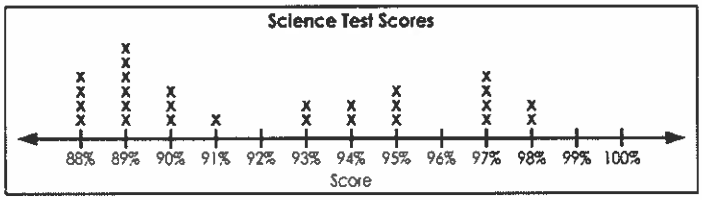


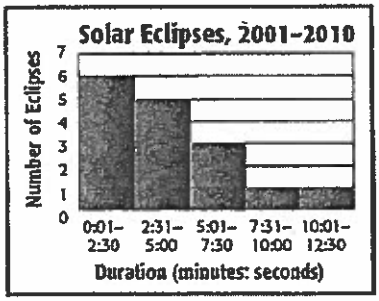
A. Skew	B. Flat	C. Normal/Symmetrical	D. Bimodal

Describe the shape and distribution of the graphs below. Be sure to mention gaps, peaks, clusters or outliers.









6th Unit 13 – Collect, Analyze and Display Data
Performance Task 4

Standard(s) Addressed:

6.SP.1: Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*

6.SP.3: Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.5: Summarize numerical data sets in relation to their context, such as by:

a. Reporting the number of observations.

b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Standards for Mathematical Practice:

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

Task:

Netflix rankings (1 star through 5 stars):

Finding Dory

5, 5, 4, 5, 3, 3, 5, 4, 5, 4, 5

Zootopia

4, 2, 5, 3, 3, 4, 2, 3, 2, 4, 3

1. Make a dot plot, histogram, and box plot for the data above.
2. Describe each movie's data based on its center, shape, and spread.
3. Determine which movie was enjoyed more from its viewers.

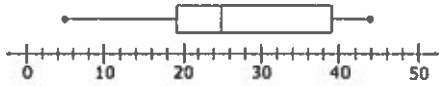
Additional Work Space

UNIT 13 STUDY GUIDE

Name: Class: Date:

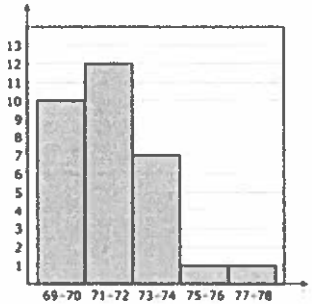
Question #1

Study the box plot shown.



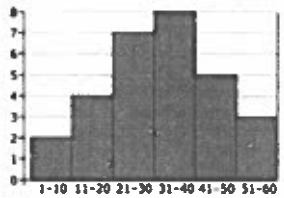
What is the value of the median in the box plot shown?

Question #2 Study the histogram below.



Which interval displays the peak of the data shown?

Question #3 The histogram below shows how many students answered different amounts of questions correct on a test.



How many students answered less than 31 questions correctly?

Question #4

Stem	Leaf
1	1 2 5 7
2	0 1 3 4 8
3	2 9

Mean:

Median:

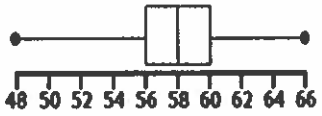
Mode:

Range:

Question #5

Between what two months was there the least change?

Question #6 The box plot below displays data about the heights of students (in inches) in Mrs. Jackson's class.



What is the value of the third quartile?

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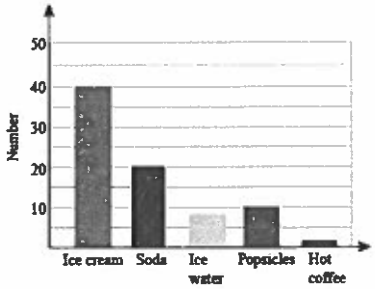
Question #7 Each person received one free snack or drink on the train. The histogram displays the amount of each item chosen.



Which statement is true?

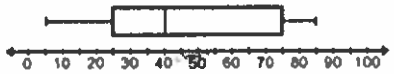
A: Most people chose Popsicles.

B: Twice as many people chose Ice Cream than Soda.

C: More students chose Hot Coffee than Ice water.

D: The majority of students chose Ice Water or Hot Coffee.

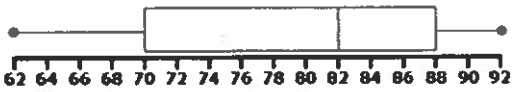
Question #8 A survey of 6 graders is conducted to determine how much money they have saved. The results are used to create the box-and-whisker plot shown.



What percentage of students saved less than $40.00?

Question #9

The box plot below shows the test scores of the students' in Mrs. Jones' math class.



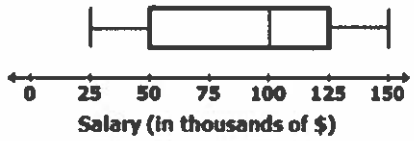
True or False (EXPLAIN YOUR ANSWER FOR EACH.)

A: Most students scored below 92.

B: 25% scored below 72.

Question #10

A public university publishes its data on 100 professors' salaries as a box plot.



One more professors' salary was added to the data. He earns $24,000. Which whisker will become longer?

Question #11

	MONDAY	*TUESDAY*	*WEDNESDAY*	*THURSDAY*	*FRIDAY*
PERIOD 1	2	1	0	1	1
PERIOD 2	1	3	4	5	2
PERIOD 3	4	3	2	0	0
PERIOD 4	2	0	0	0	0
PERIOD 5	1	0	1	0	0

A stomach bug was spreading at a school nearby! The table shows how many students went home sick during each period of the day, each day of the week.

A) What is the median of the entire week?

B) What is the median of each day?

C) What is the mean of the entire week? (Round to a whole number.)

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D) What is the mean of the each day?

E) What is the mode of the entire week?

F) What is the range of the entire week?

G) What is the mean absolute deviation of the data from the entire week? (Use your answer from J.)

Question #12 Jill has scores of 93, 90, 88, and 100 on algebra quizzes. There will be one more quiz. Which value is the *lowest* Jill's fifth score, x , could be to have an average score of at least 90?

A) 90
B) 89
C) 79
D) 70

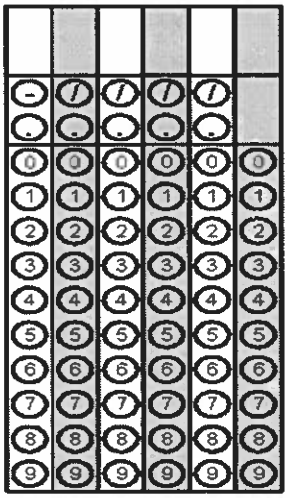
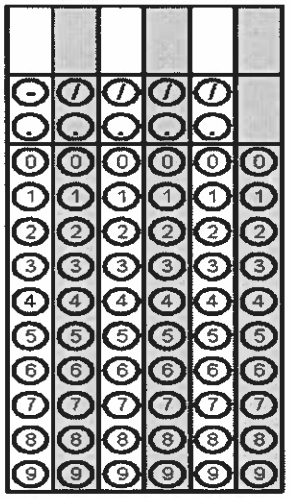
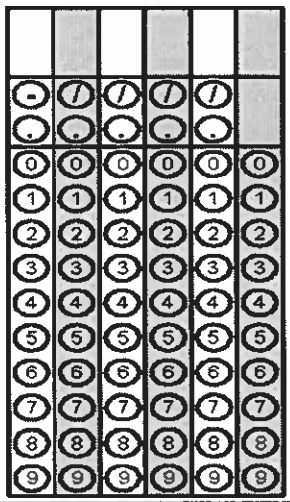
Question #17

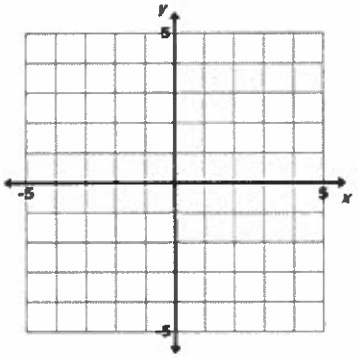
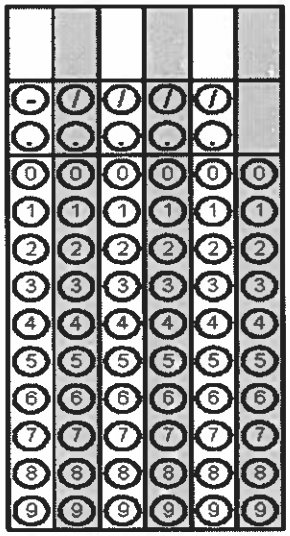
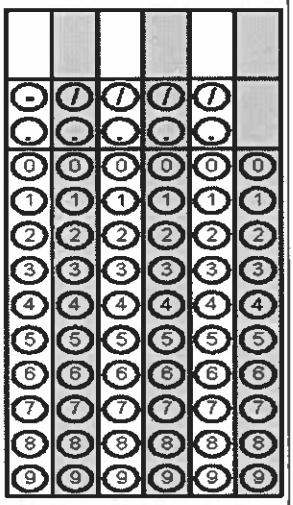
A retirement home displays data on the ages of its residents in the box-and-whisker plot.

What is the range of the values in the middle 50% of the data?

19

Additional Work Space

	Problem 1	Problem 2	Gridded Response
Monday	The Gokal family is retiling a portion of their floor that is in the shape of a trapezoid. The trapezoid has a height of 3 ft and base lengths of 6 ft and 8ft. If the tile costs $4.27 per square foot, how much will it cost?	Mrs. Recever collected data from some of her 1st period students on the number of songs on their iTunes account. Find the median number from the data collected below. 8, 25, 20, 9, 23, 10, 23, 16, 21,	***Problem 1*** 
Tuesday	Find the area of a circle with a diameter of 6.5 cm. Round to the nearest hundredth.	If the mode of this set of data is 17, what is the value of m? $\{4, 21, 22, 24, 17, 26, m\}$	***Problem 2*** 
Wednesday	Tyson and his mom are building a shelf for his trophies. The board they are using is $6\frac{1}{2}$ feet long. If they want the shelves to be $1\frac{3}{4}$ feet long, how many shelves can be cut from the board?	Evaluate if $y = 8$. $\left(\frac{6+3y}{3}\right)^2$	***Problem 2*** 

Thursday	Find the area of a triangle with coordinates (2,2), (-6, 2), and (-2,-4). 	Combine like terms. $7 + 13r + 10t + 4(r + 2t) - 3$	***Problem 1*** 
Friday	Find the interquartile range of the data listed below. 12, 50, 30, 40, 21, 45, 29, 15.	Find the third measure of the interior angle of a right triangle with one angle measure of 55°.	***Problem 2*** 

Student: _____

Class: _____

Date: _____

1. Nancy likes collecting seashells and storing them in a box. She can empty the seashells out of the box and see all the seashells at once. Which of these is a statistical question that Nancy can ask about her seashells?

   A. How many seashells are in the box?

   B. How many seashells in the box are white?

   C. How small is the smallest seashell in the box?

   D. What is the distribution of sizes of seashells in the box?

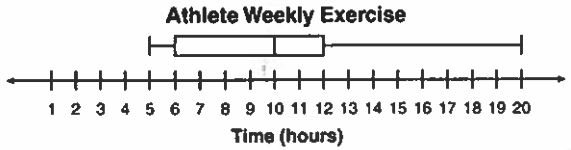
2. **A student will ask his classmates one survey question. Which of the following is a statistical question that should result in varied responses?**

   A. What is the length of a meter stick in centimeters?
   B. What is the total number of feet in 8 yards?
   C. What is the sum of the digits in your telephone number?
   D. What is the total number of eggs in 5 dozen?

