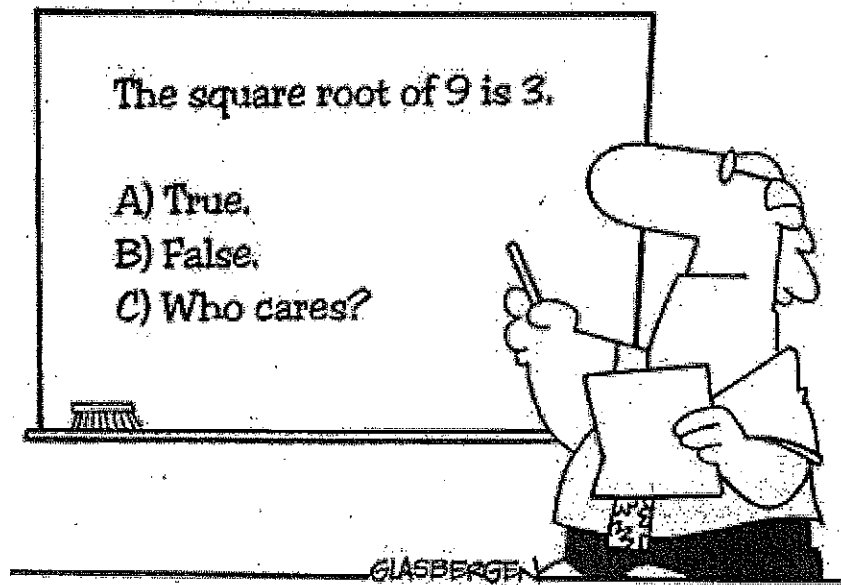
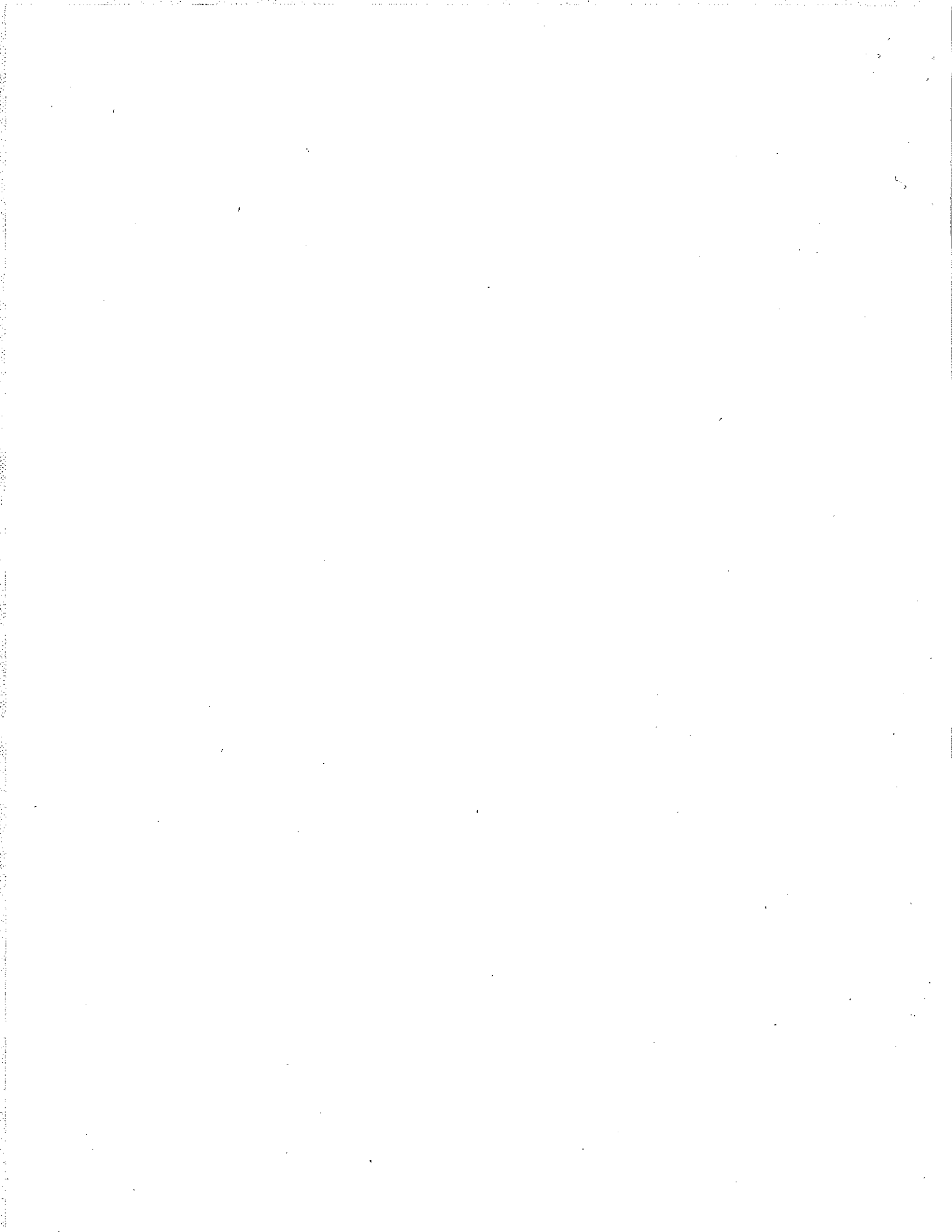


