Summer Assignment: 6th Grade (Rising 7th) Mathematics

Name: _____ DUE: _____

This summer packet is for students completing the 6th grade. This is a requirement and will be graded at the beginning of the next school year. You can refer back to Google Classroom for extra support and additional resources. An answer key has been emailed to your parents so you can check your answers. In order for you to receive full credit, use the following checklist:

Checklist:

Did you read the instructions carefully? _____

Have you answered all the questions completely? _____

Did you show your work? _____

Did you label all units? _____

Did you check your work? _____

Did you check the spelling of words that are given to you in the packet? _____

Did you reread your explanations to yourself to make sure they make sense? _____

Grading:

Criteria	Points Possible	Points Earned
Attention to detail and neatness: name and date written, checklist used, spelling checked, etc.	20	
Thorough completion: all problems complete with work shown	20	
Accuracy	10	
TOTAL	50	

Have a safe and happy summer!

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This is a suggested time-management checklist to help pace yourself over the summer. You can adjust the checklist as you see fit based on your summer schedule.

Month	Date	Specific Lesson	Check when completed
June	6/9 - 6/13	Break!	
	6/16 - 6/20	Lesson 1: Positive Numbers & The Number Line Lesson 2: Negative Numbers & The Number Line	
	6/23 - 6/27	Lesson 3: Multiplying & Dividing Fractions and Decimals	
July	6/30 - 7/4	Lesson 4 & 5: Rates & Ratios	
	7/7 - 7/11		
	7/14 - 7/18	Lesson 6: Percents	
	7/21 - 7/25	Lesson 7: Algebraic Expressions	
August	7/28 - 8/1	Lesson 8: Equations & Inequalities	
	8/4 - 8/8	Lesson 9: The Coordinate Plane	
	8/11 - 8/15	Lesson 10: Measures of Central Tendency	
	8/18 - 8/29	*Lesson 11: Area & Perimeter of Polygons*	
		Lesson 12: Circles	

Resource Pages:

Lesson	Resources:
Lesson 1: Positive Numbers & The Number Line Lesson 2: Negative Numbers & The Number Line	- Prime Factorizations - Factors and Multiples - Least Common Multiple - Greatest Common Factor - Negative Numbers - Ordering Negative Numbers - Absolute Value
Lesson 3: Multiplying & Dividing Fractions and Decimals	- Multiplying Fractions - Multiplying Whole Numbers and Fractions - Multiplying Mixed Numbers - Dividing Fractions - Multiplying Decimals - Dividing Decimals
Lesson 4 & 5: Rates & Ratios	- Equivalent Ratios - Ratio Problems - Rates and Unit Rates
Lesson 6: Percents	- Percents - Percent, Decimal, Fractions Conversions
Lesson 7: Algebraic Expressions	- Parts of Algebraic Expressions - Substitution and Evaluating Expressions - Writing Algebraic Expressions - Combining Like Terms
Lesson 8: Equations & Inequalities	- Algebraic Equations Basics - One-Step Addition and Subtracting Equations - One-Step Multiplication and Division Equations - Intro to Inequalities with Variables
Lesson 9: The Coordinate Plane	- Coordinate Plane - Quadrants on a Coordinate Plane
Lesson 10: Measures of Central Tendency	- Mean, Median, and Mode - Range
Lesson 11: Area & Perimeter of Polygons	- Polygons - Perimeter - Areas of Parallelograms - Areas of Triangles - Area of Composite Figures
Lesson 12: Circles	- Area and Circumference of Circles

Lesson 1: Positive Numbers & The Number Line

List the first five multiples of 7:
List all the factors of 24:

Find the Greatest Common Factor for each number pair.

18 and 48
30 and 75
15 and 24

Find the Least Common Multiple for each number pair.

6 and 10
8 and 12

A light flashes every 2 minutes, a second light flashes every 3.5 minutes, and a third light flashes every 4 minutes. If all three lights flash together at 8 p.m., what is the next time of the day they will all flash together? Show work and write your answer in a complete sentence.

Kayla buys two types of flowers, 48 pink roses and 56 white lilies. She combines the flowers to make identical bouquets, with no flowers left over.

a) Find the greatest number of bouquets that Kayla can make. Show work.

b) Find the number of pink roses and white lilies in each bouquet. Show work.

List 3 prime numbers:

How do you know the 3 numbers you listed are prime? Explain in complete sentences.

_____

_____

_____

Find the prime factorization of each number in expanded form and exponential form.

28	40	100
Expanded Form	Expanded Form	Expanded Form
Exponential Form	Exponential Form	Exponential Form

Lesson 2: Negative Numbers & The Number Line

Write the opposite of each number.

6	-7.3	-100

Complete the number line by filling in the missing numbers.