3. **In an apartment complex with 120 identical apartments, a random sample of renters are selected for a survey. Which question would most likely generate data without variability?**

   A. How many pets do you have?
   B. How much money do you earn in a year?
   C. How many people live in your apartment?
   D. How many bedrooms are in your apartment?

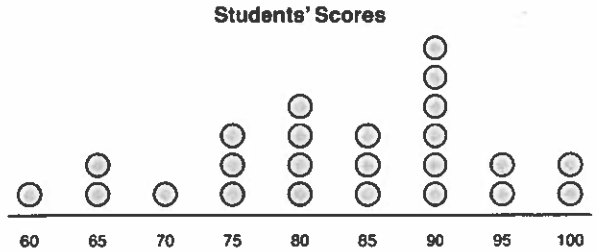
4. **The box-and-whisker plot shown displays the number of hours 20 student athletes spend exercising during the week.**



Which number best describes the range of the data in the box-and-whisker plot?

   A. 25
   B. 15
   C. 10
   D. 6

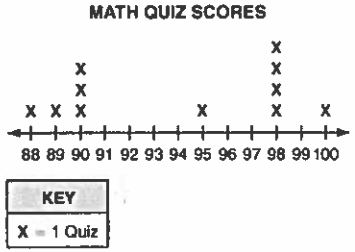
5. **Mr. Roel organized his students' scores on the following line plot.**



Based on this information, which of the following best describes the median student score?

   A. 35
   B. 80
   C. 85
   D. 90

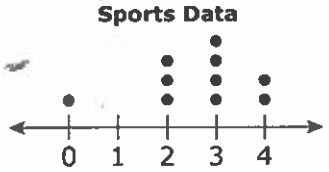
6. After each math quiz this grading period, Alexa recorded her score on the line plot below.



What is the median of the set of data?

   A. 91
   B. 94
   C. 95
   D. 98

7. Julie asked 10 of her friends how many sports they play. Then she created a data set of their answers. The distribution of the data set is represented by the dot plot below.



Which statement is true?

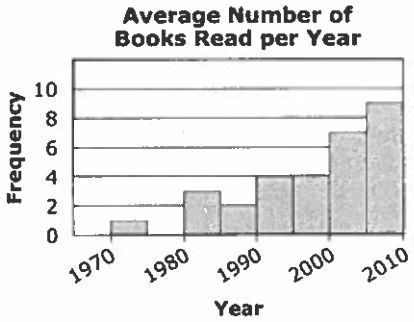
A. Three of Julie's friends play 4 sports.

B. Most of Julie's friends play 2 sports or less.

C. The median number of sports played by Julie's friends is 1 less than the mean.

D. The range of the number of sports played by Julie's friends is 1 more than the median.

8. Below is a histogram showing the average number of books Dan read each year from the time he was 10 until he was 50.



Which answer is an accurate description of the graph?

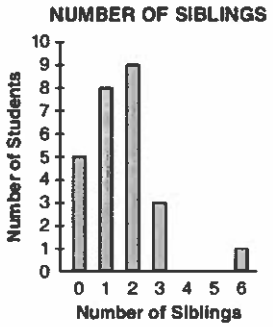
A. Normally distributed

B. Skewed left

C. Skewed right

D. Bimodal

9. Mr. Turner asked his students how many siblings they have. He displayed the data in the bar graph below.



Which of the following sets represents the outlier(s) of the data?

A. {0, 6}

B. {4, 5}

C. {2}

D. {6}

10. A teacher writes a list of numbers on the board. The range for the list of numbers is 23. Which list could be the teacher's?

A. 12, 24, 9, 26, 23

B. 23, 23, 8, 15, 12

C. 26, 11, 34, 23, 31

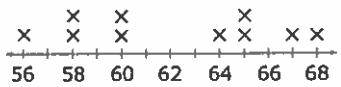
D. 30, 21, 19, 23, 22

11. The heights, in inches, of 10 students are listed below.

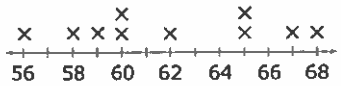
56, 65, 60, 59, 68, 65, 67, 65, 60, 58

Which line plot displays this data?

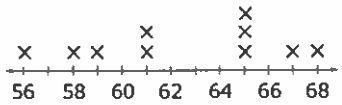
A.



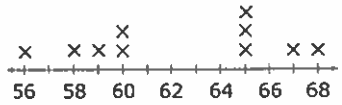
B.



C.

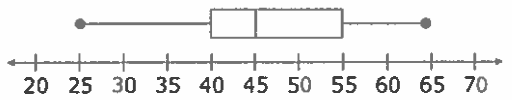


D.

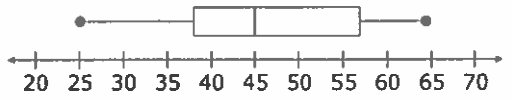


12. Which box plot represents a set of data whose median is 45 and interquartile range is 19?

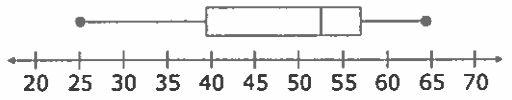
A.



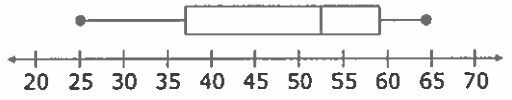
B.



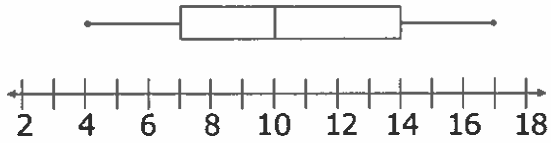
C.



D.



13. Which value represents the upper quartile on the box plot below?



A. 10

B. 12

C. 14

D. 17

19

14. Tyrone took a survey of prices for a compact disc he wanted. He visited 10 online businesses and found their prices for the disc. The prices are listed below.

$7.50, $8.00, $8.25, $7.35, $9.00, $7.75, $7.35, $7.35, $8.00, $7.45.

What is the **mean** price for the compact disc at these 10 businesses?

15. **The table shows the number of participants from each school at a spelling contest.**

Spelling Contest Participants

School	Number of Participants
Adams	29
Roosevelt	22
Washington	28
Wilson	22
Lincoln	14

What is the mean number of participants from these schools?

A. 14
B. 22
C. 23
D. 28

16. **Which set of numbers has a median of 5?**

A. {5, 5, 6, 7, 8}
B. {2, 3, 5, 8, 9}
C. {1, 2, 3, 4, 5}
D. {0, 0, 1, 3, 5}

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Mean, Median, Mode, Range

Directions: Solve each problem, showing all work. Then find the ANSWER number on the coloring sheet and color it with the color given in the box.

1 Find the mean of the data set: 14, 19, 13, 22, 7 Color this answer light blue.	2 Find the median of the data set: 17, 35, 20, 18, 29, 26 Color this answer light green.	3 Find the mode of the data set: 10, 18, 13, 22, 10, 13, 10, 19 Color this answer purple.	4 Find the range of the data set: 37, 40, 33, 45, 32, 34 Color this answer pink.	5 What is the outlier in the following set? 29, 2, 28, 30, 26, 31 Color this answer yellow.
6 Pam is 17 years old and her sister is 9. Her two brothers are 11 and 7 years old. What is the mean of their ages? Color this answer dark blue.	7 Sam had four tests last month. His scores were 81, 94, 83, and 91. What is the median of his scores? Color this answer light blue.	8 When Sally went bowling, her scores were 108, 72, and 95. If she bowls a 4th game, what will her score need to be to give her an average of 91? Color this answer purple.	9 The mean of the data set is 15. What number is missing? 18, 16, ___, 9, 12, 23 Color this answer light green.	10 The range of a data set is 18. If the smallest number in the set is 9, what is the largest number? Color this answer pink.
11 Find the median of the data set: 8, 19, 14, 16, 9, 20, 9 Color this answer yellow.	12 The median of the data set is 18. What number is missing? 12, 17, ___, 21, 13, 25 Color this answer purple.	13 Mindy had five tests last month. Her scores were 95, 86, 78, 80, and 91. What is the range of her scores? Color this answer light blue.	14 The mode of the data set is 21. What number is missing? 21, 17, ___, 25, 23, 13 Color this answer light green.	15 The range of a data set is 32. If the largest number in the set is 50, what is the smallest number? Color this answer yellow.
16 Find the mean of the data set: 15, 22,19, 20, 29, 18, 25, 19, 31 Color this answer pink.	17 Find the mode of the data set: 29, 22,19, 20, 29, 23, 29, 19, 31 Color this answer light blue.	18 What is the outlier in the following set? 28, 31, 40, 26, 38, 65, 39, 35, 30 Color this answer light green.	19 The mean of the data set is 18. What number is missing? 21, 11, ___, 27, 22, 13, 16 Color this answer yellow.	20 The median of the data set is 81. What number is missing? 82, 87, ___, 77, 70, 80, 88 Color this answer pink.

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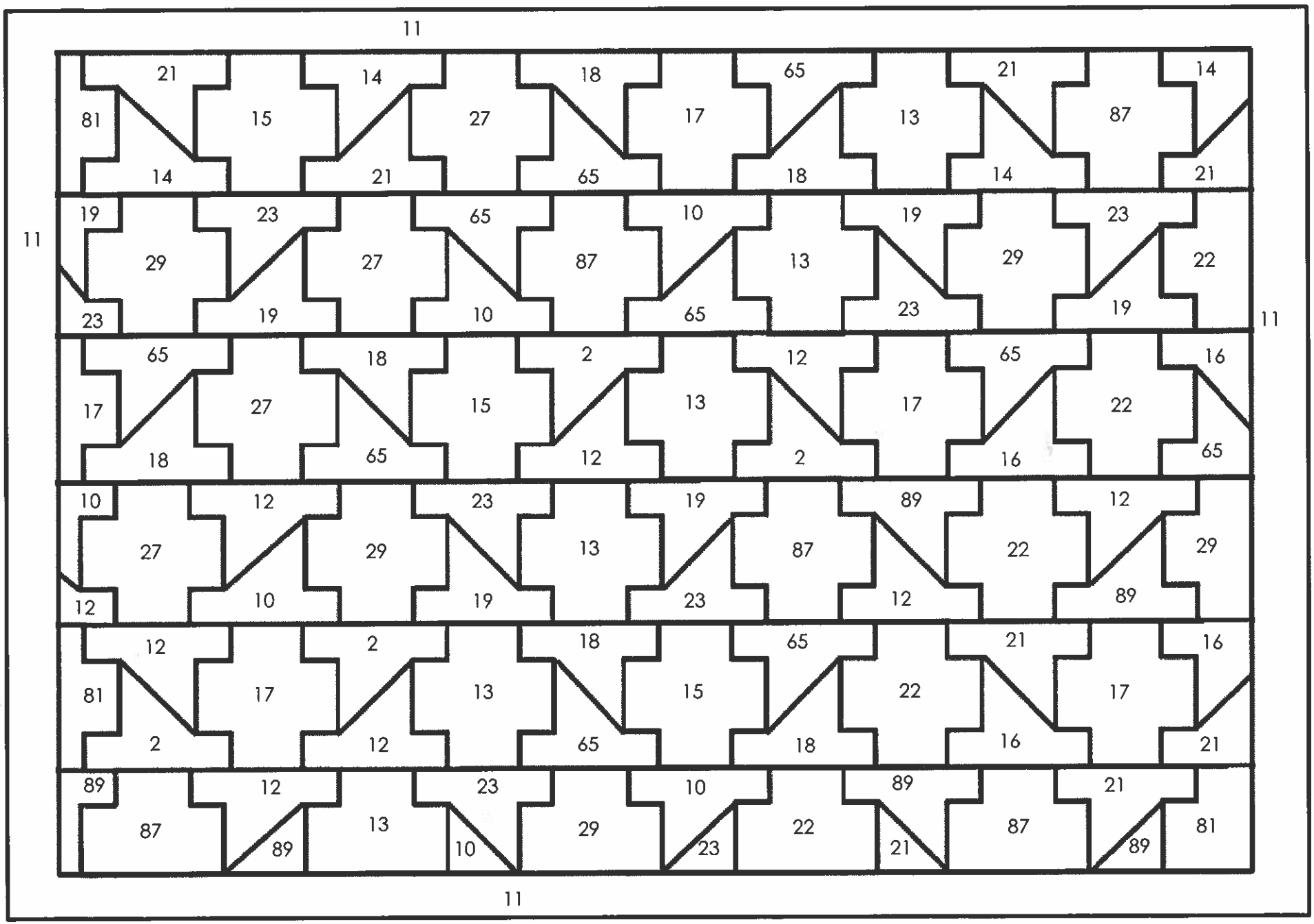
Mean, Median, Mode, Range



1) The expression $6^3 \times 4^2$ is equivalent to which of the following numerical expressions?