Math 8

Midterm Review

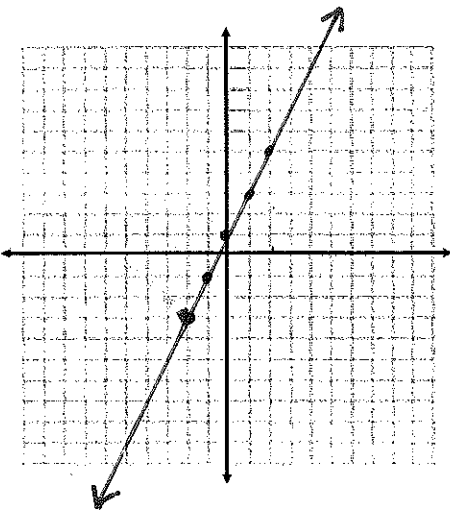


**Many students actually look forward
to Mr. Atwadder's math tests.**

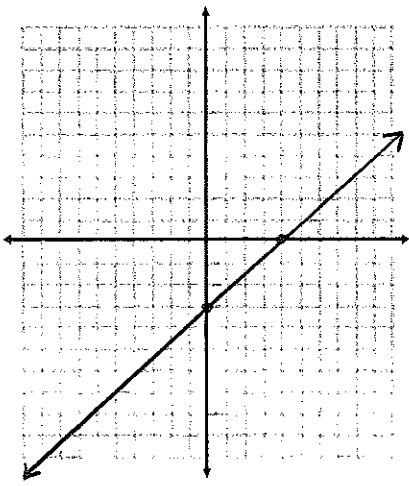


Fill in all the missing pieces for each line. Use the information provided as clues for all the rest of the parts.

1.

Table		Data Points	Graph
x	y	(_____ , _____) and (_____ , _____)	
-2	-3	Equation	
-1	-1	$y = 2x + 1$	
0	1	Slope and y-intercept	
1	3	m = <u>2</u> b = <u>1</u>	
2	5		

2.

Table		Data Points	Graph
x	y	(<u>0</u> , <u>-3</u>) and (<u>4</u> , <u>0</u>)	
		Equation	
		$y = \frac{3}{4}x - 3$	
		Slope and y-intercept	
		m = <u>$\frac{3}{4}$</u> b = <u>-3</u>	
		$\frac{\Delta y}{\Delta x} = \frac{-3}{-4}$	

3.

Table		Data Points	Graph
x	y	(_____ , _____) and (_____ , _____)	
		Equation	
0	6	$y = -1x + 6$	
		Slope and y-intercept	
1	5	$m = \underline{-1}$ $b = \underline{6}$	
2	4		
3	3		
4	2		

4.