_____ _____ _____ _____

Order the numbers in the set from least to greatest.

-25, 0, 48, -110, 23, and -200	2.3, -1.7, -0.2, 0.3, 1.2, -1.9, -2.3

Write a positive or negative number to represent each situation.

A loss of $180 _____

A gain of 10 yards _____

200 feet below sea level _____

A deposit of $250 into a bank account _____

A withdrawal of $2,500 from a bank account _____

Write the absolute value of each number.

|-9| = _____ |-2| = _____ |100| = _____

Complete each inequality using > or < .

$|-18| \square |-24|$ $|-30| \square |-40|$

$|100| \square |-200|$ $|-280| \square |190|$

$|-650| \square |-480|$ $|570| \square |-400|$

Dylan owes his brother Nat $240, and his best friend Clare $166. His sister Elena owes Dylan $275, and his friend Kaitlyn owes Dylan $150.

a) Dylan writes the number -240 to represent the amount he owes his brother Nat. What numbers should Dylan use to represent the other amounts given above?

b) Who owes the most money? Show work.

c) How much does Dylan owe in total? Show work.

d) Which is greater, the amount of money Dylan owes, or the amount of money that people owe him?

Lesson 3: Multiplying and Dividing Fractions & Decimals

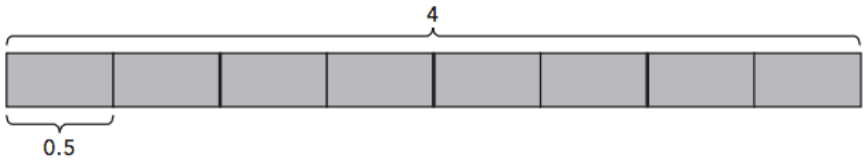
Find each quotient or product. Simplify your answer. You may draw a model to help you.

$5 \div \frac{1}{4}$	$\frac{9}{10} \div \frac{7}{20}$
$\frac{4}{5} \div \frac{3}{10}$	$4 \div \frac{2}{7}$
$\frac{2}{3} \times 12$	$4\frac{1}{2} \times 1\frac{1}{3}$
Clare drinks $\frac{3}{16}$ gallon of milk each day. How many days will it take Clare to drink 3 gallons of milk? Show work.	

Multiply. Show work. Set up vertically if needed.

2.1 x 1.5 =	0.6 x 0.4 =	0.7 x 0.3 =

Write a division expression that represents the model. Then find the answer.



Divide.

$3.6 \div 0.3$ $9.28 \div 0.3$ $0.72 \div 0.06$

Potatoes cost $0.85 per pound. Dr. Gallagher bought 2.75 pounds of potatoes. How much did he pay for the potatoes? Round to the nearest cent. Show work and write your answer in a complete sentence.

Clare and Elena both compete in a race. Clare takes 42.8 seconds to finish, and Elena finishes in 49.2 seconds. How many seconds faster was Clare than Elena? Show work and write your answer in a complete sentence.

Thadeus buys 8.5 square feet of carpet. The carpet costs $10.20 per square foot. How much does Thadeus pay for the carpet? Show work and write your answer in a complete sentence.

Lesson 4 & 5: Rates & Ratios

Express the ratio in simplest form.

36 : 20	24 : 64	45 : 90

State whether each pair of ratios are equivalent. Show your thinking.

13 : 15 and 30 : 26	54 : 18 and 18 : 6

JP is making granola. He uses almonds, walnuts, and pecans in the ratio 4 : 3 : 8. JP uses 40 ounces of pecans. Draw a picture (bar model) if necessary.

a) Find the weight of the almonds. Show work.

b) Find the weight of the walnuts. Show work.

c) Find the total weight of the granola.

It takes 8 minutes for water from a tap to fill up a 30-gallon tank. What is the rate of water flowing from the tap per minute? Show work.

The table shows the cost of three different fruits Atticus purchased at a grocery store. Round your answers to the nearest hundredth of a dollar.

Fruit	Amount Paid	Amount Purchased	Cost Per Pound
Grapefruit	$11.67	15 lb	
Rhubarb	$14.97	3 lb	
Cherries		2 lb	$5.99

a) Which type of fruit costs the most per pound?

b) What is the price difference per pound between the most expensive fruit and the cheapest fruit?

Cereal A costs $4.20 for a 14-ounce box and Cereal B costs $3.90 for a 12-ounce box. Which cereal is the better buy? Explain how you determined your answer. (Round your answers to 2 decimal places.)

Lesson 6: Percents

Express each percent as a fraction or a mixed number in simplest form. Show work.

24%	698%	96%

Expression each percent as a decimal. Show work.

85%	130%	32%

Express each fraction as a percent. Show work.