A) 18×8
B) (6×4)
C) 24^6
D) 216×16

2) Which of the following numerical expressions has the least value?

A) $2 \times 3 \times 4 + 5$
B) $(2 \times 3) + (4 \times 5)$
C) $(2 + 3 + 4) \times 5$
D) $2 \times (3 + 4) \times 5$

3) Which of the following expressions is not equivalent to the others?

A) $3(5a + 10b)$
B) $5(3a + 6b)$
C) $2(5a + 15b)$
D) $15a + 30b$

4) Jill needs to save at least \$45 for a ticket to the play. She already has \$26. She wrote and inequality to reflect how much more money she needs.

$s \leq \$19$

Which statement is true?

A) Jill's inequality is incorrect because 19 should be added to 45.
B) Jill's inequality is incorrect because the inequality sign is incorrect.
C) Jill's inequality is correct because she used ≤ to represent "at least".
D) Jill's inequality is correct because the amount she needs to save is less than \$19.

5) An inequality is written in the box.

$24 > 8x$

Which numbers can replace x to make the inequality true?

A) 0 ,1, 2, 3,
B) 0, 1, 2
C) any number greater than 3
D) any number less than or equal to 3

6) An inequality is written in the box.

$6 \cdot 12 > 8 \cdot n$

Which number can replace *n* to make a true statement?

A) 4

B) 16

C) 9

D) 12

7) Represent the following expression algebraically:

NDP: _____

A) $(2x + 5) - x$
B) $x - (2x + 5)$
C) $x - 2x + 5$
D) $(x + 2x) - 5$

A number, x, decreased by the sum of 2x and 5

8) Evaluate the expression $3x + 2y$ when x is equal to 4 and y is equal to 2.4.

A) 16.4
B) 14.4
C) 16.8
D) 4.24

9) It costs \$100 to rent the skating rink plus \$5 per person. Write an expression to find the cost for any number (n) of people.

A) $5n + \$100$
B) $20n + \$100$
C) $n + 5$
D) $20n + 5 + \$100$

10) Joey had 26 papers in his desk. His teacher gave him some more and now he has 100. How many papers did his teacher give him?

A) 14 papers
B) 74 papers
C) 126 papers
D) 84 papers

11) *Twelve is less than 3 times another number r,* can be shown by the inequality $12 < 3n$. What numbers could possibly make this a true statement?

A) 3, 6, 9
B) 2, 4, 6
C) 0, 1, 2
D) 5, 10, 15

12) Andrew has a summer job doing yard work. He is paid \$15 per hour and a \$20 bonus when he completes the yard. He was paid \$85 for completing one yard. Write an equation to represent the amount of money he earned. (h is the number of hours worked)

A) $15h + 20 = \$85$
B) $\$85 - 15 = h$
C) $20 + 15 \times h = \$85$
D) $15 + 20h = \$85$

13) Which expression is not equal to 64?

A) 8^2
B) 4^3
C) $2^3 \cdot 4 \cdot 2$
D) $8^1 + 8^1$

14) Which expression has exactly 3 terms?

A) $6x^3$ B) $6x-1$ C) $6x+3$ D) $6x^2+7x-1$

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15) Monty reads a story and a play. The play has 165 pages, which is 5 times as many pages as the story. Which equation could you use to find s, the number of pages in the story?

A) $\frac{1}{5}s = 165$

B) 6x-1

C) 5s=165

D) 165s=5

16) The product of two factors is 18a – 12c. What are the factors?

A) 6(2c+3a)

B) 6(2c-3a)

C) -6(2c+3a)

D) -6(2c-3a)

17) Which of the following is not a solution of $5x \geq 35$?

A) 7 B) $7\frac{1}{5}$ C) 6 D) 8

18) Carol's mother was 24 years old when Carol was born. If her mother is 46 years old, how old is Carol?

A) 20 years old B) 18 years old

C) 11 years old D) 22 years old

19) Mia's dog weighs 4 pounds more than 8 times the weights of Kirk's dog. Which expression could be used to find the weight of Mia's dog?

A) 8k + 4 B) 4k + 8

C) 4(8k) D) 4 + 8 + k

20) Evaluate $3 \cdot (\frac{1}{3})^2$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2

Name: _____ Date: _____ Period: _____

Number Systems Exit Ticket

1) How many $\frac{1}{6}$ cup portions are in $\frac{2}{3}$ cup of juice?

A) 2 B) $\frac{1}{4}$

C) 4 D) $\frac{5}{6}$

2) Maddie cuts a 6 yard length of ribbon into $\frac{1}{3}$ yard pieces. How many cuts did she make?

A) 17 cuts
B) 12 cuts
C) 8 cuts
D) 18 cuts

3) A marathon is a 26.2 mile run. Four friends wanted to run an equal amount of the race. The first runner developed an injury after 0.7 miles. How much will each of the remaining runners have to run?

A) 12 miles
B) 6.55 miles
C) 8.5 miles
D) 13.1 miles

4) Joe wants to buy a new video game for $52.50. He puts $3.75 in his piggy bank each day. How many days will it take him to save the money for the game?

A) 14 days
B) 8 days
C) 12 days
D) 10 days

5) Sally is planning a flower garden. She has 36 daisy plants, 27 marigold plants, 54 phlox plants and 18 petunia plants. She wants each row of her garden to have the same number of each type plant. What is the greatest number of rows that she can have is she uses all of her plants?

A) 3 daisy, 6 marigold, 6 phlox and 2 petunias
B) 4 daisy, 3 marigold, 6 phlox and 2 petunias
C) 12 daisy, 18 marigold, 9 phlox and 9 petunias
D) 4 daisy, 9 marigold, 6 phlox and 2 petunias

6) Evaluate the following expression.

$\frac{1}{16} \cdot 8^2 + 3^3$

174

Name _____ Date:_____ Period:___

Teacher Review: NS Grade 6

1) Kris wants to save $72 for his mother's gift. Her birthday is in 3 weeks and has saved $42. How much will he need to save each week in order to buy her birthday gift?

A) $12
B) $16
C) $10
D) $12.50

2) A student is growing plants for a science project. Plant 1 is 12.45 cm tall. Plant 2 is 4.5 cm is taller than Plant 1 and Plant 3 is 3.75 cm shorter than Plant 2. How tall is Plant 3?

A) 12.25 cm
B) 13.2 cm
C) 20.7 cm
D) 25.45 cm

3) You are making bags of trail mix for a field trip. You have 12 ounces of peanuts and 36 ounces of cashews. You need to have the same amount of nuts in each bag. What is the greatest number of bags that you can make that will have the same number of ounces of nuts in each bag?

A) 12 bags
B) 48 bags
C) 6 bags
D) 9 bags

4) To rent a bicycle at the beach there is an initial fee of $12. For each hour the bicycle is rented, there is an additional $5 fee. If the charge was $27, how long was the bicycle rented?

A) 7 hours
B) 9 hours
C) 3 hours
D) 12 hours

5) Sal and Jane are go to a baseball game. Popcorn bags cost $3 each and drinks are $4 each. Sal and Jane order 3 bags of popcorn and 4 drinks and pay with a $50 bill. What is their change?

A) $30
B) $22
C) $15
D) $25

6) Kate has 8 cups of flour. It takes $\frac{5}{6}$ cup of flour to make one cake. How many cakes can Kate make?

A) 9 cakes
B) 10 cakes
C) 8 cakes
D) 12 cakes

7) A new school is ordering math text books. They are $\frac{3}{4}$ of an inch thick. How many of these books will fit into a book shelf that is 2 feet long?

A) 2 books
B) 12 books
C) 26 books
D) 32 books

8) A boarding school has 416 students enrolled for the new school year. It has 8 dormitories that hold the same number of students. How many students will be housed in each dormitory?

A) 52 students
B) 26 students
C) 48 students
D) 41 students

9) Jackson is the star basketball player for his team. He averaged 19.25 points during the basketball season. If he played in 24 games, how many points did he score?

A) 564 points
B) 462 points
C) 432 points
D) 249 points

10) There are 6 pizzas to be divided for the baseball team, which has 15 players. How much of each pizza will each player receive?

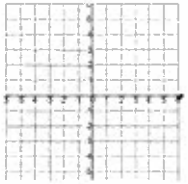
A) $\frac{2}{5}$ of a pizza
B) $\frac{1}{2}$ of a pizza
C) $\frac{1}{3}$ of a pizza
D) 1 whole pizza

11) Kay has three pieces of luggage to take on a trip. The total amount of the luggage is 52.5 kg. One piece weighs 37.9 kg. How much do each of the other pieces weigh if they are the exact same weight?

A) 14.6 kg
B) 7.3 kg
C) 21.9 kg
D) 39 kg

12) Three points of a figure are A(-6,3), B(6,3) and C(6,-3). What is the area of the figure?

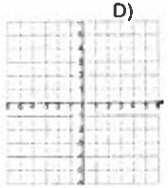
A) 84 sq units
B) 42 sq units
C) 36 sq units
D) 72 sq units



NS

13) Which point is the image of (-2,4) reflected across the x axis and then across the y axis?

A) (2,4)
B) (-2,-4)
C) (2,-4)
D) (4,-2)



14) Graph and connect the points, (0,4), (0,-4), (-5,-4) and (-5,4), on the coordinate plane to form a shape. What is the area and perimeter of the figure?

A) A= 26sq. units P= 40 units
B) A= 40 sq. units P= 13 units
C) A= 21 sq. units P= 26 units
D) A= 40 sq. units P= 26 units

15) Three rectangles have been divided into fourths. Using the rectangles shown, what is $3 \div \frac{3}{4}$?

A) $3\frac{1}{4}$
B) 4
C) 6
D) $4\frac{1}{3}$

9-11

NUMBER SYSTEM TASK CARDS!

Task Card 1

There are 12 servings in a box of cereal. Each day, Ryan eats 2 servings of cereal. What fraction of the full box of cereal has Ryan eaten after 5 days?

A $\frac{7}{3}$

B $\frac{3}{4}$

C $\frac{4}{5}$

D $\frac{5}{6}$

Task Card 2

A first year membership at the country club is $2,900. Included in this is a joining fee of $500 that is due the first day. If the remaining balance is paid monthly, how much do new members pay each month for a year?

A. $100

B $200

C $300

D $350

177

Task Card 3

Billy has been on a diet for 22 weeks. He has averaged a loss of 0.73 pounds each week.

How many total pounds has Billy lost?