Table		Data Points	Graph
x	y	(_____ , _____) and (_____ , _____)	
		Equation	
5	4	$y = \frac{1}{2}x + 1\frac{1}{2}$	
		Slope and y-intercept	
6	4.5	$m = \underline{\frac{1}{2}}$ $b = \underline{1.5}$	
7	5		
8	6.5		
9	6		

0 1.5
1 2
2 2.5
3 3
4 3.5

5.

Table		Data Points	Graph
x	y	(2, -4) and (4, -8)	
		Equation	
0	0	$y = -2x$	
		Slope and y-intercept	
1	-2	$m = \underline{-2}$ $b = \underline{0}$	
2	-4	$\frac{\Delta y}{\Delta x} = \frac{-4 - 0}{2 - 0} = \frac{-4}{2} = -2$	

Decide from the given table whether a linear, inverse variation, or neither relationship is represented. Explain your reasoning.

6.

x	1	2	4	6	8
y	2	1	6	4	3

 Explain

- Circle One: Linear
 Inverse Variation
 Neither

the product of x and y is always the same thing

$$xy = 24 \quad \text{or} \quad y = \frac{24}{x}$$

7.

x	5	6	7	8	9
y	10	1	1	1	2

 Explain

- Circle One: Linear
 Inverse Variation
 Neither

y-values does not go up by the same amount each time

as x increases so does y

8.

x	5	10	15	20	25
y	10	20	30	40	50

 Explain

- Circle One: Linear
 Inverse Variation
 Neither

x and y increase at a constant rate

$$y = 2x$$

$$\frac{10}{5} = 2 \quad y = 2x + b$$

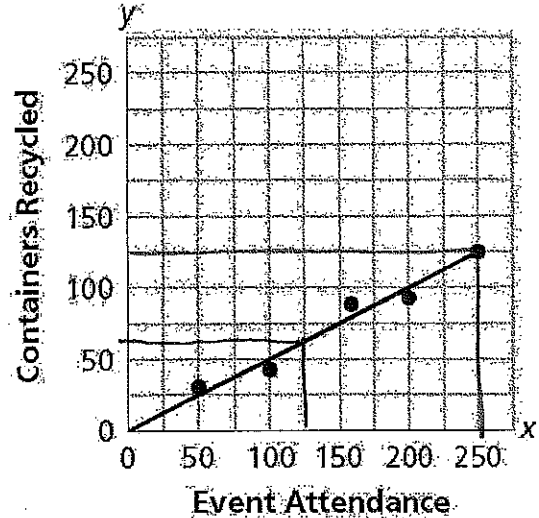
$$(5, 10) \quad 10 = 2(5) + b$$

$$10 = 10 + b$$

$$0 = b$$

Complete the following.

11. At Metropolis Middle School the student government earns money by recycling cans and bottles at after school events. Some sample (attendance, containers) data are shown in the graph below, along with a line modeling the pattern in the data.



a. Write an equation of the line shown.

Equation: $y = \frac{1}{2}x$

$(0, 0) (250, 125)$

$\frac{125}{250} = \frac{1}{2}$

b. Explain what the values for m and b in your equation tell about the relationship between the number of containers to be recycled and attendance at the school event.

Explanation for m (slope): m states how many containers are recycled per person attending the event

Explanation for b (y-intercept): how many containers are recycled when 0 people attend the event

c. Using either the graph or your equation answer the following questions?

1. About how many containers will be recycled if 125 people attend a chorus concert? Explain using words, numbers, and/or diagrams.

$\frac{50 + 75}{2}$

62.5 containers

2. What attendance at a basketball game will produce about 125 containers to be recycled? Explain using words, numbers, and/or diagrams.

250 people

12. A group of Metropolis Middle School students volunteered to work all day helping to build a new city playground. A local pizzeria offered to supply twelve large pizzas for their lunch. The volunteers share the pizza equally (So if one volunteers comes then they get all twelve pizza to themselves, if two volunteers come then they each get six pizzas, and so on).

- a. Complete the following table showing how the amount of pizza for each volunteer depends on the number of volunteers.

Number of Volunteers	1	2	4	8	16	32
Number of Pizzas per Volunteer	12	6	3	1.5	.75	.375

- b. Is the relationship between the amount of pizza per volunteer and the number of volunteers linear, inverse, or some other pattern? Give an explanation justifying your answer.

