

Name \_\_\_\_\_

## Summer Work for Geometry Part 1

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## Algebra Review – NO CALCULATOR

Simplify

1.  $3x - 7x - 11y - 13y$

2.  $2x - [6 - 4(2x - 3)]$

3.  $(4x^3 - 2x^2 + 5x - 3) - (7x^3 + 2x^2 - 3x - 5)$

4.  $(x^3y^2)(x^8y)$

5.  $(x + 7)(4x - 9)$

Factor completely.

6.  $x^2 + 8x + 12$

7.  $x^2 - 64$

8.  $x^2 - 14x - 32$

9.  $4t^2 + 20t + 25$

Solve. Be sure to show all work.

$$10. \frac{3}{x} = \frac{5}{7}$$

$$11. \frac{9}{x} = 3$$

$$12. 3x - 7 = 4$$

**Algebra Review – CALCULATOR ALLOWED**

13. Evaluate:  $(-25) \cdot (8) + 74 \div (-4)$

14. If apples cost \$1.49 per pound, and you paid \$3.54, how many pounds of apples did you purchase?

15. Solve for x.

$$6x + 10 = 9x + 6$$

16. Arrange the following numbers from least to greatest.  
0.5600, 0.5606, 0.57, 5.7, 0.056

17. Bryan has  $\frac{2}{3}$  of a project completed while Annie has finished  $\frac{5}{7}$  of the same project. Who has completed the greater amount of work?

18. Which property is illustrated by the following statement?

$$8 \cdot (6 \cdot 5) = (8 \cdot 6) \cdot 5$$

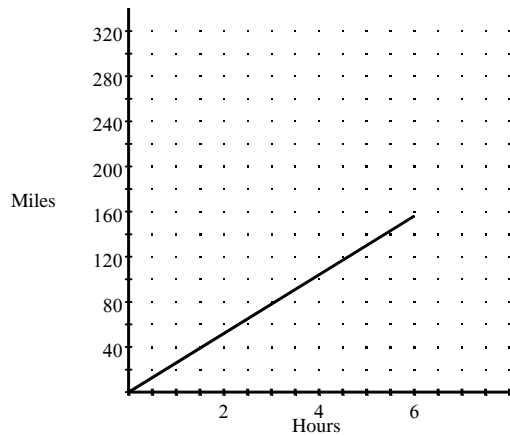
- [A] Associative Property of Addition
- [B] Commutative Property of Multiplication
- [C] Associative Property of Multiplication
- [D] Commutative Property of Addition

19. Which property is illustrated by the following statement?

$$10 \cdot 0 = 0$$

- [A] multiplication property of one
- [B] commutative property of multiplication
- [C] multiplication property of zero
- [D] associative property of multiplication

20. The figure below represents the distance traveled by a car in 6 hours. Find the speed of the car.



21. Sarah is buying new silverware. Each place setting, which consists of a fork, knife, and spoon, comes in a box that is 2 inches wide, 1.5 inches high, and 6 inches long. If Sarah ordered 16 place settings, what is the smallest possible volume of a large box that will fit all 16 sets?

22. Use the formula  $C = p + r \cdot p$  to find the total cost of a purchase, where  $C$  is the total cost,  $p$  is the price, and  $r$  is the sales tax rate written as a decimal.

A pair of shoes costs \$79.99. The sales tax rate is 7%.



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Have a great summer, and I will see you all soon!

## Algebra Review – NO CALCULATOR

Simplify

1.  $x^2 - 8x + 7 = 0$

2.  $|3x - 9| = 12$

3.  $-3 \leq x + 5 < 9$

Write an equation of the line that fits the given information.