A. 16.06 pounds

B. 15.06 pounds

C. 1.606 pounds

D. 1.506 pounds

Task Card 4

Kelly has $25 to spend on construction paper at the craft store.

If a package of construction paper costs $1.62, what is the *greatest* number of packages Kelly can buy?

A. 41 packages

B. 40 packages

C. 16 packages

D. 15 packages

Task Card 5

Mary has 7 grandchildren, and she gave each of them $20.50.

How much money did she give to her grandchildren altogether?

A. $2.17

B. $140.50

C. $143.50

D. $161.50

178

Task Card 6

A submarine is diving at a rate of 84 feet per minute. If the submarine begins diving from the surface of the water, what would be the submarine's depth after 7 minutes?

A. -77 feet

B. -91 feet

C. -588 feet

D. -600 feet

Task Card 7

What is the order of these values from least to greatest?

0.06, 0.8, 0.06, 0.006, 0.86, 0.68, 0.068

A. 0.006, 0.06, 0.068, 0.08, 0.68, 0.8, 0.86

B. 0.006, 0.068, 0.06, 0.08, 0.68, 0.86, 0.8

C. 0.006, 0.06, 0.068, 0.68, 0.08, 0.8, 0.86

D. 0.06, 0.006, 0.068, 0.68, 0.08, 0.8, 0.86

Task Card 8

The temperature in New York City is -7°F. On the same day, the temperature in Los Angeles is 42°F.

Which statement comparing the temperatures is true?

A. It is 35° warmer in New York.

B. It is 35° cooler in New York.

C. It is 49° warmer in New York.

D. It is 49° cooler in New York.

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Task Card 9

Which two points on the number line have the same absolute value?

A. A and E

B. B and D

C. C and D

D. D and E

Task Card 10

At the Food Star Grocery, apples are 5 for $1.00. Bob bought 6 of them. Tomatoes are $1.74 a pound. Bob bought half a pound. Milk is $3.25 a gallon and he bought 1 gallon. How much does Bob spend on groceries before taxes?

A. $5.12

B. $5.32

C. $5.99

D. $6.19

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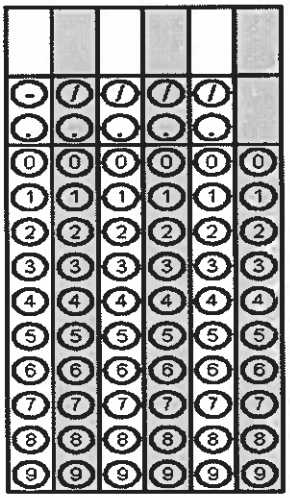
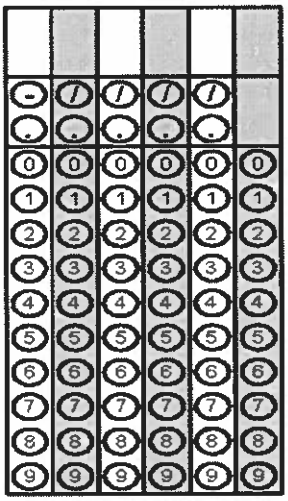
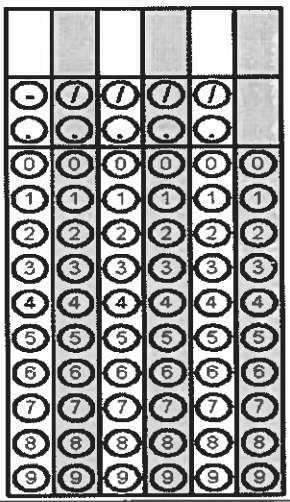
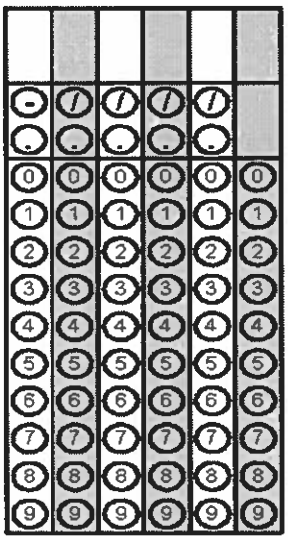
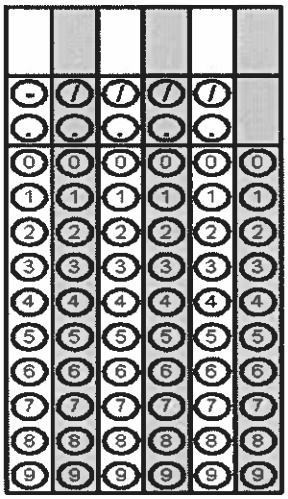
TASK CARD RECORD SHEET

1.	2.
3.	4.
5.	6.

7.	8.
9.	10.

	Problem 1	Problem 2	Gridded Response
Monday	Lindsey and her three friends shared a bag with 48 jellybeans. There are 16 jellybeans left. If each friend ate the same number of jellybeans, how many did each friend eat?	Find the height of a rectangular prism with volume of 192 cm^3, length of 16 cm and width of 2 cm.	***Problem 2*** 
Tuesday	Seth used $1\frac{1}{2}$ cups of sugar for her peanut butter cookie recipe, but they weren't sweet enough. She realized she needs to add $\frac{1}{4}$ cups more sugar the next time she makes her cookies. How much total sugar will she need?	Evaluate. $\left(\frac{1}{5}+\frac{2}{3}\right)^2$	***Problem 1*** 
Wednesday	Sherri wants a new laptop that will cost $678.00. She has already saved $165 and can save $33.00 each week. How many more weeks will it take her to have enough money to buy the laptop?	Prince and his friends are making winter hats. They have 510 yards of yarn. If each outfit requires $20\frac{2}{5}$ yards of yarn, how many hats can they make?	***Problem 1*** 

Thursday	A cereal distributer is packing crates for shipment. They pack the same number of boxes of cereal in each crate. They packed a total of 210 boxes of cereal into 14 crates. They still have 105 boxes of cereal that must be packed. How many more crates must they pack?	Solve for m. $4m + 3m + 2m = 118 - 10$	***Problem 1*** 
Friday	If $\frac{1}{3}$ of a pizza feeds $\frac{1}{9}$ of a choir group, how many pizzas are needed to feed the entire choir group?	Tonya has set aside \$125 to eat out each month. If she spent \$42, \$27, \$39, and \$31 each week of the month, what percent over budget is she?	***Problem 1*** 

2B Equations

LESSON 2-3

1. Which of the following has a solution of 22?

   A $14 + t = 35$

   B $t - 9 = 13$

   C $2t = 54$

   D $\frac{t}{3} = 11$

2. Which of the following has a solution of 19?

   A $a + 15 = 34$

   B $a - 7 = 15$

   C $5a = 105$

   D $\frac{a}{3} = 6$

3. Which of the following is a solution to the equation $3x - 5 = 7$?

   A 3 C 5

   B 4 D 6

4. Which of the following is a solution to the equation $x + 12 = 21$?

   A 7 C 9

   B 8 D 10

5. ***SHORT RESPONSE*** Rachel says she is 5 feet tall. Her friend measures her height as 60 inches. Are the two measurements equivalent? Explain how you determined your answer.

6. ***SHORT RESPONSE*** A recipe calls for 2 cups of flour. Tim measured 24 tablespoons of flour. Is this the correct amount of flour? Explain how you determined your answer. (*Hint:* There are 16 tablespoons in a cup.)

ESSON 2-4

7. What is the solution to the equation $r + 13 = 36$?

   A 21 C 33

   B 23 D 49

8. What is the solution to the equation $52 = 24 + n$?

   A 28 C 76

   B 32 D 78

9. If $y + 9 = 52$, what is the value of $2y - 12$?

   A 43 C 74

   B 61 D 110

10. If $19 = m + 2$, what is the value of $m - 9$?

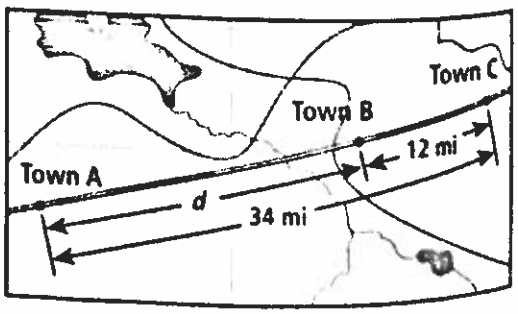
    A 8 C 17

    B 12 D 21

11. ***SHORT RESPONSE*** Let n represent the number of players who have signed up for a soccer league as of Saturday. On Sunday, 19 new players sign up, bringing the total number of players to 63. Write an equation that can be used to find the value of n. Solve your equation.

12. ***SHORT RESPONSE*** Molly had 17 collectible dolls before her birthday. After her birthday, she had 25 total dolls. Let d represent the number of dolls Molly received for her birthday. Write an equation that can be used to find the value of d. Solve your equation.

13. ***SHORT RESPONSE*** Towns A, B, and C are located along Main Road, as shown on the map. Town A is 34 miles from town C Town B is 12 miles from town C Write an equation that can be used to find the distance d between town A and town B. Solve your equation.



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Name: _____ Date: _____ Period: _____

Expressions and Equations Exit Ticket

1) Which of the following numerical expressions has the least value?

A) 2 x 3 x 4 + 5
B) (2 x 3) + (4 x 5)
C) (2 + 3 + 4) x 5
D) 2 X (3 + 4) x 5

2) Which of the following expressions is not equivalent to the others?

A) 3(5a + 10b)
B) 5(3a + 6b)
C) 2(5a + 15b)
D) 15a + 30b

3) Evaluate the expression $3x + 2y$ when x is equal to 4 and y is equal to 2.4.

A) 16.4
B) 14.4
C) 16.8
D) 4.24

4) *Twelve is less than 3 times another number r,* can be shown by the inequality $12 < 3n$. What numbers could possibly make this a true statement?

A) 3, 6, 9
B) 2, 4, 6
C) 0, 1, 2
D) 5, 10, 15

5) Andrew has a summer job doing yard work. He is paid $15 per hour and a $20 bonus when he completes the yard. He was paid $85 for completing one yard. Write an equation to represent the amount of money he earned. (h is the number of hours worked)

A) $15h + 20 = \$85$
B) $\$85 - 15 = h$
C) $20 + 15 \times h = \$85$
D) $15 + 20h = \$85$

6) If $y - 3 = 10$, what is the value of $2(y + 4)$

A) 17
B) 13
C) 34
D) 43

2B Equations

LESSON 2-5

14. What is the solution to the equation $z - 5 = 9$?

A 4 C 13
B 6 D 14

15. What is the solution to the equation $17 = v - 14$?

A 3 C 21
B 7 D 31

16. If $w - 6 = 24$, what is the value of $\frac{w}{3}$?

A 6 C 10
B 9 D 30

17. If $14 = y - 8$, what is the value of $3 \cdot (y + 5)$?

A 6 C 33
B 22 D 81

18. ***SHORT RESPONSE*** Reggie withdrew $175 from his bank account to go shopping. After his withdrawal, there was $234 left in his account. Write an equation that could be used to find how much money Reggie had in his account before his withdrawal. Solve your equation.

19. ***SHORT RESPONSE*** Cameron ate 13 pieces of candy. After he ate the candy, there were 47 pieces left in the bag. Write an equation that could be used to find how many pieces of candy were in the bag before Cameron ate any. Solve your equation.