Circle One: Linear Inverse Neither

Explain:

$$xy = 12$$

$$x = \frac{12}{y}$$

$$y = \frac{12}{x}$$

$$P = \frac{12}{n}$$

- c. Write an equation relating amount of pizza per volunteer P to the number of volunteers n.

Equation: $P = 12/n$

- d. Find the amount of pizza per volunteer if there are 12 volunteers.

1 pizza/volunteer

13. At Midtown Bowling Center, the cost to bowl four games is \$8.40, and the cost to rent shoes is \$1.15.

- a. Write an equation for the cost, C, for renting shoes and bowling n games.

- b. What is the y-intercept for your equation?

1.15

What does it represent?

Cost before you bowl

$$\frac{8.40}{4} = 2.10 \text{ per game}$$

- c. What is the slope of your equation?

2.10

What does it represent?

Cost/game

- d. What is the cost of renting shoes and bowling six games?

$$1.15 + 6(2.10) = \$13.75$$

- e. Tony paid \$7.45 for his games and shoe rental. How many games did Tony bowl?

$$7.45 = 2.10x + 1.15$$

$$6.30 = 2.10x$$

$$3 = x$$

3 games

14. Two charter bus companies offer different pricing plans for a one-day school field trip. Badger Bus Line charges \$75 for the driver and \$1.25 per mile for the bus. Hawkeye Express charges \$100 for the driver and \$0.85 per mile for the bus.

- a. Write an equation showing how the cost of using each company c will depend on the length of the field trip x in miles.

Badger Bus Line equation: $C = 75 + 1.25x$

Hawkeye Express equation: $C = 100 + 0.85x$

- b. Use the above information to answer the following questions. Show all your calculations.

1. For what distance will the cost of using Badger Bus Line be \$250?

$$250 = 75 + 1.25x \quad 140 \text{ miles}$$

2. What will a 250 mile trip cost if Hawkeye Express bus is used?

$$C = 100 + 0.85(250) \quad \$312.50$$

3. For what trip lengths can the school use Badger Bus Line if they have at most \$300 to spend on transportation? Represent your answer as an inequality.

180 miles or less

$$75 + 1.25x \leq 300$$

$$x \leq 180$$

15. Toothpicks were used to make the pattern below. Use this pattern to answer the following questions.



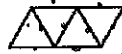
1st
3



2nd
5



3rd
7



4th 9

11 13

- a. How many toothpicks will be in the 5th figure?

11

- b. How many toothpicks will be in the 6th figure?

13

- c. How many toothpicks will be in the 23rd figure?

47

- d. What number figure would take 61 toothpicks to make?

30

- e. Describe the pattern for this toothpick problem in words.

each new figure adds 2 toothpicks

x	y
0	3
1	5
2	7
3	9
4	11
5	13
6	15

- f. Write an equation for the number of toothpicks t needed to make the n th figure.

$$61 = 2x + 1$$

$$60 = 2x$$

$$30 = x$$


Equation:

$$y = 2x + 1$$

LFP Practice – How much do you remember?

Name _____

1. A square has an area of 36 square units. What is the length of a side?

 $A = 36$ $\sqrt{36} = 6 \text{ units}$

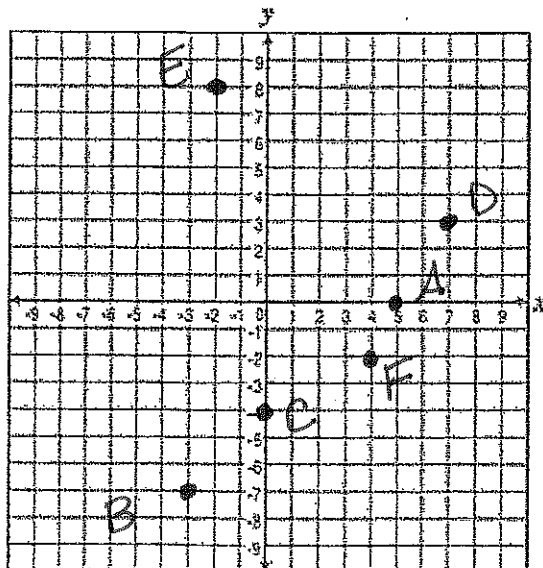
2. A square has an area of 30 square units. What is the length of a side?

