DISTANCE LEARNING PACKET

8TH GRADE

MATH

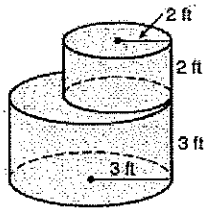
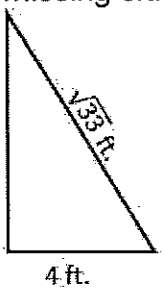
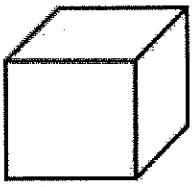
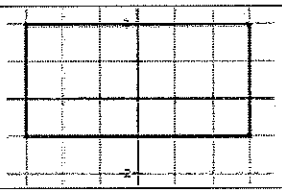
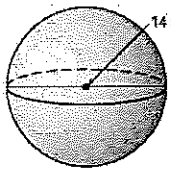
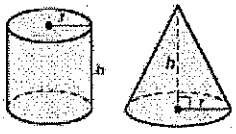
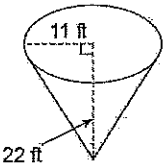
Eighth-Grade Math

Please Show Your Work Where Required.

If you would like more practice, you may use MobyMax, Study Island, and IXL.

Day	Cumulative Review	Check When Completed	Review of Concept	Check When Completed	Practice	Check When Completed
1	transformations angles, triangles, exponents		Rate of Change		Rate of Change	
2	Order of operations Equations,		Slope of a Line		Slope of a line	
3	equations, transformations angles, triangles		Equations Variables on both sides		Equations V/both sides	
4	Equations, transformations		Special solution Eq.		Sp. solution	
5	Equ. Transformations		Linear/Nonlinear		Linear/Non	
6	Volume, slope Pythagorean Theorem		Eval. Functions		Ev. Function	
7	Slope, volume, functions		Pyth. Th. Converse		Pyth. Con.	
8	Linear equations		Pyth. Theorem		Pyth. Th.	
9	Linear functions		Equations Dis. Prop.		Equations	
10	Transformations Angles, sci. notation		Scientific Notation		Sci. Notation	
11	External angles, sci. no. Real numbers		Translations		Translations	
12	Transversals, sci. no. roots		Reflections		Reflections	
13	Sci. notation, est. roots Angles, exponents		Real Numbers		Real No.	
14	Functions Transformations		Sq. & Cube Roots		Sq./Cube	
15	Pythagorean Theorem volume		Solving Eq. Roots		Eq. Roots	
16	Transformations angles		Rotations		Rotations	
17	Functions		Dilations		Dilations	
18	Properties of exponents		Writing Eq./Graph		Eq/Graph	
19	Pythagorean Theorem volume		Comparing Function		Com. Fun.	
20	Comparing using Sci. notation		Triangle Sum Th.		Transversals	

Name: Class: **8th Grade Cumulative Review Day 6**

Day 6	Day 6
Find the volume of the combined figure: 	Find the missing side length. 
Use the Pythagorean Theorem to determine if a triangle with side lengths 6ft., 6ft., 8ft. is a right triangle.	In the cube below, how long is it from the bottom corner to the opposite top corner (space diagonal)? 
	Draw a diagonal on the rectangle. How long is the diagonal of the rectangle?
Find the volume of the figure below: 	How much bigger is the volume of the cylinder than that of the cone? 
Which relation is a function? A) {(5,3), (2,8), (–5,–1), (4,7), (2,1)} B) {(5,3), (2,8), (–5 –1), (4,7), (5,7)} C) {(5,3), (2,8), (–5,–1), (4,7), (–2,1)} D) {(5,3), (2,8), (–5,–1), (5,7), (–2,1)}	
Find the volume of the figure below: 	If y = ½x – 2, determine the value of y when x = –12
Find the slope between the following points: $(-5,2)$, and $(3,9)$	A school is selling T-shirts to students. It costs $35 to create the design and $10 to print each shirt. Write an equation in y = mx + b that models this.

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Name: _____ Class: _____ Date: _____

Day 6

Evaluating Functions

Example 1: *Evaluate each function.*

a) Find y when $x = 2$ given $y = 8 + 3x$.

$y = 8 + 3(2)$

$y = 14$

b) Find y when $x = \frac{2}{3}$ given $y = -6x$.

$y = -6\left(\frac{2}{3}\right)$

$y = -4$

c) Find y when $x = -4$ given $y = 2x^2$.

$y = 2(-4)^2$

$y = 32$

d) Find y when $x = \frac{1}{4}$ given $y = \sqrt{x} + 1$.

$y = \sqrt{\frac{1}{4}} + 1$

$y = \frac{3}{2}$

Try: *Evaluate each function.*

a) Find y when $x = -3$ given $y = -x + 4$.

b) Find y when $x = \frac{5}{4}$ given $y = 8x - 2$.

c) Find y when $x = -2$ given $y = -x^2 - 9$.

d) Find y when $x = 27$ given $y = \sqrt[3]{x} - 3$.

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Function Notation – denoted by f(x), g(x), or h(x)
treated the same way as y

Example 2: Evaluate given $f(x) = -3x + 5$ and $g(x) = x^3$.

a) Find $f(1)$.

$f(1) = -3(1) + 5$
$f(1) = 2$

b) Find $f\left(-\frac{1}{3}\right)$.

$f\left(-\frac{1}{3}\right) = -3\left(-\frac{1}{3}\right) + 5$
$f\left(-\frac{1}{3}\right) = 6$

c) Find $g(-2)$.

$g(-2) = (-2)^3$
$g(-2) = -8$

d) Find $g\left(\frac{3}{4}\right)$.

$g\left(\frac{3}{4}\right) = \left(\frac{3}{4}\right)^3$
$g\left(\frac{3}{4}\right) = \frac{27}{64}$

Try: Evaluate given $f(x) = -\frac{3}{2}x$ and $g(x) = x^2 - 3$.

a) Find $f(-6)$.

b) Find $f\left(\frac{1}{2}\right)$.

c) Find $g(1)$.

d) Find $g(-5)$.

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8a

Name: _____ Class: _____ Date: _____

Day 6

Evaluating Functions
Practice

For 1-6, evaluate given $f(x) = 5x + 2$ and $g(x) = x^2 + 3$.