$\frac{4}{5}$	$\frac{9}{20}$	$\frac{7}{10}$

Out of a total of 300 animals in the zoo, 45 are birds. What percent of the animals in the zoo are birds?

Of the 400 students at a basketball game, 180 are girls and the rest are boys. What percent of the students at the basketball game are boys?

A group of students were surveyed and asked to name their favorite fruit. The table shows the results of the survey.

a) What percent of students surveyed prefer Apples? Show work.

b) What percent of students surveyed prefer the least favorite fruit? Show work.

Favorite Fruits

Fruit	Number of Students
Apples	30
Oranges	15
Strawberries	40
Pears	25
Peaches	10

c) What percent of students surveyed prefer apples or pears?

Lesson 7: Algebraic Expressions

Write an algebraic expression for each of the following.

1) The sum of k and 8 _____
2) The difference of 9 and x _____
3) The quotient of h and 8 _____
4) The product of g and 7 _____
5) 5 less than z _____
6) Subtract 6 from 5w _____
7) Add 10 to the product of z and 7 _____
8) Subtract the quotient of h and 3 from 4 multiplied by x _____

Evaluate each expression for the given value of the variable. SHOW WORK.

6x + 7 when x = 5

9y - 10 when y = 3

14g - 98 + 3g when g = 7

$6h + 25 - \frac{5h}{4}$ when h = 8

Simplify each expression.

6g - 3g + 8g - g	10u + 4u - 8u - 3u
9m + 10 - 4m +7k - 3k	12x - 4x + 3x + 8

State whether each pair of expressions are equivalent. Show your thinking.