LESSON 2-6

20. What is the solution to $4y = 20$?

A 4 C 16
B 5 D 80

21. What is the solution to the equation $72 = 9g$?

A 8 C 63
B 9 D 648

22. If $3t = 21$, what is the value of $t + 9$?

A 7 C 63
B 16 D 72

23. If $90 = 6h$, what is the value of $3h - 12$?

A 15 C 540
B 33 D 1,608

24. ***SHORT RESPONSE*** The area of a rectangle is 54 square inches. Its width is 6 inches. Write and solve an equation that could be used to find the length of the rectangle.

25. ***SHORT RESPONSE*** A squirrel can run 36 miles in 3 hours. Write an equation that could be used to find the number of miles a squirrel can run in 1 hour. Solve your equation.

LESSON 2-7

26. What is the solution to the equation $\frac{a}{3} = 12$?

A 4 C 24
B 9 D 36

27. What is the solution to the equation $6 = \frac{n}{4}$?

A 2 C 24
B 10 D 36

28. If $5 = t \div 5$, what is the value of t^2?

A 0 C 25
B 1 D 625

29. If $x \div 2 = 10$, what is the value of $6x - 3$?

A 5 C 27
B 20 D 117

30. ***SHORT RESPONSE*** Irene likes to run and ride a bike for exercise. Each day, she runs for $\frac{1}{3}$ the time that she rides her bike. Yesterday, Irene ran for 15 minutes. Write an equation that could be used to find how many minutes she rode her bike. Solve your equation.

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Name: _____ Date: _____ Period: _____

Teacher Review: EXPRESSIONS AND EQUATIONS Grade 6

1) The expression $6^3 \times 4^2$ is equivalent to which of the following numerical expressions?

A) 18×8
B) (6×4)
C) 24^6
D) 216×16

2) Jill needs to save at least \$45 for a ticket to the play. She already has \$26. She wrote and inequality to reflect how much more money she needs.

$$s \leq \$19$$

Which statement is true?

A) Jill's inequality is incorrect because 19 should be added to 45.
B) Jill's inequality is incorrect because the inequality sign is incorrect.
C) Jill's inequality is correct because she used ≤ to represent "at least".
D) Jill's inequality is correct because the amount she needs to save is less than \$19.

3) An inequality is written in the box.

$24 > 8x$

Which numbers can replace x to make the inequality true?

A) 0 ,1, 2, 3,
B) 0, 1, 2
C) any number greater than 3
D) any number less than or equal to 3

4) An inequality is written in the box.

$6 \cdot 12 > 8 \cdot n$

Which number can replace *n* to make a true statement?

A) 4

B) 16

C) 9

D) 12

5) Represent the following expression algebraically:

A number, x, decreased by the sum of 2x and 5

A) $(2x + 5) - x$
B) $x - (2x + 5)$
C) $x - 2x + 5$
D) $(x + 2x) - 5$

6) It costs \$100 to rent the skating rink plus \$5 per person. Write an expression to find the cost for any number (*n*) of people.

A) $5n + \$100$
B) $20\ n + \$100$
C) $n + 5$
D) $20\ n + 5 + \$100$

7) Joey had 26 papers in his desk. His teacher gave him some more and now he has 100. How many papers did his teacher give him?

A) 14 papers
B) 74 papers
C) 126 papers
D) 84 papers

8) Which expression is not equal to 64?

A) 8^2
B) 4^3
C) $2^3 \cdot 4 \cdot 2$
D) $8^1 + 8^1$

9) Which expression has exactly 3 terms?

A) $6x^3$ B) $6x-1$ C) $6x+3$ D) $6x^2+7x-1$

10) Monty reads a story and a play. The play has 165 pages, which is 5 times as many pages as the story. Which equation could you use to find s, the number of pages in the story?

A) $\frac{1}{5}s = 165$

B) $6x-1$

C) $5s=165$

D) $165s=5$

11) The product of two factors is 18a – 12c. What are the factors?

A) $6(2c+3a)$

B) $6(2c-3a)$

C) $-6(2c+3a)$

D) $-6(2c-3a)$

12) Which of the following is not a solution of $5x \geq 35$?

A) 7 B) $7\frac{1}{5}$ C) 6 D) 8

13) Carol's mother was 24 years old when Carol was born. If her mother is 46 years old, how old is Carol?

A) 20 years old B) 18 years old

C) 11 years old D) 22 years old

14) Mia's dog weighs 4 pounds more than 8 times the weights of Kirk's dog. Which expression could be used to find the weight of Mia's dog?

A) $8k + 4$ B) $4k + 8$

C) $4(8k)$ D) $4 + 8 + k$

15) Evaluate $3 \cdot (\frac{1}{3})^2$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2

1-4 Exercises

1.04a, 1.07, 5.01e

FOR EOG PRACTICE
see page 638

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go.hrw.com Keyword: MR4 1-4

GUIDED PRACTICE

See Example 1 Evaluate each expression.

1. $36 - 18 \div 6$
2. $7 + 24 \div 6 \times 2$
3. $11 + 2^3 \times 5$
4. $62 - 4 \times (15 \div 5)$
5. $5 \times (28 \div 7) - 4^2$
6. $5 + 3^2 \times 6 - (10 - 9)$

See Example 2

7. Coach Milner fed the team after the game by buying 24 Big Burger Deals for $4 each and 7 Super Big Burger Deals for $6 each. Evaluate the expression for the cost of the food: $24 \times 4 + 7 \times 6$.

INDEPENDENT PRACTICE

See Example 1 Evaluate each expression.

8. $9 + 27 \div 3$
9. $2 \times 7 - 32 \div 8$
10. $45 \div (3 + 6) \times 3$
11. $100 \div 5^2 + 7 \times 3$
12. $4^2 + 48 \div (10 - 4)$
13. $6 \times 2^2 + 28 - 5$
14. $6^2 - 12 \div 3 + (15 - 7)$
15. $21 \div (3 + 4) \times 9 - 2^3$
16. $5 + 3 \times 2 + 12 \div 4$
17. $(3^2 + 6 \div 2) \times (36 \div 6 - 4)$

See Example 2

18. The nature park has a pride of 5 adult lions and 3 cubs. The adults eat 8 lb of meat each day and the cubs eat 4 lb. Use the expression to find the amount of meat consumed each day by the lions: $5 \times 8 + 3 \times 4$.
19. Angie read 4 books that were each 150 pages long and 2 books that were each 325 pages long. Evaluate the expression $4 \times 150 + 2 \times 325$ to find the total number of pages Angie read.

PRACTICE AND PROBLEM SOLVING

Evaluate each expression.

20. $12 + 3 \times 4$
21. $25 - 21 \div 3$
22. $60 \div (10 + 2) \times 4^2 - 23$
23. $10 \times (28 - 23) + 7^2 - 37$
24. $72 \div 9 - 2 \times 4$
25. $12 + (1 + 7^2) \div 5$
26. $(15 - 6)^2 - 34 \div 2$
27. $(2 \times 4)^2 - 3 \times (5 + 3)$

Add parentheses so that each equation is correct.

28. $2^3 + 6 - 5 \times 4 = 12$
29. $7 + 2 \times 6 - 4 - 3 = 53$
30. $3^2 + 6 + 3 \times 3 = 36$
31. $5^2 - 10 + 5 + 4^2 = 36$
32. $2 \times 8 + 5 - 3 = 23$
33. $9^2 - 2 \times 15 + 16 - 8 = 11$

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Name: _____ Date: _____ Period: _____

Ratios and Proportions Exit Ticket

1) You have 54 marbles, 24 are black, 18 are red and 12 are blue. Which ratio represents the ratio of black to blue marbles?

A) 2:9
B) 2:1
C) 1:2
D) 4:3

2) Which is the best buy? One dozen ears of corn for $4.99 or 3 ears of corn for $1.00?

A) Neither, they are both the same price.
B) One dozen ears for $4.99 because they are only 50 cents for each ear
C) 3 ears for a dollar because they are $0.33 for each ear
D) One dozen because you can buy more ears of corn with less money.

3) Annie has completed 240 pages in a book that she is reading. She has completed 80% of the book. How many pages are in the book?

A) 320 pages
B) 240 pages
C) 260 pages
D) 300 pages

4) Charlie saved $50 for a new pair of shoes. He bought a pair for $45 with a 20% discount. How much change will he get back from his $50?

A) $36
B) $20
C) $14
D) $9

5) A recipe calls for 3 potatoes to serve 4 people. If Jack is planning to serve a crowd of 20 people, how many potatoes should he use?

A) 7 potatoes
B) 12 potatoes
C) 15 potatoes
D) 60 potatoes

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8B Percents

LESSON 8-9

18. What is 30% of 98?

A 2.94 C 294

B 29.4 D 2,940

19. What is 15% of 220?

A 3.3 C 330

B 33 D 3,300

20. Which expression is equal to 2.16?

A 5% of 72 C 8% of 60

B 6% of 35 D 12% of 18

21. Which expression is equal to a whole number?

A 1% of 360 C 9% of 50

B 8% of 64 D 25% of 12

22. Jane has read 70% of the books on her bookshelf. If she has read 28 books, how many books are on her bookshelf?

A 19 C 30

B 20 D 40

23. Mr. Hernandez estimates that 65% of the flowers in his garden are roses. If there are 36 flowers in his garden, about how many are *not* roses?

A 8 C 23

B 13 D 55

24. ***SHORT RESPONSE*** A theater sold a total of 570 tickets for a new movie. Of those tickets, 30% were children's tickets. Write an expression that could be used to determine how many children's tickets were sold. Evaluate your expression.

25. ***SHORT RESPONSE*** Kathy has listened to 80% of the music on a CD. Write an expression that could be used to determine how many more minutes of music are left on the CD if 26 minutes have passed. Evaluate your expression.

LESSON 8-10

26. Patricia is buying new roller skates that cost $59.99. The sales tax rate is 7%. About how much will the total cost of the roller skates be?

A $4.20 C $64.20

B $42.00 D $106.00

27. Margo and her three friends went to dinner. The bill was $34.62. They left a tip that was 15% of the bill. About how much was the tip?

A $3.50 C $5.25

B $5.00 D $7.00

28. Ashley wants to buy a sweater regularly priced at $19.95. It is on sale for 25% off the regular price. About how much will she pay for the sweater after the discount?

A $5 C $16

B $15 D $25

29. Pete has $50.00. He plans to purchase three books, which are priced at a total of $39.97. If the sales tax rate is 8%, how much change should Pete receive from the cashier?

A $3.20 C $6.83

B $4.00 D $43.17

30. ***SHORT RESPONSE*** Aaron wants to buy a new CD player that is regularly priced at $75.95. It is on sale for 10% off the regular price. The sales tax rate is 7%. Write expressions that could be used to determine the total cost of the CD player. Evaluate your expressions.

31. ***SHORT RESPONSE*** Sara spent $102.38 on school clothes at the mall. The total of the ticket prices on the items she bought was $94.58. How much money did Sara pay in sales tax? Write an equation that could be used to determine the sales tax rate. Solve your equation.