1) $f(8)$

2) $g(-1)$

3) $f\left(\frac{3}{5}\right)$

4) $g(3)$

5) $g(-4)$

6) $f(-2)$

For 7-12, evaluate each function.

7) Find y when $x = 2$ given $y = 3x$.

8) Find y when $x = -1$ given $y = x^3$.

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9) Find y when $x = 6$ given $y = -\frac{1}{2}x + 5$.

10) Find y when $x = -2$ given $y = 5x^2 - 1$.

11) Find y when $x = \frac{4}{9}$ given $y = \sqrt{x}$.

12) Find y when $x = -4$ given $y = \frac{3}{2}x^2$.

For 13-14, circle the error. Then correctly evaluate the function.

13) Find $f\left(-\frac{1}{4}\right)$ given $f(x) = -2x + 2$.

$f\left(-\frac{1}{4}\right) = -2\left(-\frac{1}{4}\right) + 2$

$f\left(-\frac{1}{4}\right) = 2 + 2$

$f\left(-\frac{1}{4}\right) = 4$

14) Find $g(3)$ given $g(x) = -x^2 + 5$.

$g(3) = -3^2 + 5$

$g(3) = 9 + 5$

$g(3) = 14$

15) Select the option that does not belong given $f(x) = 4x^2$ and $g(x) = \frac{1}{2}x - 4$. Justify your choice.

a) $f(-2)$ b) $g(40)$ c) $f(2)$ d) $g(16)$

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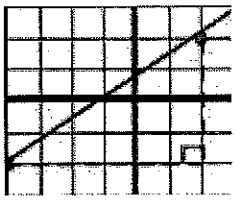
Name: Class: **8th Grade Cumulative Review Day 7**

Day 7

What is the slope of the line?



For which value of *x* is the relation *not* a function?

$\{1, 3), (5, 2), (8, 0), (x, 6)\}$

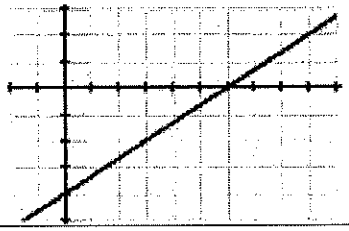
A) 1 B) 6

C) 3 D) 2

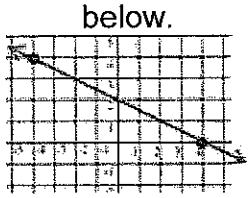
In the graph to the right:

When x = 3, then y = _____

When y = 2, then x = _____



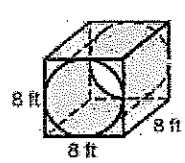
Write the slope intercept form of the graph below.



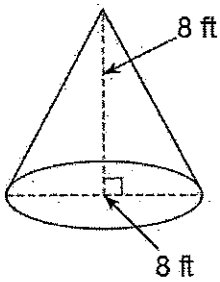
Write the equation of a line in slope intercept form that has a slope of $-\frac{2}{3}$ and has a y-intercept of 7.

Given the function y = $-2x - 9$, what is the corresponding value y when $x = -11$?

A tube is drilled out of a rectangular prism. How much of the prism is left?



Day 7



Given the cone to the right, how much bigger would the volume of a cylinder need to be for it to be of equal height and equal diameter?

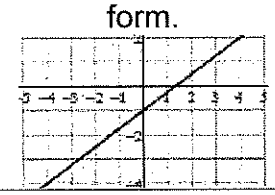
Determine the domain and range of the function below:

x	-4	-3	2	7
y	10	-1	6	10

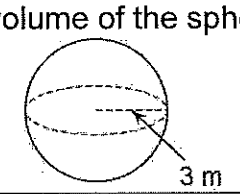
Find the slope between the following points:

$(-6,6)$, and $(-6,-1)$

Write the equation of the line in slope intercept form.



Find the volume of the sphere below:



Write the equation of a line in slope intercept form that contains the points (1,–4) and (–5, 2).

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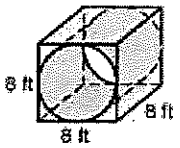
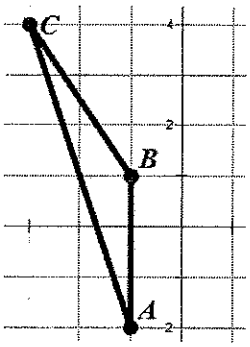
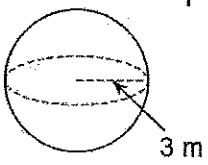
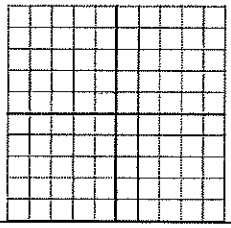
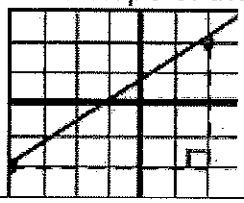
Name: Weekly Math Review – Q3:7 Date:

Wednesday	Thursday
A tube is drilled out of a rectangular prism. How much of the prism is left? 	 Area: Perimeter:
Find the volume of the sphere below: 	
Graph the function onto the graph to the right. x: –4, –2, 0, 2 y: –2, –1, 0, 1 Are you supposed to connect the dots?	
Given the function $f(x) = -2x - 9$, what is the corresponding value when $x = -11$?	If y = 4x – 1, determine the value of y when $x = \frac{7}{2}$
Circle a linear situation. A) The area of a rectangle B) The Volume of a pool C) Buying songs at $1 each D) $y = 2x^2 + 5x$	What is the slope of the line? 
Write the equation of a line in slope intercept form of a line that has a slope of $-\frac{7}{4}$ and contains (–4, 5).	Write the equation of a line in slope intercept form that contains the points (1,–4) and (–5, 2).
The function $y = \frac{1}{4}x + 3$ is transformed by shifting it to the right 8 units. What is the equation of the new function?	The function $y = -2x$ is reflected across the x-axis. What is the equation of the new function?
Identify the transformation that changes $y = \frac{1}{6}x - 8$ to the function $y = \frac{5}{6}x - 8$.	Identify the transformation that shifts $y = x - 10$ to the function $y = x + 5$.