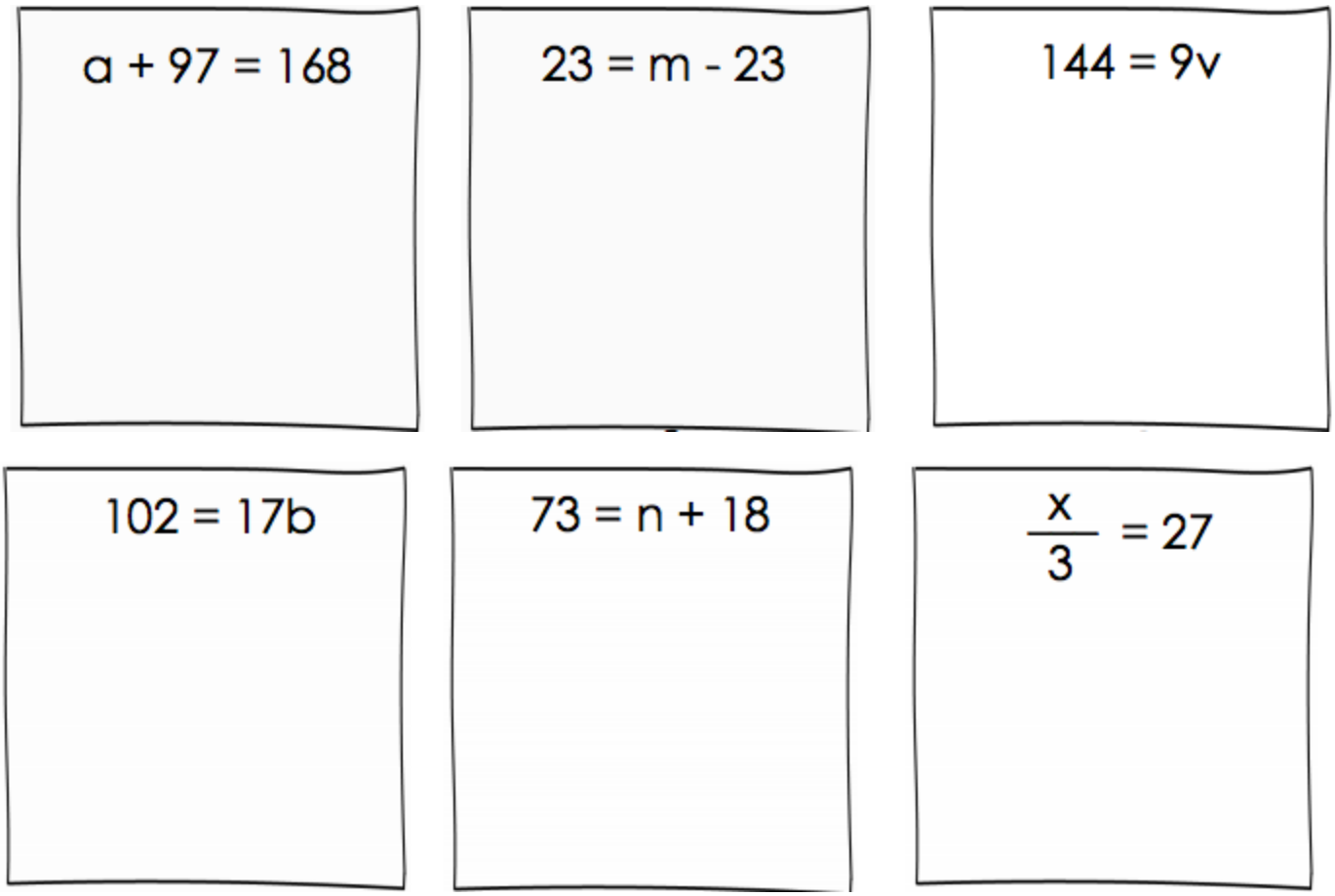
8z + 2z and 3z + 4z + 3z	9y and 9 + y

Expand each expression.

3(4w + 5)	5(6 - 3y)
7(2a - 7)	9(3p + 5)

Lesson 8: Equations & Inequalities

Solve. Make sure you show work!



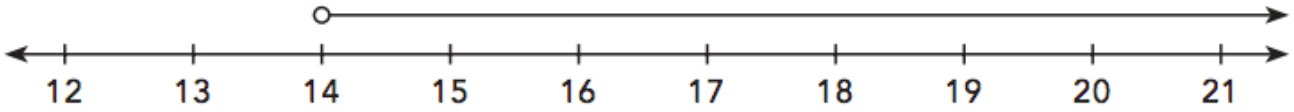
Write and solve an algebraic equation for each problem. Show work.

When a number is doubled, the result is 48. What is the number?
After students borrowed 28 novels from the school library, there were 35 novels left. How many novels were in the school library at first?

Rewrite each statement using $>$, $<$, $\geq$, *or* $\leq$

g is less than or equal to 55.	q is greater than or equal to 28.
p is greater than 15.	y is less than 20.

Write an inequality for each graph on a number line using the variable x.



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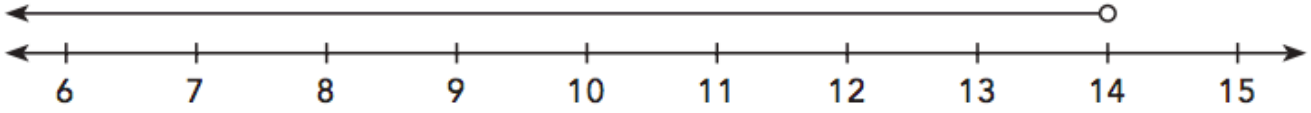


_____

A small bus can hold a maximum of 20 students. Let y represent the number of students.

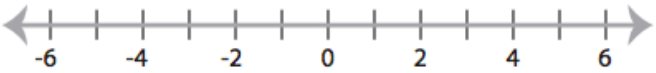
a) Write an inequality for y. _____

b) Is 18 a possible value of y? Explain. _____

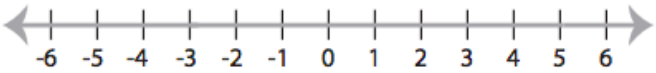
c) Use the number line below to represent the solution set of the inequality. Then state the maximum value of y. _____

Graph the inequalities on the number line:

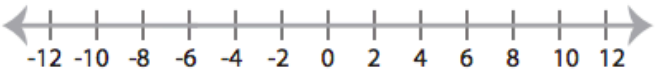
1) $x \geq -2$



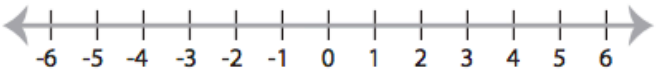
2) $x < 5$



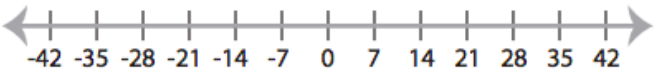
3) $x \leq 6$



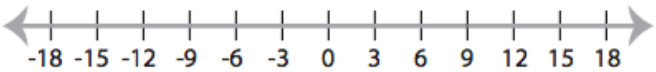
4) $x > 1$



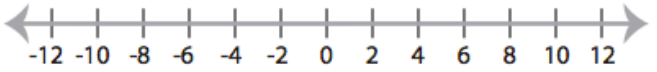
5) $x < -14$



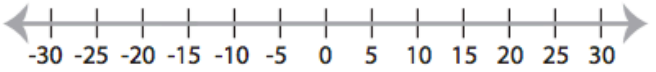
6) $x \leq 9$



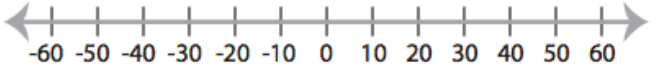
7) $x > -2$



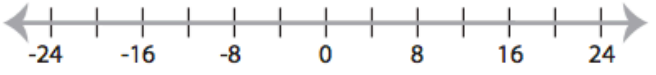
8) $x \geq -15$



9) $x \leq -10$



10) $x > 16$



Lesson 9: The Coordinate Plane

Write the ordered pairs for each of the points on the coordinate plane.