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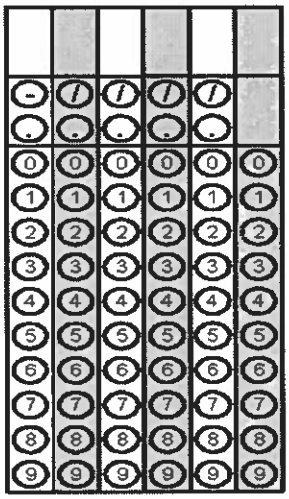
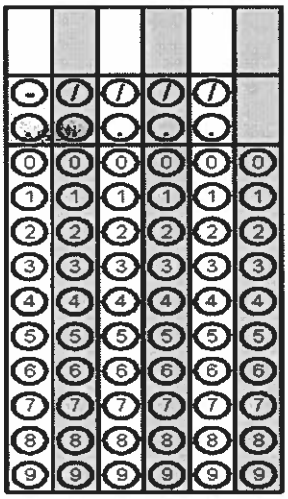
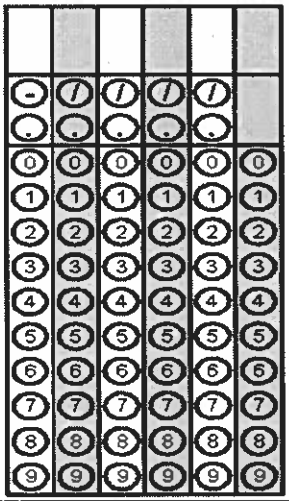
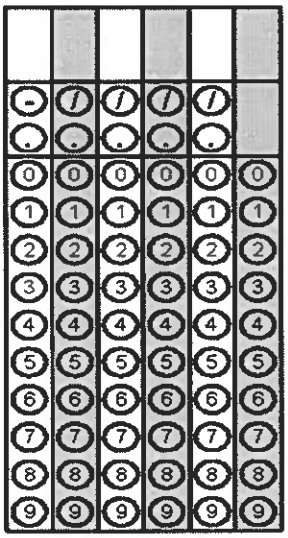
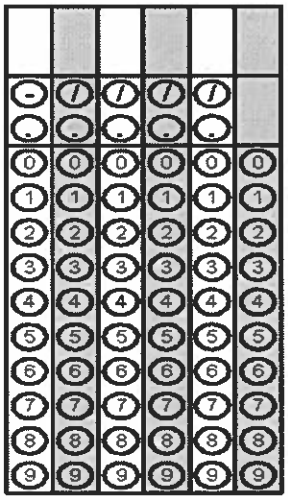
	Problem 1	Problem 2	Gridded Response
Monday	Find the area of one side of a cube with a volume of 216 in^3.	The salaries for 41 employees were compared and the median was found to be \$62,000. Only one employee actually earns \$62,000. How many employees earned less than \$62,000?	***Problem 1*** 
Tuesday	Aidan and Maria's parents bought them a pizza to share. Aidan ate $\frac{1}{2}$ of the pizza and Maria ate $\frac{1}{3}$ of what was left. Their mom divided the rest between her and their dad for lunch the next day. How much of the pizza did their mom and dad take for lunch?	Combine like terms. $4ab + 6b + 8a + a + ab + 5a$	***Problem 1*** 
Wednesday	Solve for g. *Express your answer as a fraction or decimal.* $1.75 + 2.5 - 0.25 = g(4^2 - 8)$	A triangle with all equal sides has a perimeter of 48 cm. What is the length of each side?	***Problem 1*** 

<table>
<tr>
<td>Thursday</td>
<td>Find the volume of a cube with side length of 3.5 cm.</td>
<td>Complete the equation for the table below.

y = ___x

<table>
<tr><th>x</th><th>y</th></tr>
<tr><td>0</td><td>0</td></tr>
<tr><td>5</td><td>2.5</td></tr>
<tr><td>8</td><td>4</td></tr>
<tr><td>14</td><td>7</td></tr>
</table>
</td>
<td>Problem 1
  </td>
</tr>
<tr>
<td>Friday</td>
<td>A triangle has two congruent sides and a third side with a length of 42 in. If the perimeter is 104 in, what are the lengths of the congruent sides?</td>
<td>Evaluate.

$\left(\frac{4}{5}\right)^3$</td>
<td>Problem 1
  </td>
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Name: _____ Date: _____ Period: _____

Teacher Review Ratio and Proportions Grade 6

1) A family was traveling to the mountains for a long needed vacation. If they drove 208 miles in four hours, traveling at the same rate, how much farther will they travel in 3 more hours?

A) 102 miles
B) 416 miles
C) 52 miles
D) 156 miles

2) Hal compared the number of black marbles he had to the number of white marbles he had. Which statement correctly describes Hal's marbles?

A) For every one white marble, Hal has 3 black marbles.
B) For every three white marbles, Hal has 1 black marble.
C) For every 3 white marbles, Hal has 2 black marbles.
D) For every 2 white marbles, Hal has 3 black marbles.

3) Haley is the head nurse at a hospital and must order supplies. If $\frac{1}{4}$ of a package of bandages lasts $\frac{1}{8}$ of a month, how many packages are required for the entire month?

A) $\frac{1}{12}$ package B) $\frac{1}{2}$ package

C) 2 packages D) 4 packages

5) A recipe calls for 2 cups of sugar to $\frac{1}{2}$ cup of lime juice. How much lime juice should be added if the new recipe uses 6 cups of sugar?

A) 1 cup B) $1\frac{1}{2}$ cups

C) $2\frac{1}{2}$ cups D) 3 cups

6) Josh is driving from his house to his grandmother's house. If $\frac{1}{3}$ gallon of gasoline will get Josh $\frac{1}{9}$ of the way to his grandmother's, how many gallons of gasoline does he need for the entire trip?

A) 3 gallons B) 9 gallons

C) 12 gallons D) 27 gallons

7) If 8 gallons of gas cost $28.16, how much will 5 gallons of gas cost at the same rate?

A) $3.52 B) $17.60

C) $21.12 D) $140.80

8) A bookstore is having a sale in which you can get 8 notebooks for $14.00 and 20 folders for $5.00. How much will it cost to get 10 notebooks and 6 folders?

A) $19.00 B) $17.50

C) $7.00 D) $26.00

9) There are 4 cups in a quart and 4 quarts in a gallon. For football practice the trainer must prepare 3 cups of Gatorade per player. If there are 30 players at practice, how many gallons of Gatorade should be prepared for practice?

A) 4 gallons B) 6 gallons

D) 10 gallons D) 16 gallons

10) John puts $5 out of every $20 that he earns in a savings account. If he were to plot the pairs of values that describe this situation with x representing how much he earns and y representing how much he saves, which point would be on the plot?

A) (20,10) B) (40,60)

C) (5,15) D) (40,10)

11) Anya's class is selling wrapping paper. For every 5 rolls they sell, they make a profit of $3.00. If her class has a goal of making a $180 profit, how many rolls of wrapping paper do they need to sell?

A) 300 rolls B) 150 rolls

C) 540 rolls D) 180 rolls

12) A party punch calls for 6 ounces of concentrate to 5 cups of water. If you only have 3 ounces of concentrate, how much water should you use?

A) 2 cups B) 3 cups

C) $2\frac{1}{2}$ cups D) 4 cups

13) Jenna is feeding animals at a local shelter. She made a table to record the amount of food that each dog gets based on their weight. Use the chart to determine the amount of food that Brownie should receive each day.

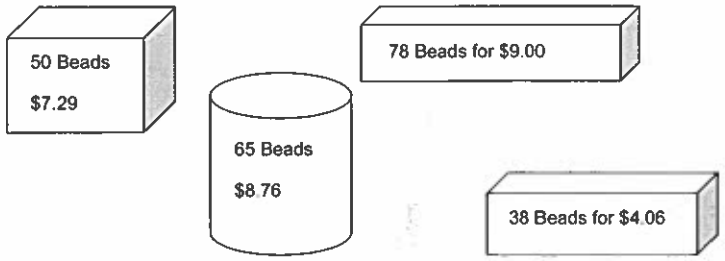
Name	Weight in pounds	Food in cups
Fergus	24	2
Lucy	48	4
Max	36	3
Brownie	12	
Gracie	60	5

A) 4 cups
B) 6 cups
C) 1 cup
D) 2 cups

14) Which is a greater rate of speed?

A) 132 miles in 4 hours
B) 62 miles in 2 hours
C) 125 miles in 5 hours
D) 1200 miles in 36 hours

15) Mrs. Potts makes beaded jewelry. She found the following containers of wooden beads at the craft store. Which is the best buy?



A) 50 Beads for $7.29
B) 78 Beads for $9.00
C) 65 Beads for $8.76
D) 38 Beads for $4.06

16) The Jones family went on vacation to the beach. They rented bicycles to cruise the beach. They could choose from a single bike or a double. They also needed to rent a bicycle carrier to attach their car for transportation to the beach. What information is missing to find the best buy?

Two Seat Bikes	Single Seat Bikes
$45 per day	$25 per day
$25 bike carrier per trip	

A) The price of 2 single seat bikes.
B) The price of 2 two seat bikes.
C) The price of a bike carrier for the single seat bike.
D) All of the information is complete to find the best buy.

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Ratio and Percents Task Cards!

Task Card 1

With the price of gas increasing, Roger decides to purchase a more economical vehicle to save on gas. After doing some research, Roger creates a table so he can compare the different vehicles.

Car	Gas Tank Size	Total Distance on tank size	Miles per Gallon (mpg)
1	12	360	?
2	14	490	?
3	15	675	?
4	10	550	?

According to the table, which vehicle will provide Roger the *best* gas mileage?

Task Card 2

A lamp post is 12 feet tall and cast an 18-foot shadow. At the same time of day, the shadow of a man standing nearby is 9 feet. How tall is the man?

197

Task Card 3

Thomas wants to enlarge a picture of his favorite basketball player. The dimensions of the picture are 8 inches by 12 inches. If he wants to enlarge each side by 75% what would be the new dimensions of Thomas' picture?

Task Card 4

The Cougars baseball team played 16 games last year and won 12 of them. This year they are scheduled to play 28 games. If they end up with the same winning percentage, how many games will they win?

Task Card 5

What percentage of the picture is shaded?

198

Task Card 6

In a poll of 1,000 potential voters, 500 said they would vote for Senator Smith in the fall election. A total of about 600,000 people are expected to vote in the election. About how many people will vote for Senator Smith?

Task Card 7

If 56% of the 125 fifth-grade students have a skateboard, how many of the students have a skateboard?

Task Card 8

At a local pet store, there are 5 cats for every 2 dogs. If there are 8 dogs, how many cats are at the pet store?

199

Task Card 9

The table represents the passing percentage for the 7th grade students in each subject.

Class	Percentage Passing
Language Arts	85%
Math	89%
Science	83%
Social Studies	86%

If there are 400 students, how many students are passing social studies?

Task Card 10.

Examine the figures.

△△□□△□□□△□△□□△

What is the ratio of squares to triangles?

200

TASK CARD RECORD SHEET

1.	2.
3.	4.
5.	6.

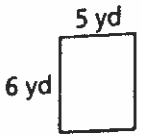
7.	8.
9.	10.

EOG Practice · Chapter 10

10A Perimeter, Area, and Circumference

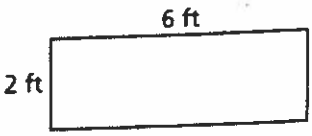
LESSON 10-1

1. What is the perimeter of the rectangle?



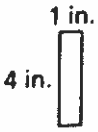
A 24 yd
B 18 yd
C 22 yd
D 20 yd

2. Find the perimeter of the rectangle.



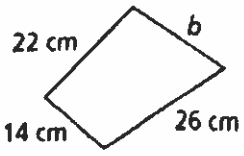
A 20 ft
B 16 ft
C 18 ft
D 14 ft

3. What is the perimeter of the rectangle?

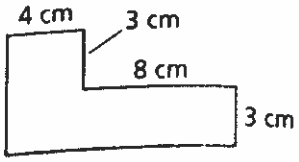


A 9 in.
B 8 in.
C 12 in.
D 10 in.

4. ***SHORT RESPONSE*** What is the value of b if the perimeter is 82 cm? Show your work, or explain in words how you determined your answer.



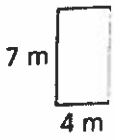
5. What is the perimeter of the polygon?