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8th

Name: _____ Class: _____ Date: _____

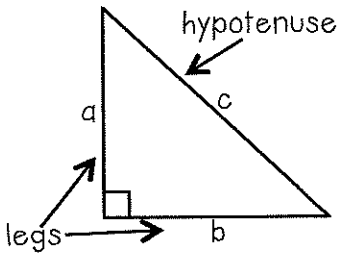
Day 7

Converse of Pythagorean Theorem

Pythagorean Theorem Converse –

If the sum of the squares of the legs is equal to the square of the hypotenuse, then the triangle is a right triangle.

$$a^2+b^2=c^2$$



Example 1: *Determine whether the following side lengths could form a right triangle.*

a) 8, 6, 10

$8^2+6^2 \stackrel{?}{=} 10^2$

$64+36 \stackrel{?}{=} 100$

$100 = 100$

Yes

b) 4, 5, 8

$4^2+5^2 \stackrel{?}{=} 8^2$

$16+25 \stackrel{?}{=} 64$

$41 \neq 64$

No

Try: *Determine whether the following side lengths could form a right triangle.*

a) 5, 4, 3

b) 5, 9, 11

c) 10, 13, 8

d) 12, 5, 13

e) 8, 17, 15

f) 2, 3, 4

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Pythagorean Triples – whole number solutions to the Pythagorean Theorem

Common Examples – 3, 4, 5
5, 12, 13
8, 15, 17
7, 24, 25

Example 2: *Use the Pythagorean Theorem to solve each problem.*

A backyard fence is designed with side lengths 18, 24 and 30 feet. Show or explain whether the side lengths could form a right triangle.

$$18^2 + 24^2 \stackrel{?}{=} 30^2$$

$$324 + 576 \stackrel{?}{=} 900$$

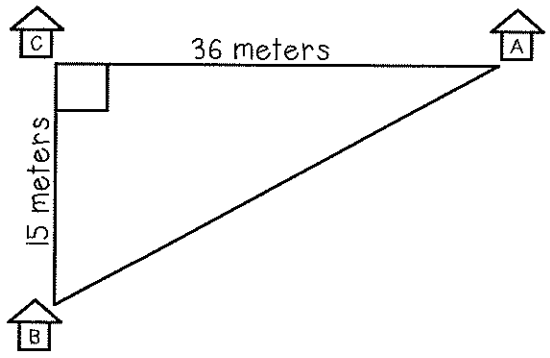
$$900 = 900$$

Yes

Try: *Use the Pythagorean Theorem to solve each problem.*

a) A bookcase is shaped like a triangular prism. The triangular face has side lengths 4', 3' and 2'. Show or explain whether the side lengths could form a right triangle.

b) Three homes form a right triangle. Determine if the distances between the homes form a Pythagorean triple. Show or explain how you know.



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8a

Name: _____ Class: _____ Date: _____

Way 7

Converse of Pythagorean Theorem Practice

For 1-8, determine whether the following side lengths could form a right triangle.

1) 6, 9, 11

2) 14, 8, 12

3) 12, 20, 16

4) 25, 24, 7

5) 13, 14, 18

6) 10, 24, 26

7) 9, 10, 13

8) 9, 12, 15

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For 9-10, use the Pythagorean Theorem to solve each problem.

9) A children's book has a diagonal of 10 inches. If the width of the book is 6 inches, are the measurements of diagonal, width, and length a Pythagorean triple? Show or explain how you know.

10) A modern painting is displayed in a triangular frame. The side lengths of the frame are 9", 12", and 14". Is the frame in the shape of a right triangle? Show or explain how you know.

11) Select the set of numbers that does not belong. Justify your answer.

a) 3, 4, 5 b) 5, 12, 13 c) 10, 15, 25 d) 8, 15, 17

12) Landon and Bryson both completed their math homework. Is either student correct? Explain any error(s).

Could the side lengths 15, 9, 12 form a right triangle?

Landon	Bryson
$15^2 + 9^2 \stackrel{?}{=} 12^2$	$12^2 + 9^2 \stackrel{?}{=} 15^2$
$225 + 81 \stackrel{?}{=} 144$	$144 + 81 \stackrel{?}{=} 225$
$306 \neq 144$	$225 = 225$
No	Yes

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Name: **Class:**

8th Grade Review Day 8

Directions: Write the equation of each line in slope-intercept form.

1. The slope of the line is 3. The y-intercept is (0, 4).

2. The slope of the line is -2. The y-intercept is (0, 0).

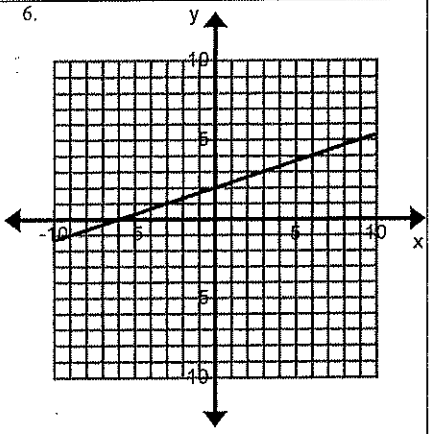
3. The slope of the line is $\frac{1}{2}$. The y-intercept is (0, -2).

4. The slope of the line is $-\frac{4}{3}$. The y-intercept is (0, -1).

5. The slope of the line is 0. The y-intercept is (0, 2).

Directions: Find the slope and y-intercept from the graph, table, or story below. Then write the equation of each line in slope-intercept form. If you have a hard time determining where the line intersects a point be sure to check at least three points.