a) M _____

b) N _____

c) P _____

d) Q _____

e) R _____

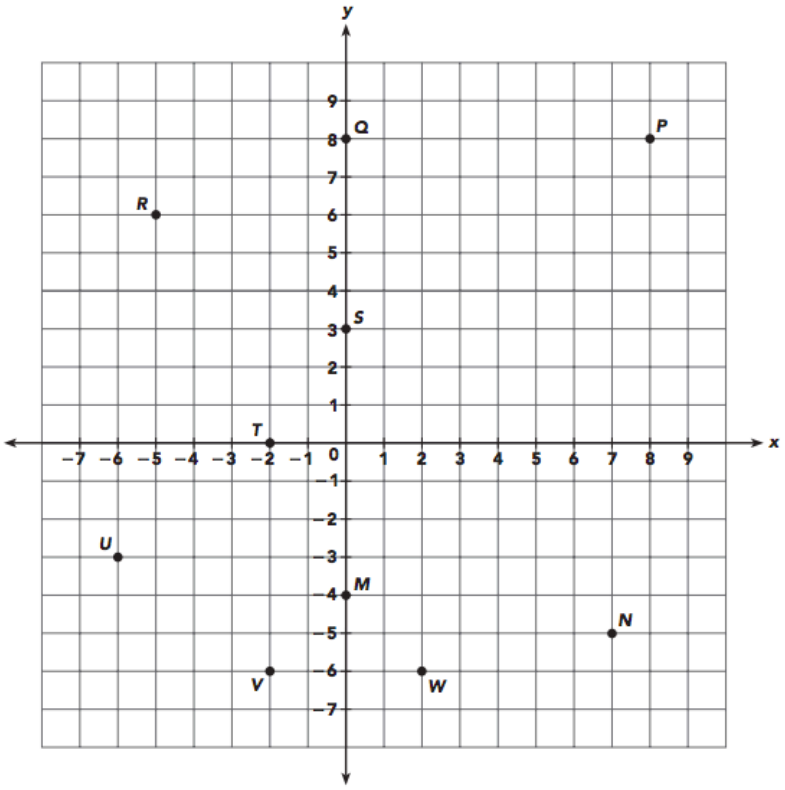
f) S _____

g) T _____

h) U _____

i) V _____

j) W _____



Plot the following points on the same coordinate plane. Make sure you put the letter next to the point.

a) A (0, 0) b) B (-4, -4) c) C (5, 7) d) D (9, -7)

What quadrant is point W located in? _____

What quadrant is point R located in? _____

Which axis is point S on? _____

Which axis is point T on? _____

Lesson 10: Measures of Central Tendency

Mean - Finding the mean is the same as finding the _____. In order to find the mean, _____ up all of the numbers in the data set and then divide it by the amount of numbers in the data set.

Median - In order to find the median, you must rewrite the numbers from _____ to _____. Then, find the middle number in the data set. If there are two numbers in the middle, find the average of the two numbers.

Mode - The mode is the _____ occurring number in the data set. If there are no numbers that occur the most, you can write, "none".

Range - To find the range, take the _____ number and subtract the _____ number.

Word Bank:

most add greatest biggest smallest average least

For each data set, find the mean, median, mode, and range. SHOW WORK.

9, 10, 11, 16, 12, 12, 14	2.3, 1.7, 0.8, 1.8, 2.3, 1.4
Mean: Median: Mode: Range:	Mean: Median: Mode: Range:

Find the measures of central tendency. Be sure to order your data from least to greatest.

1) 24, 31, 12, 38, 12, 15

Mean : _____ Median : _____

Mode : _____ Range : _____

2) 5, 28, 16, 32, 5, 16, 48, 29, 5, 35

Mean : _____ Median : _____

Mode : _____ Range : _____

3) 53, 13, 34, 41, 26, 61, 34, 13, 69

Mean : _____ Median : _____

Mode : _____ Range : _____

4) 85, 58, 72, 85, 46, 93

Mean : _____ Median : _____

Mode : _____ Range : _____

The table shows the shoe sizes of 15 girls. Use the information to answer questions below. Show work.

Shoe Sizes	4	5	6	7	8
Number of Girls	3	4	5	2	1

a) What is the modal (mode) shoe size?

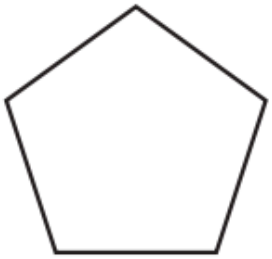
b) What is the median shoe size?

c) Find the mean shoe size.