4. slope of 5 and y-intercept of 9

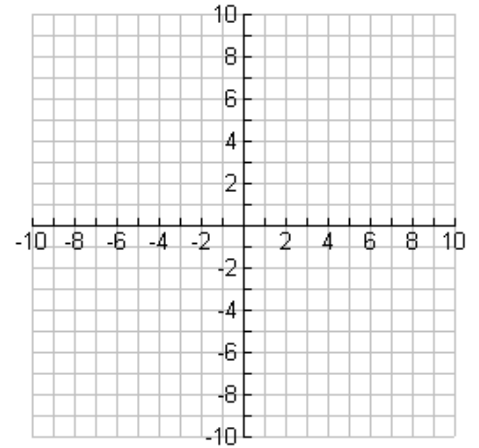
5. containing the point  $(2, 4)$  with slope  $\frac{2}{3}$

6. y-intercept  $(0, 2)$  and parallel to  $y + 4x = 11$

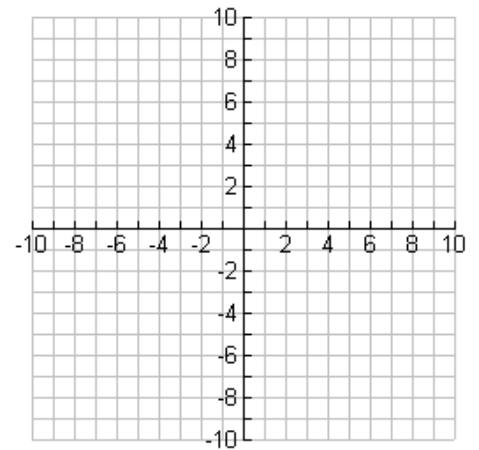
7. containing the points  $(2, 13)$  and  $(6, 3)$

Graph the following equations without using a calculator.

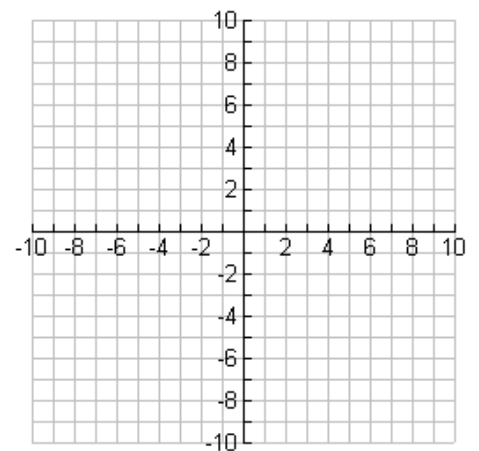
8.  $y = 2x - 6$



9.  $3x + 5y = 15$



10.  $y = x^2 - 3$



11. Rewrite using only positive exponent.

$$-7p^{-4}(q^2t^{-1})^{-2}$$

12. Find the absolute value.

$$|-5+2|$$

13. Simplify.

$$|2+9| - |-6-7| + 10$$

**Algebra Review – CALCULATOR ALLOWED**

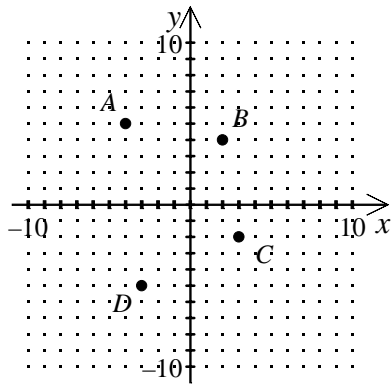
14. The temperature on a summer afternoon is  $83^{\circ}\text{F}$ . Convert this temperature to degrees Celsius.  
*You will need to look up the formula for converting from  $^{\circ}\text{F}$  to  $^{\circ}\text{C}$ .*

15. Evaluate  $\frac{p}{q} + 3p$ , for  $p = -21$  and  $q = 7$

16. Solve for  $x$ .

$$4(-8 - 3x) = -44$$

17. Name the coordinates of the points  $A$ ,  $B$ ,  $C$ , and  $D$ .



18. Define a variable and write an equation for the situation. Then solve.

A customer went to a garden shop and bought some potting soil for \$12.50 and 6 shrubs. If the total bill was \$71.00, what did each shrub cost?