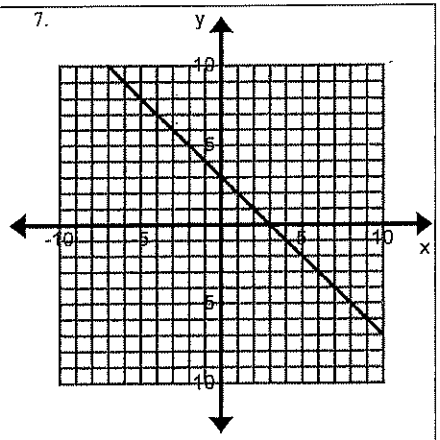
6.



m: _____ b: _____

Equation:

7.



m: _____ b: _____

Equation:

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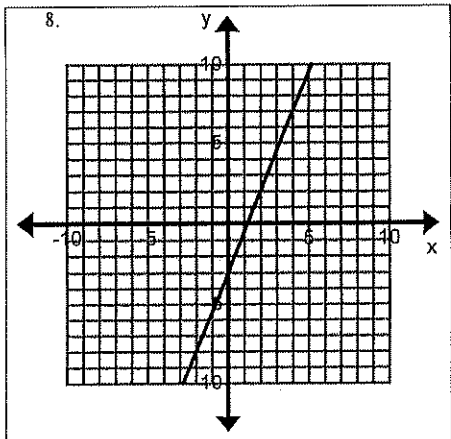
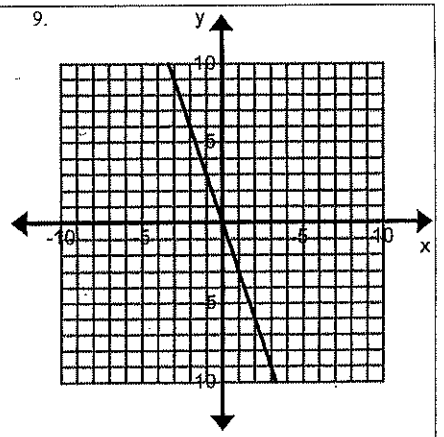
8.



m: _____ b: _____

Equation:

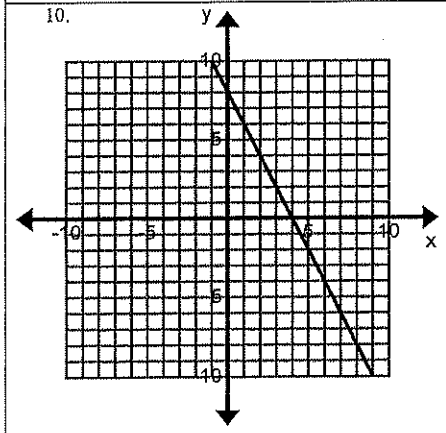
9.



m: _____ b: _____

Equation:

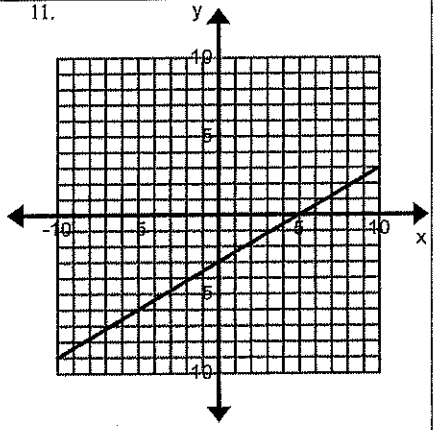
10.



m: _____ b: _____

Equation:

11.



m: _____ b: _____

Equation:

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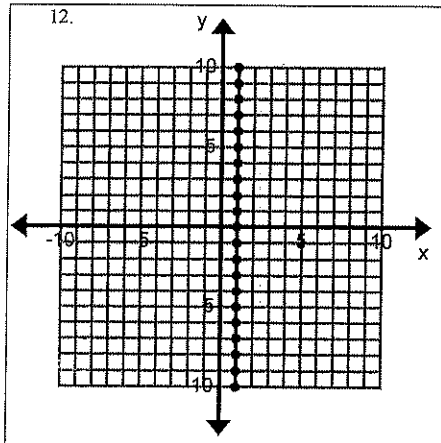
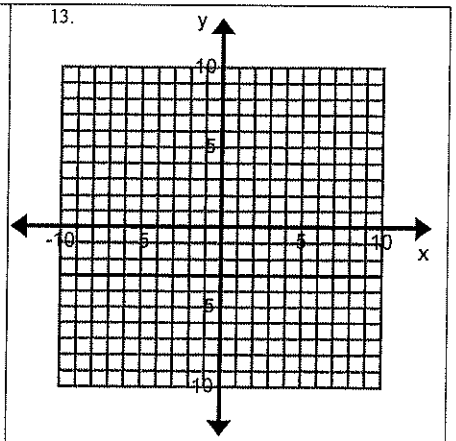
12.



m: _____ *b*: _____

Equation:

13.



m: _____ *b*: _____

Equation:

14.

x	y
0	4
1	6
2	8
3	10

m: _____ *b*: _____

Equation:

15.

x	y
-1	-1
0	-2
1	-3
2	-4

m: _____ *b*: _____

Equation:

16.

x	y
-2	-1
0	0
2	1
4	2

m: _____ *b*: _____

Equation:

17. You are going on a road trip with your family. You are already 30 miles into your trip and the speed limit is 75 miles per hour on the freeway. Let x be the number of hours from now and y be the total distance traveled.

m: _____ *b*: _____

Equation:

18. A Basset Hound weighs 100 pounds and is on a special diet to lose 4 pounds per month. Let x represent the number of months passed and y the weight of the dog.

m: _____ *b*: _____

Equation:

19. Your cell phone plan has a flat rate of $30 each month. For each text you send it costs $0.20. Let x represent the number of texts that you send and y your total monthly bill.

m: _____ *b*: _____

Equation:

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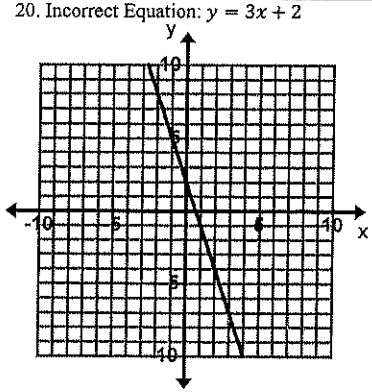
Find, Fix, and Justify: In each of the following problems, a common mistake of writing the equation of a line has been made. Describe the error and write the correct equation.