Lesson 11: Area & Perimeter of Polygons

For each polygon, write the number of sides and then write the name of the polygon. Feel free to look up the word online for correct spelling.

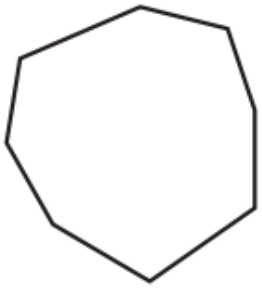
1)



Number of sides _____

Polygon type _____

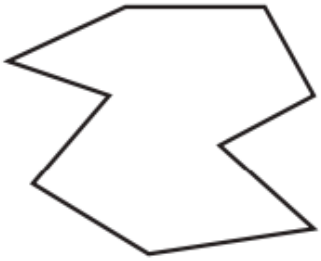
2)



Number of sides _____

Polygon type _____

3)



Number of sides _____

Polygon type _____

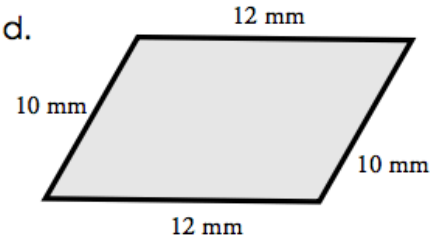
4)

Number of sides _____

Polygon type _____

Find the perimeter of each shape. Be sure to include the units in your answer. Show work.

d.



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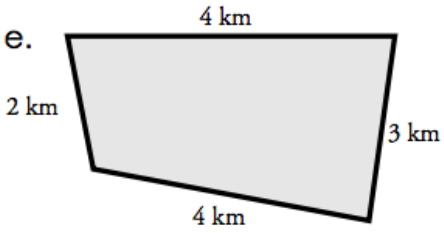
e.



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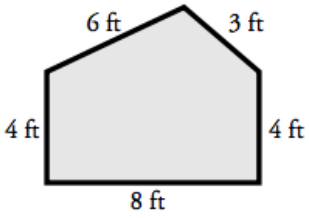
f.



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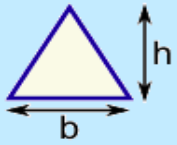
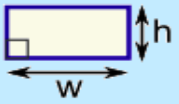
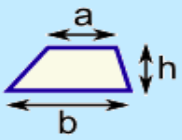
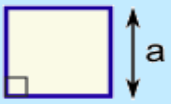
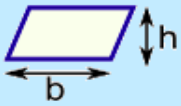
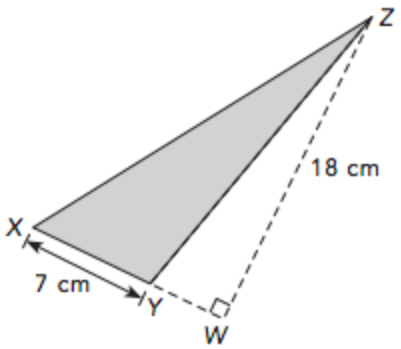
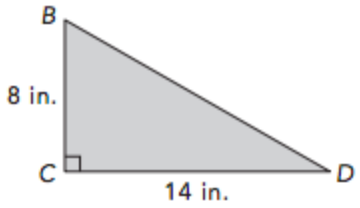
	Triangle Area = ½ × b × h b = base h = vertical height
	Rectangle Area = w × h w = width h = height
	Trapezoid (US) Trapezium (UK) Area = ½(a+b) × h h = vertical height

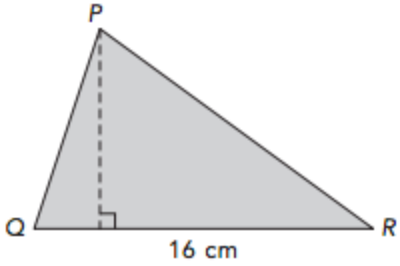
	Square Area = a^2 a = length of side
	Parallelogram Area = b × h b = base h = vertical height
	Circle Area = π × r^2 Circumference = 2 × π × r r = radius

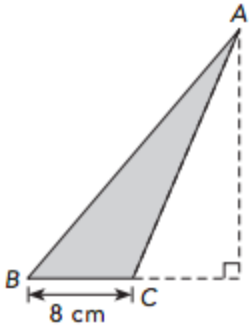
Find the area of each triangle. Show work. Make sure you include the units in your final answer.





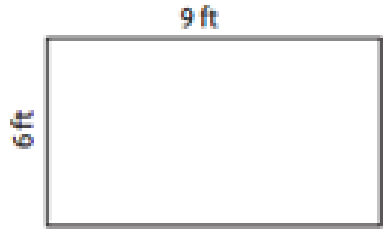
The area of each triangle is 96 square centimeters. Find the height. Show work.