19. Write and solve an equation for the situation.

A disposable camera manufacturer spends \$2250 each day for overhead expenses plus \$9 per camera that it manufactures for labor and materials. The cameras sell for \$15 each. How many cameras must the company sell in one day to equal its daily costs?

20. The sum of three consecutive *even* integers is 108. What are the integers?

21. Solve the inequality.

$$-\frac{9}{20}z \leq \frac{19}{10}$$



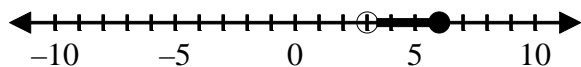
22. Solve the inequality.

$$8b - 10 \leq 9b + 15$$

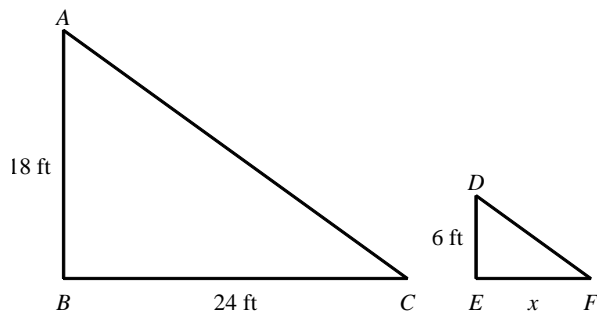
23. Solve the proportion.

$$\frac{x - 3}{8} = \frac{4}{9}$$

24. Write a compound inequality that the graph could represent.



25. The following figures are similar. Find the missing length (x).



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## Summer Work for Geometry Part 3

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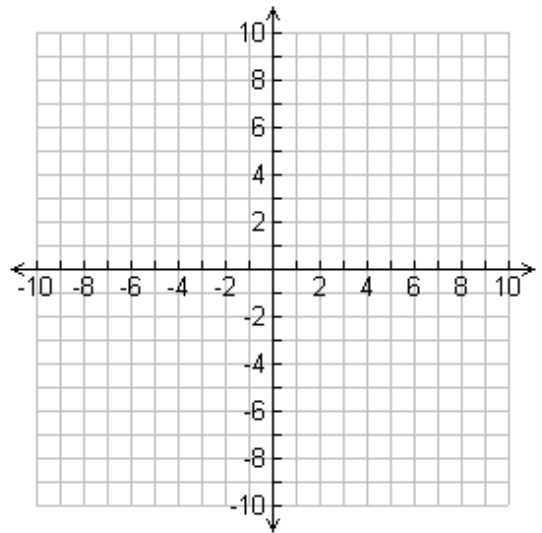
## Algebra Review – Calculators Allowed

1. Write an equation to model the question and solve.

17 is what percent of 38?

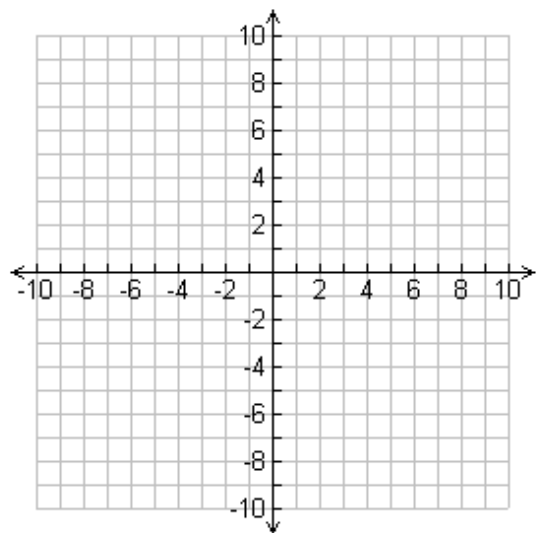
2. Graph the function.