 $A = 30$ $\sqrt{30} \text{ units}$
 5.47

3. A square has an area of 144 square units. What is the perimeter of the square?

 $A = 144$ Side 12.4 48 units
 12

- 4.



Graph the points:

A(5,0)

B(-3,-7)

C(0,-4)

D(7,3)

E(-2,8)

F(4,-2)

Pythagorean Theorem practice problems

Find the length of the hypotenuse.

1. $4^2 + 5^2 = c^2$ $16 + 25$ $c^2 = 41$

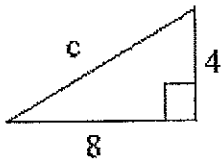
$c = \sqrt{41}$ 6.4

2. $7^2 + 2^2 = c^2$ $49 + 4$ $c^2 = 53$

$c = \sqrt{53}$ 7.28

Find the length of the third side of each right triangle.

3.



$4^2 + 8^2 = \sqrt{80}$

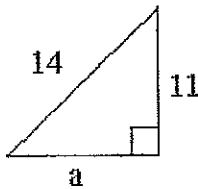
$c = \sqrt{80}$

8.94

$c = \sqrt{16 \cdot 5}$

$c = 4\sqrt{5}$

4.



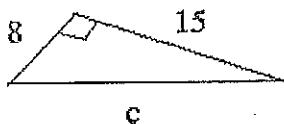
$14^2 - 11^2 = a^2$
 $75 = a^2$

$a = \sqrt{75} = \sqrt{25 \cdot 3}$

$a = 5\sqrt{3}$

8.66

5.



$8^2 + 15^2 = c^2$
 $289 = c^2$

$c = 17$

Find the length of the side not given when the hypotenuse is c and the legs are a and b.

6. $a = 10, b = 24$ $10^2 + 24^2 = \sqrt{676}$

$c = 26$

7. $a = 9, c = 13$ $13^2 - 9^2 = \sqrt{88}$

$b = 2\sqrt{22}$ 9.38

8. $b = 18, c = 30$ $30^2 - 18^2 = \sqrt{576}$

$a = 24$

9. $a = 5, b = 12$ $5^2 + 12^2 = \sqrt{169}$

$c = 13$

10. $a = 6, c = 10$

$10^2 - 6^2 = \sqrt{64}$

$b = 8$

Name: _____

GGG Common Assessment Review

1. The side of a square measures 2.2 cm. What is the area of the square?

$$2.2^2$$

$$4.84 \text{ cm}^2$$

2. The edge length of a cube is 7 in. What is the volume of the cube?

$$7^3 = 343 \text{ in}^3$$

3. Write 8^4 in expanded form.

$$8 \cdot 8 \cdot 8 \cdot 8$$

4. Write 0.000093218 in scientific notation.

$$9.3218 \cdot 10^{-5}$$

5. Write 987,000,000,000 in scientific notation.

$$9.87 \cdot 10^{11}$$

6. Write $7,8422 \times 10^{-6}$ in standard form.

$$.0000078422$$

7. Write 4.21011×10^4 in standard form.

$$42101.1$$

8. Simplify x^7/x^3

$$x^4$$

9. Simplify $a^4 \cdot a^2$

$$a^6$$

10. Simplify y^{-7}

$$\frac{1}{y^7}$$

11. What is the starting point (y-intercept) and growth factor in the following equation: $y = 8.1 \cdot 1.5^x$

8.1 starting pt.

1.5 growth factor

12. You deposit \$350 in a bank account that earns 3% annual compound interest. What is the balance in your account after 5 years?

$$y = 350(1.03)^5$$

\$405.75

13. A car costs \$21,435. Each year the car depreciates (decreases in value) by 8%. How much will the car be worth after 10 years?

1-.08

.92

$$21435(.92)^{10}$$

\$9311.12