Calculate the area and perimeter of each rectangle. Make sure you include units.

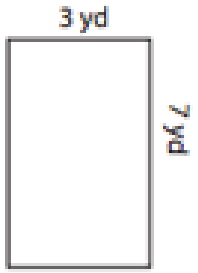
1)



Area : _____

Perimeter : _____

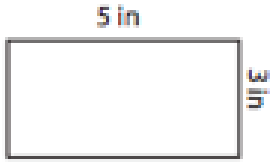
2)



Area : _____

Perimeter : _____

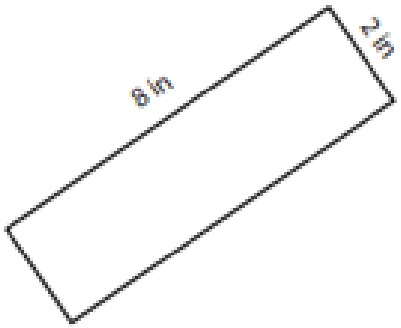
3)



Area : _____

Perimeter : _____

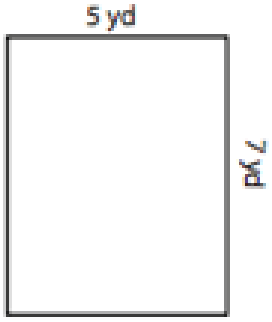
4)



Area : _____

Perimeter : _____

5)



Area : _____

Perimeter : _____

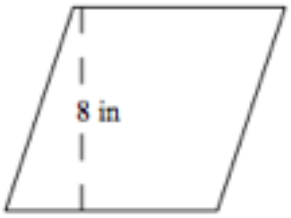
6)

Area : _____

Perimeter : _____

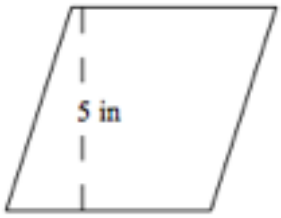
Calculate the area of each polygon. Make sure you include units.

1)



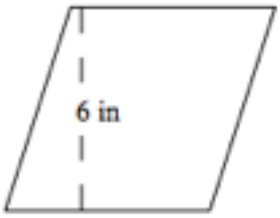
Area _____

2)



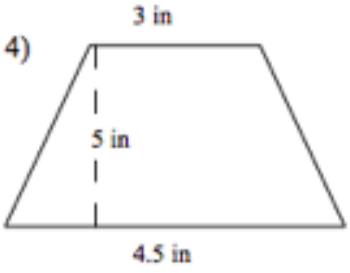
Area _____

3)



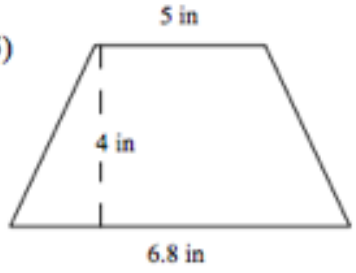
Area _____

4)



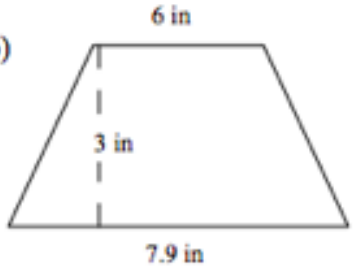
Area _____

5)



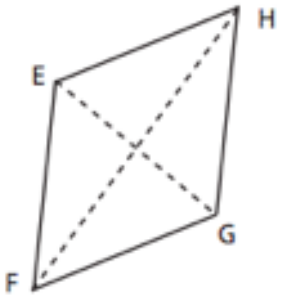
Area _____

6)



Area _____

7)

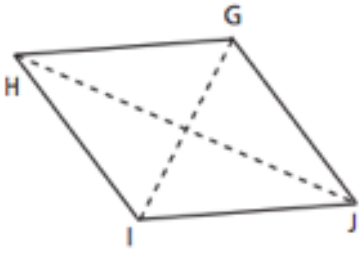


$\overline{EG}$ = 32 in

$\overline{FH}$ = 45 in

Area = _____

8)

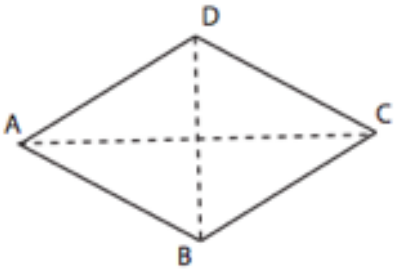


$\overline{GI}$ = 20 m

$\overline{HJ}$ = 35 m

Area = _____

9)



$\overline{AC}$ = 45 cm

$\overline{BD}$ = 38 cm

Area = _____

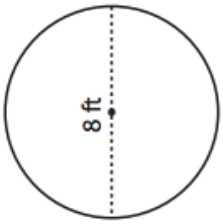
Lesson 12: Circles

Write down the formulas in the table below.