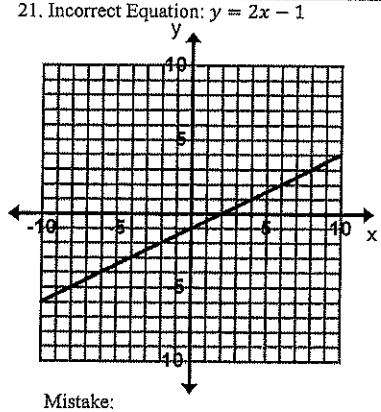
20. Incorrect Equation: $y = 3x + 2$



Mistake:

Correct Equation:

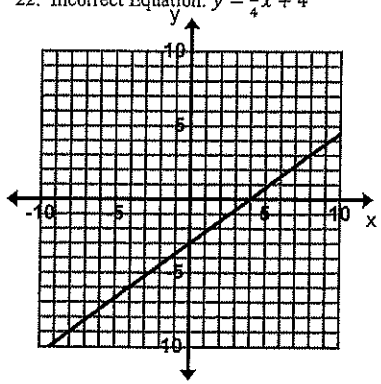
21. Incorrect Equation: $y = 2x - 1$



Mistake:

Correct Equation:

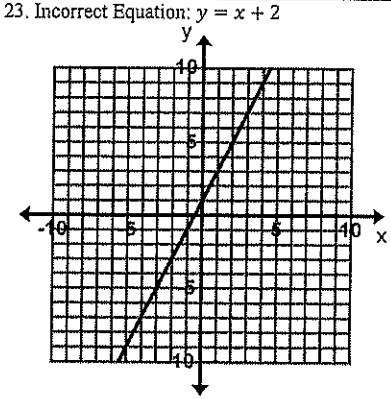
22. Incorrect Equation: $y = \frac{3}{4}x + 4$



Mistake:

Correct Equation:

23. Incorrect Equation: $y = x + 2$



Mistake:

Correct Equation:

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Name: _____ Class: _____ Date: _____

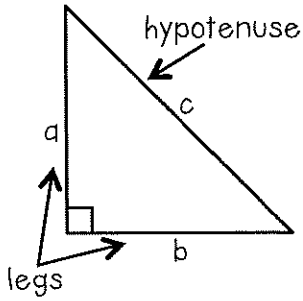
Day 8

The Pythagorean Theorem

Pythagorean Theorem –

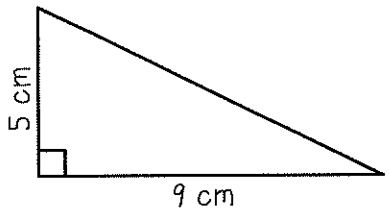
If a triangle is right, then the sum of the squares of the legs is equal to the square of the hypotenuse.

$$a^2+b^2=c^2$$



Example 1: *Solve for the missing side length of each right triangle. Round to the nearest tenth, if necessary.*

a)



$a^2 + b^2 = c^2$

$5^2 + 9^2 = c^2$

$25 + 81 = c^2$

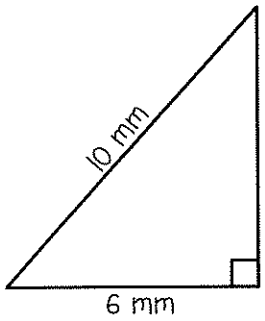
$106 = c^2$

$\sqrt{106} = \sqrt{c^2}$

$10.3 \approx c$

10.3 cm

b)



$a^2 + b^2 = c^2$

$6^2 + b^2 = 10^2$

$36 + b^2 = 100$

$-36 \quad -36$

$b^2 = 64$

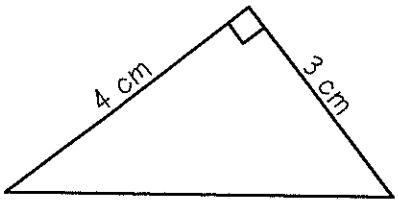
$\sqrt{b^2} = \sqrt{64}$

$b = 8$

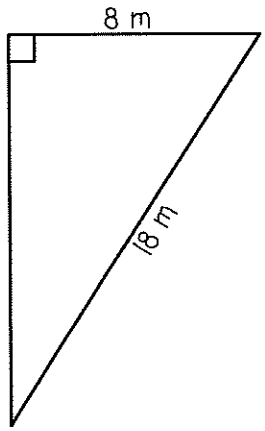
8 mm

Try: *Solve for the missing side length(s) of each right triangle. Round to the nearest tenth, if necessary.*

a)



b)



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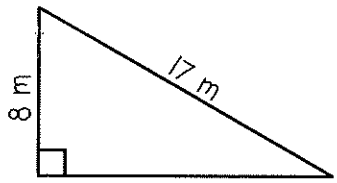
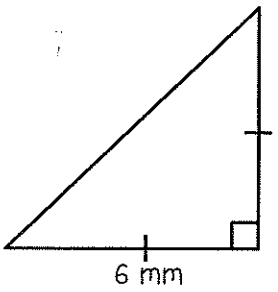
c)

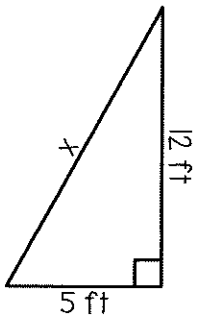


d)



Example 2: *Draw a diagram, write an equation, solve, and answer the question.*

A ladder leaning against a building is positioned 5 feet away from the base of the building and reaches 12 feet up the side. Determine the length of the ladder.



$a^2 + b^2 = c^2$

$5^2 + 12^2 = c^2$

$25 + 144 = c^2$

$169 = c^2$

$\sqrt{169} = \sqrt{c^2}$

$13 = c$

The ladder is 13 feet long.

Try: *Draw a diagram, write an equation, solve, and answer the question.*

a) Car A travels 30 miles per hour heading due west. Car B begins at the same location and departs at the same time traveling 40 miles per hour due south. Determine how far apart the cars will be after one hour.

b) Televisions are sized by the length of their diagonal. If Gary has a 2-foot by 3-foot space to fit a new tv, can he buy one that is 50 inches?

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8.2

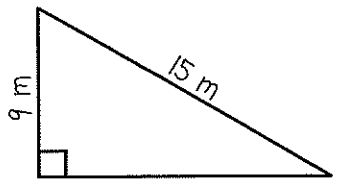
Name: _____ Class: _____ Date: _____

Day 8

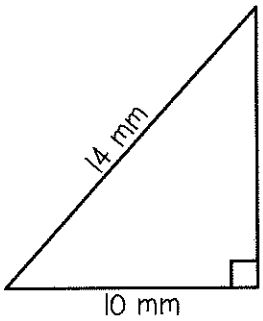
The Pythagorean Theorem
Practice

For 1-6, solve for the missing side length(s) of each right triangle. Round to the nearest tenth, if necessary.