A 36 cm
B 38 cm
C 32 cm
D 30 cm

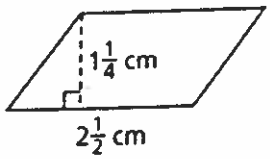
LESSON 10-2

6. What is the area of the rectangle?



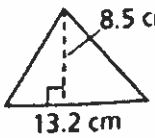
A 22 square meters
B 28 square meters
C 18 square meters
D 24 square meters

7. What is the area of the parallelogram?



A $3\frac{1}{4}$ square centimeters
B $3\frac{1}{2}$ square centimeters
C $3\frac{1}{8}$ square centimeters
D 3 square centimeters

8. What is the area of the triangle?



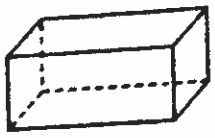
A 112.2 square centimeters
B 51.1 square centimeters
C 56.1 square centimeters
D 54 square centimeters

203

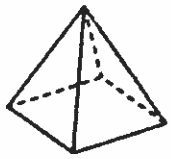
10B Volume and Surface Area

LESSON 10-6

1. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the rectangular prism.



2. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the square pyramid.



3. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the cylinder.

4. What is the name of a polyhedron that has 6 surfaces that are all squares?

   A square pyramid
   B cylinder
   C cube
   D cone

5. A prism is a polyhedron with two parts that are congruent and parallel. What is the name of the two parts?

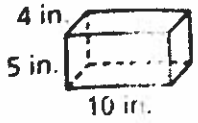
   A edges
   B vertices
   C bases
   D angles

6. What is the correct name of a solid figure with one circular base and one vertex?

   A pyramid
   B cylinder
   C cube
   D cone

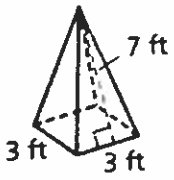
LESSON 10-7

7. Find the surface area S of the rectangular prism.



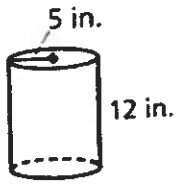
   A $S = 200 \text{ in}^2$
   B $S = 100 \text{ in}^2$
   C $S = 240 \text{ in}^2$
   D $S = 220 \text{ in}^2$

8. Find the surface area S of the square pyramid.



   A $S = 75 \text{ ft}^2$
   B $S = 51 \text{ ft}^2$
   C $S = 48.2 \text{ ft}^2$
   D $S = 55.1 \text{ ft}^2$

9. Find the surface area S of the cylinder.



   A $S = 545 \text{ in}^2$
   B $S = 498 \text{ in}^2$
   C $S = 608.1 \text{ in}^2$
   D $S = 533.8 \text{ in}^2$

10. ***SHORT RESPONSE*** Explain how to find the area of the curved surface of a cylinder.

11. ***SHORT RESPONSE*** A cube has a side length of 5 inches. Draw and label the cube. What is the area of the base of the cube? What is the surface area of the cube? Show your work.

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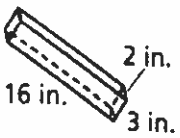
EOG Practice ■ Chapter 10

10B Volume and Surface Area

LESSON 10-8

12. What is the volume of the rectangular prism?



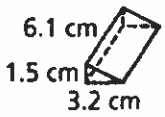
A $108\ in^3$

B $99\ in^3$

C $96\ in^3$

D $90\ in^3$

13. What is the volume of the triangular prism?



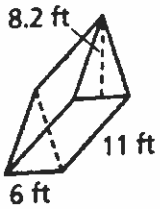
A $11.08\ cm^3$

B $16.4\ cm^3$

C $14.64\ cm^3$

D $10.8\ cm^3$

14. What is the volume of the triangular prism?



A $311.1\ ft^3$

B $401\ ft^3$

C $270.6\ ft^3$

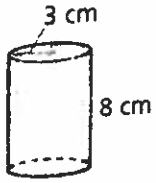
D $300.1\ ft^3$

5. ***SHORT RESPONSE*** The volume of a rectangular prism is 400 cubic centimeters. The prism is 10 centimeters long and 8 centimeters wide. Explain how to determine the height of the prism. Draw the prism, and label all three dimensions.

LESSON 10-9

For problems 16–18, use 3.14 for π.

16. What is the volume in cubic centimeters (cm^3) of the cylinder?



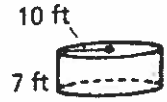
A $315\ cm^3$

B $226\ cm^3$

C $245\ cm^3$

D $298\ cm^3$

17. What is the volume in cubic feet (ft^3) of the cylinder?



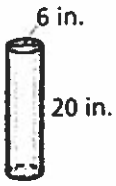
A $2{,}198\ ft^3$

B $1{,}275\ ft^3$

C $3{,}152\ ft^3$

D $3{,}001\ ft^3$

18. What is the volume in cubic inches (in^3) of the cylinder?



A $395\ in^3$

B $426\ in^3$

C $545\ in^3$

D $565\ in^3$

19. ***SHORT RESPONSE*** How many cubic feet are in 1 cubic yard? Show your work, or explain in words how you determined your answer.

20. ***SHORT RESPONSE*** Explain the difference between surface area and volume.

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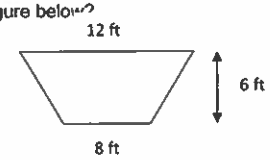
Name: _____ Date: _____ Period: _____

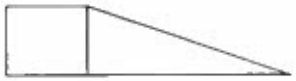
Geometry Exit Ticket

1) What is the area of the figure below?



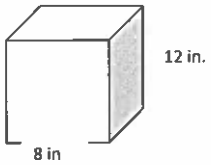
A) 56 sq. feet
B) 60 sq. feet
C) 72 sq. feet
D) 36 sq. feet

2) A polygon is made up of a square and a triangle. The total area of the figure is 30 sq. cm. The area of the triangle is 14 sq. cm. What is the length of the side of the square?



A) Not enough information is given
B) 4 cm
C) 16 cm
D) 64 cm

3) An open storage box is shaped below, but has no top. The base of the box is a square with a side length 8 in. and the height of the box is 12 in. What is the surface area of the box?

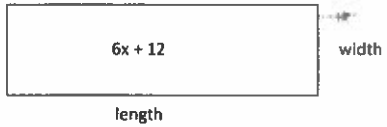


A) 512 sq. in
B) 640 sq. in.
C) 448 sq. in
D) 144 sq. in

4) A child's sandbox is 6 ft. wide, 3 ft. long, and 2 ft. deep. The child's mother fills the sandbox so that it is $1\frac{1}{2}$ feet deep. What is the volume of the sand in the box?

A) 27 cubic feet
B) 36 cubic feet
D) $7\frac{1}{2}$ cubic feet
D) 20 cubic feet

5) A rectangle has an area of 6x + 12. What are the measurements of the length and width?



A) width = 6x length = (3 + 4)
B) width = 6x length = (3 + 12)
C) width = 3 length = (2x + 12)
D) width = 3 length = (2x + 4)

6) A box has a length of 10 inches, a width of $8\frac{3}{4}$ inches and a height of $4\frac{1}{4}$ inches. How many cubnes with a side length of $\frac{1}{4}$ inch will be necessary to fill the box?

A) 23 cubes
B) 371 cubes
D) 1,400 cubes
D) 23,800 cubes

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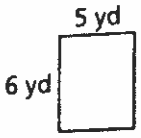
EOG Practice Chapter 10

10A Perimeter, Area, and Circumference

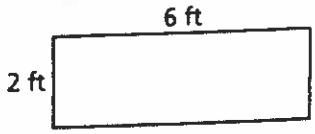
LESSON 10-1

1. What is the perimeter of the rectangle?



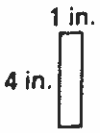
A 24 yd
B 18 yd
C 22 yd
D 20 yd

2. Find the perimeter of the rectangle.



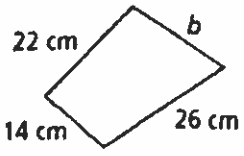
A 20 ft
B 16 ft
C 18 ft
D 14 ft

3. What is the perimeter of the rectangle?

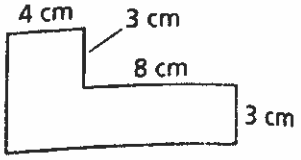


A 9 in.
B 8 in.
C 12 in.
D 10 in.

4. ***SHORT RESPONSE*** What is the value of b if the perimeter is 82 cm? Show your work, or explain in words how you determined your answer.



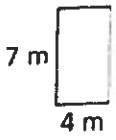
5. What is the perimeter of the polygon?



A 36 cm
B 38 cm
C 32 cm
D 30 cm

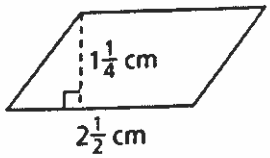
LESSON 10-2

6. What is the area of the rectangle?



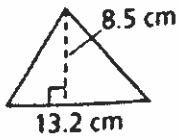
A 22 square meters
B 28 square meters
C 18 square meters
D 24 square meters

7. What is the area of the parallelogram?



A $3\frac{1}{4}$ square centimeters
B $3\frac{1}{2}$ square centimeters
C $3\frac{1}{8}$ square centimeters
D 3 square centimeters

8. What is the area of the triangle?



A 112.2 square centimeters
B 51.1 square centimeters
C 56.1 square centimeters
D 54 square centimeters

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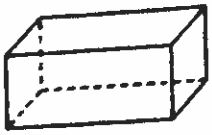
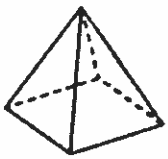
10B Volume and Surface Area

LESSON 10-6

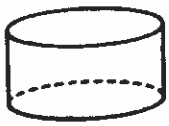
1. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the rectangular prism.



2. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the square pyramid.



3. ***SHORT RESPONSE*** Identify the number of faces, edges, and vertices on the cylinder.



4. What is the name of a polyhedron that has 6 surfaces that are all squares?

   A square pyramid
   B cylinder
   C cube
   D cone

5. A prism is a polyhedron with two parts that are congruent and parallel. What is the name of the two parts?

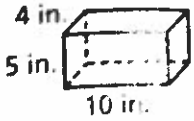
   A edges
   B vertices
   C bases
   D angles

6. What is the correct name of a solid figure with one circular base and one vertex?

   A pyramid
   B cylinder
   C cube
   D cone

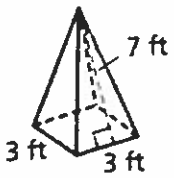
LESSON 10-7

7. Find the surface area S of the rectangular prism.



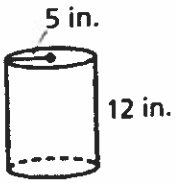
   A $S = 200 \text{ in}^2$
   B $S = 100 \text{ in}^2$
   C $S = 240 \text{ in}^2$
   D $S = 220 \text{ in}^2$

8. Find the surface area S of the square pyramid.



   A $S = 75 \text{ ft}^2$
   B $S = 51 \text{ ft}^2$
   C $S = 48.2 \text{ ft}^2$
   D $S = 55.1 \text{ ft}^2$

9. Find the surface area S of the cylinder.



   A $S = 545 \text{ in}^2$
   B $S = 498 \text{ in}^2$
   C $S = 608.1 \text{ in}^2$
   D $S = 533.8 \text{ in}^2$

10. ***SHORT RESPONSE*** Explain how to find the area of the curved surface of a cylinder.

11. ***SHORT RESPONSE*** A cube has a side length of 5 inches. Draw and label the cube. What is the area of the base of the cube? What is the surface area of the cube? Show your work.