Area of a circle =	Circumference of a circle =

Find the area and circumference of the following circles. Make sure you include units.

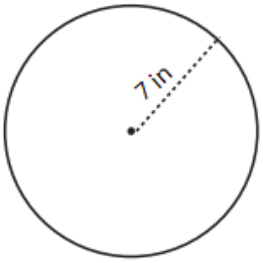
1)



Area = _____

Circumference = _____

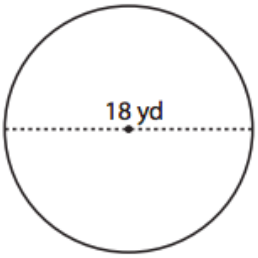
2)



Area = _____

Circumference = _____

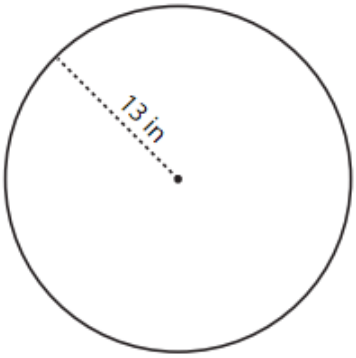
3)



Area = _____

Circumference = _____

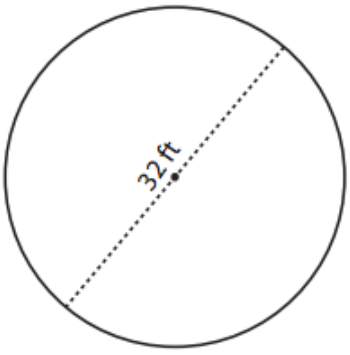
4)



Area = _____

Circumference = _____

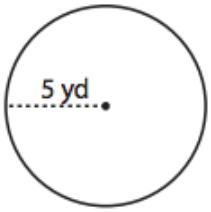
5)



Area = _____

Circumference = _____

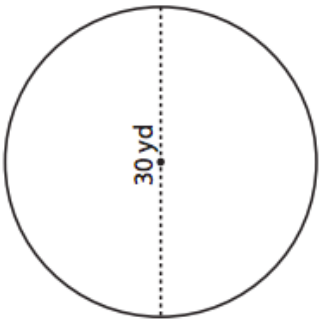
6)



Area = _____

Circumference = _____

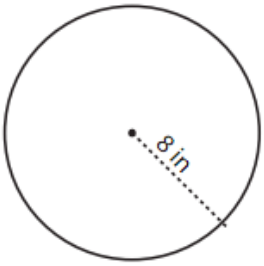
7)



Area = _____

Circumference = _____

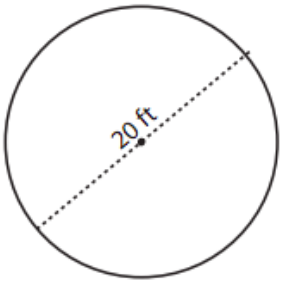
8)



Area = _____

Circumference = _____

9)



Area = _____

Circumference = _____

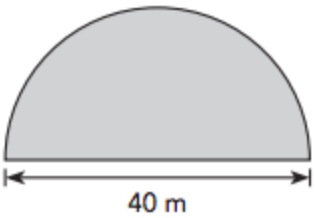
Solve. Show your work.

The diameter of a circular tablecloth is 72 inches. Find its area and circumference. Use 3.14 as an approximation for π. Draw a picture if necessary.

The radius of a circular carpet is 1.2 meters. Find its area and circumference to the nearest hundredth. Use 3.14 as an approximation for π. Draw a picture if necessary.

A park is in the shape of a semicircle. Find the area of the park.

[Hint: a semicircle is half of a circle]



Rate Your Understanding: This will be helpful for your 7th Grade math teacher ☺

3 – Meets	2 – Refresher	1 – Need to Study
I have a complete understanding of the concept. No further action needed.	I can recall some of the concepts, but need a little refresher.	I forgot how to apply the concept and need to study this section.

Specific Lesson	Rating
Lesson 1: Positive Numbers & The Number Line	
Lesson 2: Negative Numbers & The Number Line	
Lesson 3: Multiplying & Dividing Fractions and Decimals	
Lesson 4 & 5: Rates & Ratios	
Lesson 6: Percents	
Lesson 7: Algebraic Expressions	
Lesson 8: Equations & Inequalities	
Lesson 9: The Coordinate Plane	
Lesson 10: Measures of Central Tendency	
Lesson 11: Area & Perimeter of Polygons	
Lesson 12: Circles	