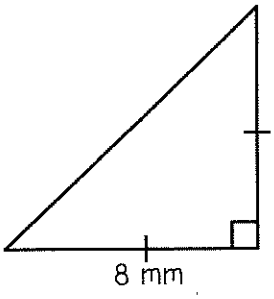
1)



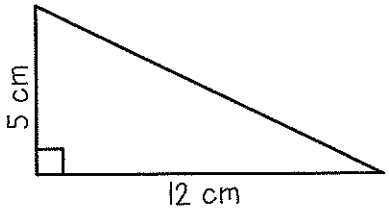
2)



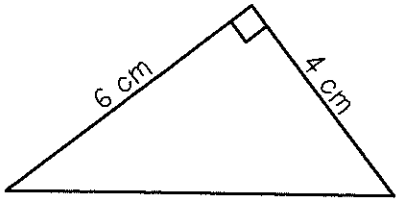
3)



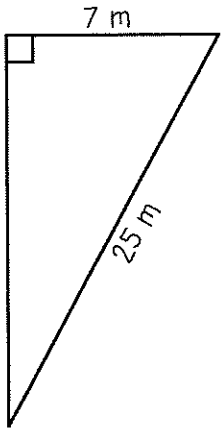
4)



5)



6)



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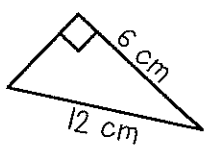
For 7-9, draw a diagram, write an equation, solve, and answer the question.

7) A 20-foot upright utility pole has a support wire stemming from the top of the pole to a secure position on the ground located 15 feet away from the base of the pole. How long is the support wire?

8) Train A travels 18 miles per hour heading due east. Train B begins at the same station and departs at the same time traveling 24 miles per hour due north. Determine how far apart the trains will be after two hours.

9) Sarah lives 5 miles southwest of her school. To bicycle home she takes Main Street 2.5 miles due south then she turns west onto Pond Street and continues riding. About how many miles does she travel on Pond Street before she reaches her home?

10) Circle the error. Correctly solve for the missing side length to the nearest tenth.



$6^2 + 12^2 = c^2$

$36 + 144 = c^2$

$180 = c^2$

$\sqrt{180} = \sqrt{c^2}$

$13.4 \text{ cm} \approx c$

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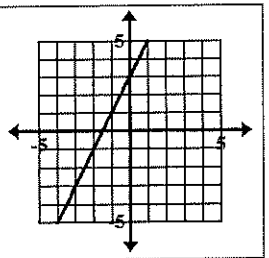
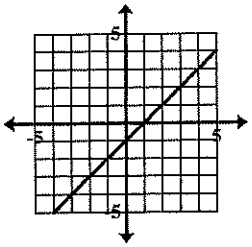
Directions: For each problem, circle the representation with the greatest rate of change. Put a star by the representation with the greatest y-intercept. Assume all representations have a constant rate of change.

8. $y = 2 + 3.5x$

x	y
1	8
5	20
7	26

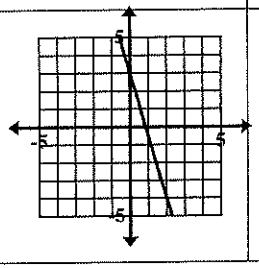


9. $y = \frac{3}{2}x$



$(0,1)(1,2.2)$

10.



x	y
0	4
2	-2
5	-11

$(0,3)(2,-5)$

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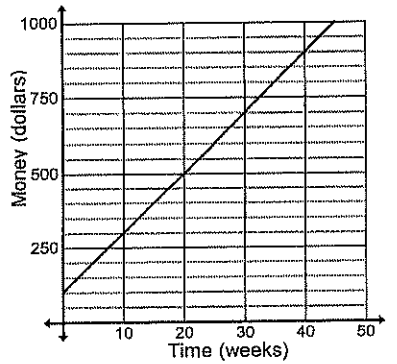
Name: **Class:** **8th Grade Review Day 9**

5.3b Homework: Comparing Linear Functions

1. Who will have $1,000 first, Becky or Olga?

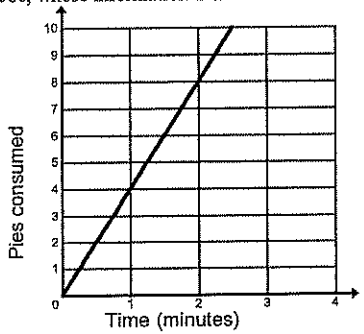
Becky has $100 and is saving $10 every week.

Olga's information is shown on the graph below.



2. Assume the rates below will remain constant. Who will win the pie eating contest? Why?

Joe, whose information is shown below.



Donna, who has eaten 11 pies in 2.5 minutes.

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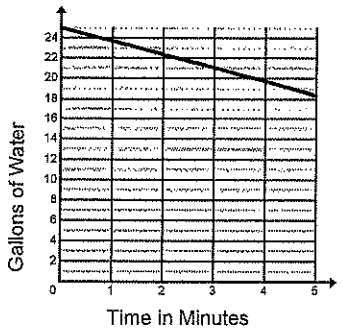
3. Based on the information below, which hot water heater will use up the available hot water first?

Water Heater A:
Starts with 50 gallons and drains 1.5 gallons a minute.

Water Heater B:

Time in Minutes	Gallons
0	30
2	27.5
4	25

Water Heater C:



4. Put the cars in order from fastest to slowest. (Note variables: x = time in hours, y = miles traveled.)

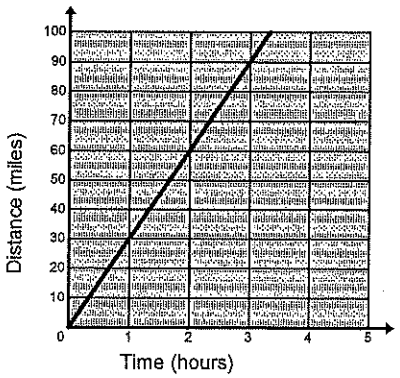
Car A:
$y = 35x$

Car B:
The Andersons completed the 24 mile trip to Salt Lake City in 30 minutes.