$$y = 0.2x - 4$$



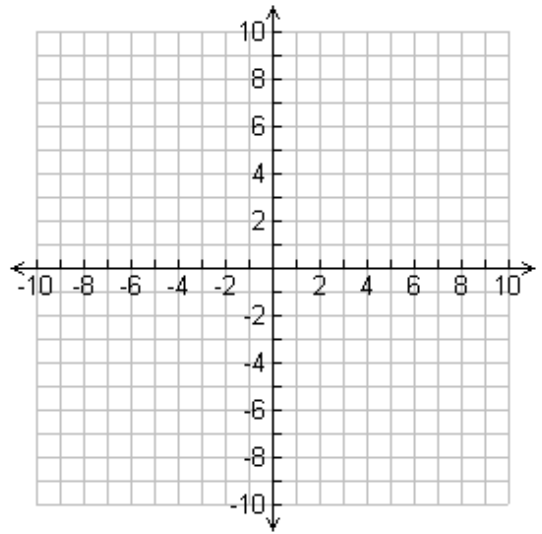
3. Graph the function.

$$3x + 2y = 12$$



4. Graph the function.

$$\frac{1}{2}(x + 4) = y + 3$$



5. The distance a spring will stretch  $x$  varies directly with a weight  $W$  attached to the spring. If a spring stretches 4.4 inches with 40 pounds attached, how far will it stretch when 90 pounds is attached?

6. Find the slope of the line that passes through the pair of points.

(8, 5) and (2, 9)

7. Find the slope and y-intercept of the equation.

$$6x - 3y = 36$$

8. Solve by elimination.

$$2x - y = -3$$

$$4x + y = 15$$

9. Solve by substitution. Do you reach the same answer as in problem 8?

$$2x - y = -3$$

$$4x + y = 15$$

10. Tickets to a local movie were sold at \$3.00 for adults and \$1.50 for students. There were 540 tickets sold for a total of \$1305.00. Solve by elimination to find the number of adult tickets sold and the number of student tickets sold.

11. Evaluate the expression for  $x = 2$  and  $y = -4$ .

$$\frac{1}{2^{-2}x^{-3}y^5}$$

12. Astronomers measure large distances in light-years. One light-year is the distance that light can travel in one year, or approximately 5,880,000,000,000 miles. If a star is 13.1 light-years from Earth, which expression in scientific notation correctly represents how far the star is from Earth?

13. Simplify the expression.

$$-4x^3 \cdot 2y^{-2} \cdot 5y^5 \cdot x^{-8}$$

14. Write the expression with only one exponent.

$$\frac{8a^9}{125a^6}$$

15. Use the quadratic formula to solve the equation. If necessary, round answers to the nearest hundredth. Remember, there may be two answers required.

$$3x^2 + 2x - 4 = 0$$

16. For the values given,  $a$  and  $b$  are legs of a right triangle, and  $c$  is the hypotenuse. Find the length of the missing side of the right triangle. If necessary, round to the nearest hundredth.

$$b = 11, a = 14.25$$

**Applied Problems – Calculators Allowed**

17. At 11 am, a 20 foot tall pole casts a shadow 8 feet long. At the same moment, a nearby building casts a shadow 20 feet long. How tall is the building?

18. The area of a rectangle is 63 square feet. The width of the rectangle is two feet longer than its length. Find the width and length of the rectangle.



19. A rectangle has width  $x$  and length  $x + 2$ .

a. Write an expression for its perimeter.

b. Write an expression for its area.

20. A football team has won 4 out of 7 games. If there are 16 games in the season, how many more games must be won to give the team a season record of at least 60% games won out of all the games played?

21. A certain model airplane is  $\frac{1}{48}$  of the airplane's actual size. The length of the model airplane's wing is  $\frac{3}{4}$  ft. How long is the airplane's wing?