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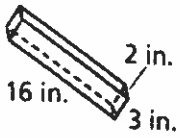
10B Volume and Surface Area

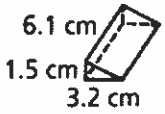
LESSON 10-8

12. What is the volume of the rectangular prism?



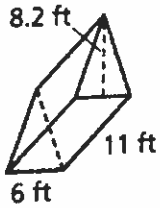
A 108 in^3
B 99 in^3
C 96 in^3
D 90 in^3

13. What is the volume of the triangular prism?



A 11.08 cm^3
B 16.4 cm^3
C 14.64 cm^3
D 10.8 cm^3

14. What is the volume of the triangular prism?



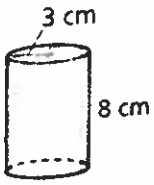
A 311.1 ft^3
B 401 ft^3
C 270.6 ft^3
D 300.1 ft^3

5. ***SHORT RESPONSE*** The volume of a rectangular prism is 400 cubic centimeters. The prism is 10 centimeters long and 8 centimeters wide. Explain how to determine the height of the prism. Draw the prism, and label all three dimensions.

LESSON 10-9

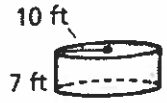
For problems 16–18, use 3.14 for π.

16. What is the volume in cubic centimeters (cm^3) of the cylinder?



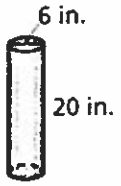
A 315 cm^3
B 226 cm^3
C 245 cm^3
D 298 cm^3

17. What is the volume in cubic feet (ft^3) of the cylinder?



A 2,198 ft^3
B 1,275 ft^3
C 3,152 ft^3
D 3,001 ft^3

18. What is the volume in cubic inches (in^3) of the cylinder?



A 395 in^3
B 426 in^3
C 545 in^3
D 565 in^3

19. ***SHORT RESPONSE*** How many cubic feet are in 1 cubic yard? Show your work, or explain in words how you determined your answer.

20. ***SHORT RESPONSE*** Explain the difference between surface area and volume.

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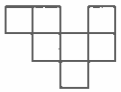
Name: _____ Date: _____ Period: _____

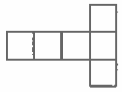
Teacher Review: GEOMETRY

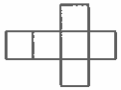
1) Three coordinates of a quadrilateral are (5,3), (-5, 3) and (-5,-3). What are the coordinates of the fourth corner?

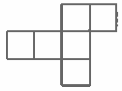
A) (0,5) B) (5,-3) C) (-3,5) D) (3,-5)

2) Which of the following nets will NOT make a cube?

A) 

B) 

C) 

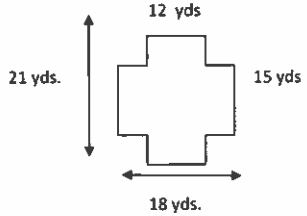
D) 

3) A rectangular pool is 12 feet long and 6.5 feet wide. If the volume of the water is 702 cubic feet deep, how deep is the water?

A) 8.5 ft B) 9 ft

C) 12 ft D) 7 ft

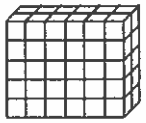
4) The new playground below needs covering. How much covering will be needed?



A) 342 sq. yds. B) 180 sq. yds

C) 378 sq. yds. D) 196 sq. yds.

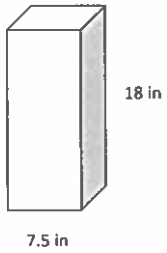
5) What is the volume of the following figure?



A) 30 cubic units B) 60 cubic units

C) 12 cubic units D) 45 cubic units

6) Joe wants to paint the rectangular prism below. If one pint of paint covers 125 sq inches, how many pints of paint will be needed?



A) 6 pints B) 12 pints

C) 5 pints D) 8 pints

7) Mr. White is trying to store boxes in a storage room with length of 8ft, width of 5ft and height of 2ft. How many boxes can fit in this space if each is box is $2\frac{1}{4}$ feet long $1\frac{1}{2}$ feet wide and 1 feet deep?

A) 20 boxes B) 23 boxes

C) 40 boxes D) 80 boxes

8) A net for a solid contains 4 triangles and 1 square. What is the name of the solid.?

A) triangular prism B) cube

C) rectangular prism D) pyramid

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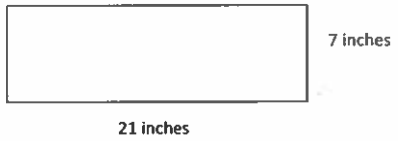
9) What happens to the area of this rectangle when the sides are doubled?



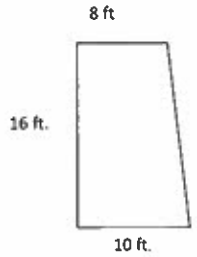
A) The area is doubled.

B) The area is tripled.

C) The area is quadrupled

D) The area stays the same

10) Mae is seeding her back yard with grass seed. How many square feet must Mae cover with grass seed to seed her back yard?



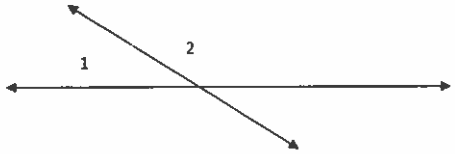
A) 144 sq. ft

B) 168 sq. ft

B) 176 sq. ft.

D) 1328 sq. ft

11) If the measure of angle 2 is 105 degrees, what is the measure of angle 1 ?



A) 60 degrees

C) 75 degrees

B) 70 degrees

C) 180 degrees

12) How many yards wide is a rectangle if the length is $\frac{3}{4}$ yard and the area is $\frac{1}{8}$ yard?

A) $\frac{3}{32}$

B) $\frac{1}{6}$

C) $\frac{1}{2}$

D) $\frac{3}{12}$

13) Lucy wraps gifts over the holidays. Each gift box is in the shape of a rectangular prism. Lucy has discovered that a present requires 2 times its surface area in wrapping paper. If she is wrapping a gift that is 2 feet long, 1 foot wide and $\frac{1}{2}$ foot tall, how many square feet of wrapping paper will Lucy need?

A) 9 sq ft

C) 18 sq ft

B) 14 sq ft

D) 21 sq ft.

14) A box has a length of 10 inches, a width of $8\frac{3}{4}$ inches and a height of $4\frac{1}{4}$ inches. How many cubnes with a side length of $\frac{1}{4}$ inch will be necessary to fill the box?

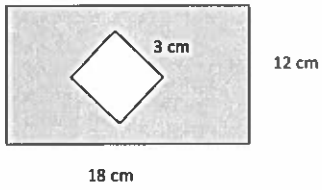
A) 23 cubes

D) 1,400 cubes

B) 371 cubes

D) 23,800 cubes

15) What is the area of the shaded portion?



A) 207 sq cm

C) 648 sq cm

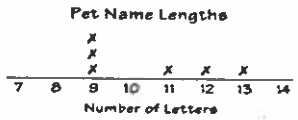
B) 216 sq cm

D) 1812 sq cm

Name: _____ Date: _____ Period: _____

Data and Statistics Exit Ticket

1) What is the mean of the data below?



A) 10.5 B) 45 C) 12 D) 12.5

2) The following test scores were scored in a math class.

80	72	80	80	82
92	84	80	96	72

What is the range of the data?

A) 72 B) 22 C) 26 D) 35

3) Sue found the following prices for purses: $22, $27, $25, $21, $29, and $25. Which measure of central tendency is affected by adding another purse for $40?

A) median B) mode C) None, all will be the same. D) range

Use the table below for question 4

Employees' Hourly Wages

$5.70	$7.00
$5.70	$7.25
$5.70	$7.50
$6.50	$16.00

4) How does the data compare?

A) The range is less than the mean.

B) The mode is greater than the range.

C) The mode is greater than the median.

D) The range is the greater than the mode.

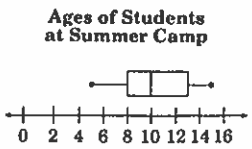
5) A team scored the following number of points in its last eight games:

15, 24, 17, 19, 21, 38, 25, 39

Which number is the lower quartile for this data set?

A) 31 B) 23 C) 18 D) 17

6. The ages of the students at a summer camp are summarized in this box-and-whisker plot.



Which set of data could have been used to construct the box-and-whisker plot?

A 5, 8, 10, 10, 10, 13, 15

B 5, 8, 10, 10, 12, 14, 15

C 5, 6, 10, 10, 11, 15, 15

D 5, 7, 9, 10, 13, 14, 15

EOG Practice ■ Chapter 6

6A Organizing Data

Use the table for problems 12–15.

Number of Hours Spent Practicing								
Week	1	2	3	4	5	6	7	8
Hours	8	9	9	9	11	8	0	2

12. Which numbers in the table are outliers?

A 0, 2 C 8, 2

B 7, 8 D 9, 0

13. What is the mean number of hours spent practicing without the outliers?

A 6.6 C 9

B 7.9 D 9.4

14. What is the median of the data without the outliers?

A 8 C 9

B 8.5 D 9.5

15. What is the mode of the data without the outliers?

A 7 C 8.5

B 8 D 9

The daily temperatures for the first eight days of April were 52°F, 63°F, 61°F, 54°F, 52°F, 55°F, 68°F, and 75°F. Use the data for problems 16–21.

16. What is the range of the data set?

A 21 C 23

B 22 D 24

17. What is the mean of the temperatures?

A 60 C 75

B 65 D 78

18. What is the median of the data set?

A 43 C 50

B 45 D 58

19. What is the mode of the set of temperatures?

A 50 C 53

B 52 D 54

20. If a temperature of 28°F were recorded on the ninth day of April, what would be the mean temperature for the nine days?

A $56.\overline{4}$ C 68

B 65 D 69

21. ***SHORT RESPONSE*** Why is the mode of the data not affected by the addition of the ninth day's temperature of 28°F?

Use the table for problems 22–24.

Hours Spent Riding to School Each Week				
5	4.5	4	3	2.5
3	4	3	5	2

22. What is the mean number of hours spent riding to school?

A 3.5 C 4

B 3.6 D 4.8

23. What is the median of the hours spent riding?

A 2.9 C 3.5

B 3 D 4.5

24. What is the mode of the data?

A 2.5 C 3.5

B 3 D 4

25. ***SHORT RESPONSE*** The mean of a data set is 47.5. One more number is added to the set, and the mean does not change. Describe a number that could be added to a set and cause no change in the mean.

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Mathematical Processes 1-8: **Students:** I will be able to identify and use appropriate math required to create and solve real-world word problems from different situations.

Designing a Game Board

Due: Friday 30th June, 2018.

Your task as a small group (4) is to create a board game.

You should include:

- The domain (Expressions and Equations, The Number System, Geometry, Ratios and Proportions, and Statistics and Probability) your group chose to build/create your game from.
- Game Rules including information on how a winner is determined
- Game (board, 30 question cards, other game pieces)

Question Cards should include 6th Grade themed questions that review mathematics that we have learned and practiced this year. Questions should be on one side of an index card and solutions on the other side. ONLY one question per card. For example:

- The ACE Swim Team swims every Monday and Wednesday each week. As part of their warm-up, each member swims 12 laps. How many total laps does the team swim each week? (Each team has 8 members)

- For a community project, students will be collecting cans of food. There have been 1,470 cans collected so far. If each box can hold 14 cans, how many boxes will they need?

- At Walmart, a pen costs $1.74. If you buy 6 pens, how much will it cost? What change would you get if you paid with $20.00?

In your group (think about these questions when designing your game):

- What do you like most about your game?
- Are the rules of your game clear and easy to understand? If not, what can you change to make the game better?
- Can one person win the game?
- How is the pace of your game? Too fast? Too slow? What changes can you make to your game to make it better?
- Are there any changes that you need to make to your game after playing it through? If so, make those changes.

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GROUP: _____ _____ _____ _____