Car C:

Time (hours)	Distance (miles)
0.5	18
2.5	90
4	144

Car D:



5. Put the runners in order from slowest to fastest. (Note variables: x = time in minutes, y = miles traveled.)

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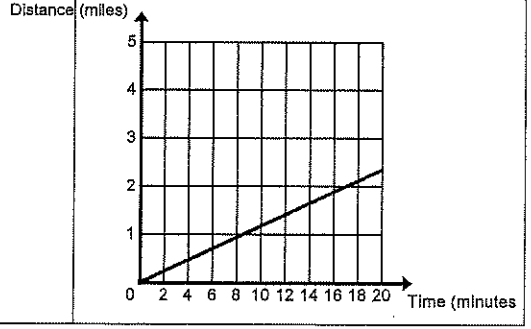
Ellen ran 1 mile in the last 10 minutes

Samantha: $y = \frac{2}{13}x$

Jason:

Time (minutes)	Distance (miles)
3	0.5
6	1
9	1.5

Dale:



6. Use the representations below to answer the questions that follow. (Note variables: x = time in weeks, y = amount of money remaining.)

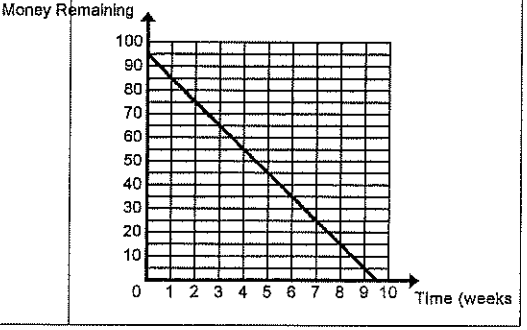
Imiko starts with $60 and spends $2 per week

Henry: $y = 80 - 5x$

Garek:

Time (weeks)	Amount of Money Remaining
2	59
5	35
7	19

Roslyn:



a. Who starts with the most money?

b. Who is spending his/her money at the fastest rate?

c. Who will run out of money first at the current rate of spending?

7. Jack, George, Lucy, and Anna are playing games on their iPads. The representations below show the battery life remaining on each child's iPad over time. (Note variables: x = time in hours, y = battery life

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Name: _____ Class: _____ Date: _____

Day 9 Solving Equations Involving Distributive Property

Recall: Simplify each expression.

a) $3(4x-1)$

b) $\frac{1}{2}(6+10x)$

c) $(-5x+8)3$

d) $5x+7x-x$

e) $2x-6x$

f) $-4(2x+9)+3x$

Steps for Solving an Equation Involving Distributive Property and Combining Like Terms:

1) Distribute (if possible).

2) Combine like terms (if possible).

3) Continue to solve.

Example 1: *Solve each equation. Show your work.*

a) $5(2x+4)=30$

$10x+20=30$

$-20\quad -20$

$\frac{10x}{10}=\frac{10}{10}$

$x=1$

b) $3x-9x=42$

$\frac{-6x}{-6}=\frac{42}{-6}$

$x=-7$

c) $\frac{2}{3}(3x-12)-5x=-20$

$2x-8-5x=-20$

$-3x-8=-20$

$+8\quad +8$

$\frac{-3x}{-3}=\frac{-12}{-3}$

$x=4$

d) $4(x+1)-(5x-2)=3$

$4x+4-5x+2=3$

$-x+6=3$

$-6\quad -6$

$\frac{-x}{-1}=\frac{-3}{-1}$

$x=3$

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Try: *Solve each equation. Show your work.*

a) $-3(x+1)=27$

b) $5x-x=-52$

c) $\frac{3}{2}(2x+6)-9x=15$

d) $-2(x-3)-(x+8)=-2$

Example 2: *Use the Five-Step Method to solve each word problem.*
Deborah finds some beautiful frames at a craft store. They are each marked $3 off. She buys 5 of them and spends $22.45. Determine the original price of a frame, assuming they each cost the same amount.

x=original price of a frame
5(x-3)=22.45
x=7.49
Each frame was originally $7.49.
5(7.49-3)=22.45
22.45=22.45

Five-Step Method	
D	Define the variable.
E	Write the equation.
S	Solve the equation.
A	Answer the question.
C	Check your answer.

Try: John and his mom are assembling "goodie bags" for his 8 friends to take home after his birthday party. They fill each bag with the same amount of candy. Based on the amount of leftover candy, they add an extra two pieces into each bag. If there are a total of 104 pieces used, how many pieces of candy were originally placed in each bag?

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Name: _____ Class: _____ Date: _____

Day 9

Solving Equations Involving Distributive Property Practice

For 1-9, solve each equation. Show your work.

1) $-5(e+2)=-20$

2) $3(2a-5)=48$

3) $\frac{2}{3}j-\frac{1}{6}j=-4$

4) $12=-4b-2b$

5) $-(-3f+1)+5=-32$

6) $-5(-2c-1)-c=23$

7) $\frac{2}{3}(9d-3)-2d-1=1$

8) $2(4h-5)+6(-h+2)=2$

9) $3(3g+8)-(4g+2)=37$

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10) Louise has already purchased new books for each her three children. After she buys them each one more, she has purchased a total of 15 books. Use the 5-Step Method to determine how many books she originally bought for each child, assuming they were each given the same number of books.