22. Multiply

$$\frac{x^2 - 81}{4x} \cdot \frac{7x}{x + 9}$$

23. Solve for x.

$$x^2 + 5^2 = 10^2$$

24. Find the area of a circle with a diameter of 82 kilometers.

25. What is the length of the diameter of a circle that has a circumference of 24 cm?

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**Section III: Reasoning – CALCULATOR NOT NEEDED (DON'T USE)**

1. Six students attended a class party and ate a variety of foods. Something caused them to become ill. John Q. Public ate pizza, hamburgers, and tacos and became ill. Homer T. Odyssey ate hamburgers and tacos but not pizza. He became ill. L. J. Horner ate pizza but neither hamburgers nor tacos and felt fine. L. B. Peep didn't eat anything and also felt fine. J. Spratt ate pizza and tacos but no hamburgers and became ill. James T. Kirk ate hamburgers and tacos but stayed away from the pizza. He also got sick. What food probably caused the illness? Be sure to explain your reasoning.

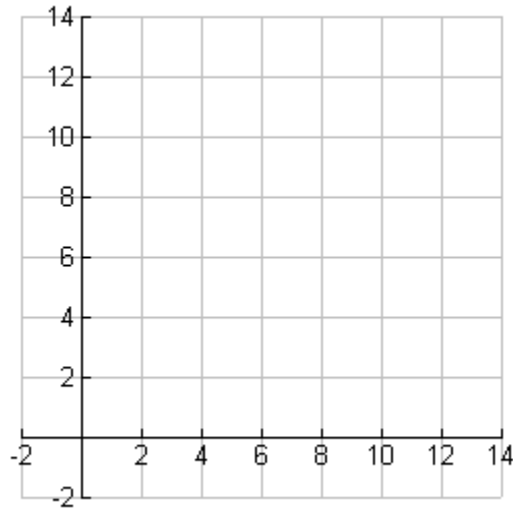
2. At 8 a.m., you place a certain amount of bacteria on a slide. Every hour, the area covered by the bacteria doubles. By 5 p.m., the slide is covered with bacteria. Area of the slide is  $2 \text{ cm}^2$ . At what time was half the slide covered with bacteria?

3. You line up six friends from tallest to shortest, in order from left to right: Andy, Beatrice, Colin, Danielle, Ernie, and Florence. When you leave the room, however, the six friends decide to mix up the order they're standing in. They lock the door to the room and tell you that you can't come back in unless you can guess what order they're standing in now. They give the following hints:
- a. No one is standing in the place he or she was standing in to begin with.
  - b. Ernie is immediately to the right of Beatrice.
  - c. Neither Danielle nor Florence is standing third from the left.
  - d. Ernie is to the left of Andy and Colin is immediately to the right of Andy.
  - e. Florence is to the left of Danielle.
  - f. A girl is standing in the second place from the right.
- In what order are they standing now?

4. You are given  $x$ - and  $y$ -coordinates for 14 points.

$A(1, 5)$	$B(2, 2)$	$C(2, 8)$	$D(3, 1)$	$E(3, 9)$
$F(6, 0)$	$G(6, 10)$	$H(7, -1)$	$I(7, 11)$	$J(9, 1)$
$K(9, 9)$	$L(10, 2)$	$M(10, 8)$	$N(11, 5)$	

a. Graph each point.



b. Most of the points fit a pattern. Which points do not?

c. Describe the figure that fits the pattern.

5. In your new geometry notebook, write down the formulas for the following with diagrams:

- |                                       |   |
|---------------------------------------|---|
| a. Perimeter and area of a square     | k. Lateral area, surface area and volume of a right prism     |
| b. Perimeter and area of a rectangle  | l. Lateral area, surface area and volume of a right cylinder  |
| c. Area of a parallelogram            | m. Lateral area, surface area and volume of a regular pyramid |
| d. Area of a triangle                 | n. Lateral area, surface area and volume of a right cone      |
| e. Area of a trapezoid                | o. Surface area and volume of a sphere                        |
| f. Area of a regular polygon          |   |
| g. Area of a rhombus                  |   |
| h. Circumference and area of a Circle |   |
| i. Length of an arc of a circle       |   |
| j. Area of a sector                   |   |

You may do this on lined paper, plain paper, graph paper, or type it. Your new textbook can help!