11) Select the expression that does not belong.

a. $\frac{4}{5}(5x-10)$

b. $4x-5-3$

c. $-2(-2x+1)-6$

d. $2(2x-3)-14$

12) Select the equation that does not belong.

a. $2(4x-1)=6$

b. $3x-7x=4$

c. $\frac{2}{3}(3x+3)=4$

d. $x-2x=-1$

13) Identify the error. Then solve the equation correctly.

$$-\frac{2}{3}(3x-6)=8$$
$$-2x-4=8$$
$$\underline{+4\ \ +4}$$
$$\underline{-2x}=\underline{12}$$
$$-2\ \ -2$$
$$x=-6$$

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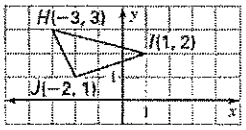
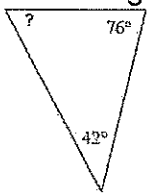
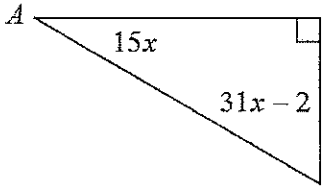
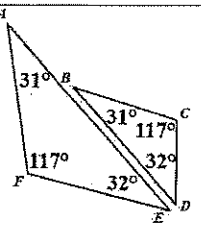
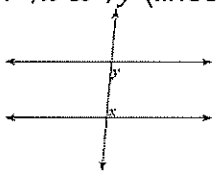
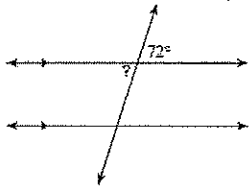
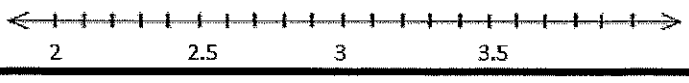
Name: Class: **8th Grade Cumulative Review Day 10**

Day 10	Day 10
What would be the coordinated of point J be after a dilation of 2.5? 	A triangle with vertices (0,0), (5,3), (10,1) is dilated with a center of dilation at the origin by a factor of 5. What are the new vertices?
Find the missing angle: 	Find the measure of $\measuredangle A$: 
$\Delta APE \sim \Delta TOM$. In ΔTOM, $\measuredangle T = 75°$ and in ΔAPE $\measuredangle P$, $= 97°$. *Find the measure of* $\measuredangle M$. **Extra Credit Problem**	Write a similarity statement that matches these triangles. 
Identify the relationship of $\measuredangle x$ & $\measuredangle y$ (lines that appear parallel are): 	Determine the missing angle: 
Simplify using exponent rules $2^3 \cdot 2^4$ ____ $\quad \frac{3^9}{3^5}$ ____ $(5^8)^3$ ____ $\quad \left(\frac{1}{2}\right)^{-3}$ ____	Simplify using exponent rules $3^{x+2} \cdot 3^x$ ____ $\quad \frac{4^{2x-2}}{4^x}$ ____ $(2^3)^{4x-1}$ ____ $\quad \left(\frac{1}{4}\right)^{-3}$ ____
Add the following. Write your answer in standard notation. $62{,}591 + 7.1 \text{ X } 10^{-2}$	Divide the following. Put your answer in scientific notation. $(77) \div (4.9 \text{ X } 10^6)$
What two integers does $\sqrt{60}$ fall between? A) 7 and 8 B) 8 and 9 C) 9 and 10 D) It's exactly 30	Which of the following numbers can be rewritten as a fraction? $5.8, 4\frac{1}{2}, \sqrt{36}, 9.\bar{2}, \sqrt{20}$
Place the following numbers on the number line. $(A) 2.83, \quad (B) 3\frac{1}{2}, \quad (C) \sqrt{16}, \quad (D) 2.\overline{76}, \quad (E) \sqrt{10}$ 	

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8th

Name: _____ Class: _____ Date: _____

Key 10

Introduction to Scientific Notation

Scientific Notation – notation used to represent numbers that are really large or really small

Form: $a \times 10^b$, where $1 \leq a < 10$ and b is an integer.

Example 1: *Convert between scientific notation and standard form.*

a) 3.5×10^7

35,000,000

(Move the decimal 7 places to the right.)

b) 7×10^{-4}

0.0007

(Move the decimal 4 places to the left.)

c) 0.0086

8.6×10^{-3}

d) 1,050,000

1.05×10^6

Try: *Convert between scientific notation and standard form.*

a) 4.04×10^{-2}

b) 5×10^4

c) 250,000

d) 0.000071

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Example 2: *Consider the data then complete the tasks.*

The population of Texas is approximately 30,000,000 people, and the population of Delaware is approximately 1,000,000 people.

a) Represent the population of Texas as a number written in scientific notation.

3×10^7

b) Represent the population of Delaware as a number written in scientific notation.

1×10^6

c) Determine how many times greater the population of Texas is compared to the population of Delaware. Show or explain your answer.

The population of Texas is about 30 times greater than the population of Delaware.
3 is 3 times greater than 1. 10^7 is 10 times greater than 10^6. $3 \times 10 = 30$

Try: *Consider the data then complete the tasks.*

Venus is approximately 40,000,000 km from Earth, and Neptune is approximately 4,000,000,000 km from Earth.

a) Represent the distance between Earth and Venus as a number written in scientific notation.

b) Represent the distance between Earth and Neptune as a number written in scientific notation.

c) Determine how many times greater the distance between Earth and Neptune is compared to the distance between Earth and Venus. Show or explain your answer.

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Key 10

Introduction to Scientific Notation Practice

For 1-9, convert between scientific notation and standard form.

1) 5×10^3

2) 14,000

3) 0.006

4) 7.2×10^{-2}

5) 105,000

6) 8×10^{-6}

7) 0.000404

8) 4.33×10^2

9) 920,000,000

For 10-12, consider the data then complete the tasks.

10) A zebra can reach a top speed of about 40 mph, and a sloth travels at a speed of about 0.2 mph. Write each number is scientific notation. Then determine how many times faster the zebra is. Show or explain.

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11) Evelyn started an online business. The profit in year one was $300. Her profit last year was $90,000. Write each number in scientific notation. Then determine how many times greater last year's profit was compared to her first year. Show or explain.

12) An architect builds a model of a new skyscraper. The height of the model is 0.4 m, and the height of the actual building will be 200 m. Write each number in scientific notation. Then determine how many times greater the height of the actual building will be compared to the model.

For 13-14, order from least to greatest.

13) 7×10^{3}, 3×10^{-3}, 7×10^{-3}, 3×10^{7}

14) 5×10^{-5}, 5×10^{5}, -5×10^{-5}, -5×10^{5}

15) Match each scenario with the appropriate value.

_____ a) number of students in a school (#)	I) 8×10^{-1}
_____ b) cost of college ($)	II) 6×10^{2}
_____ c) value of coins found in a couch ($)	III) 1×10^{4}
_____ d) population of a town (#)	IV) 2×10^{5}

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