

8TH GRADE MATH FINAL EXAM STUDY GUIDE

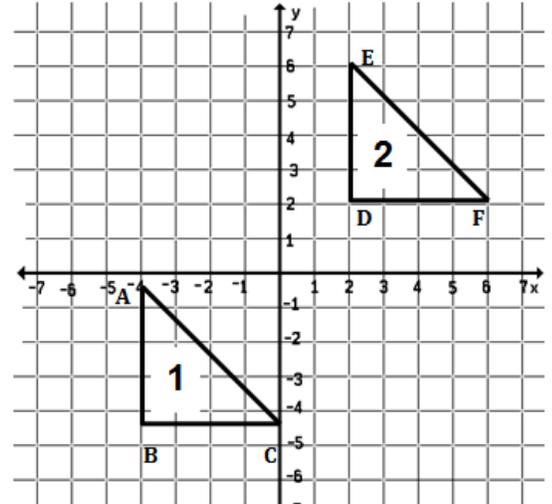
Name: _____

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Unit 1: Transformations, Congruence and Similarity STUDY GUIDE

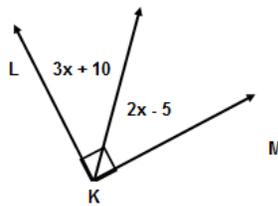
Use the coordinate plane picture below for questions 1–3.

- Describe the series of transformations that occur from triangle 1 to triangle 2 in the image above.
- If triangle 2 is rotated 90° clockwise about the origin, what will be the coordinates of the new triangle?
- If you reflect triangle 1 across the x-axis, what will be the coordinates of the new triangle?
- A square is translated using the rule $(x - 4, y + 2)$. Describe the movement of the square on the coordinate plane as a result of the translation.



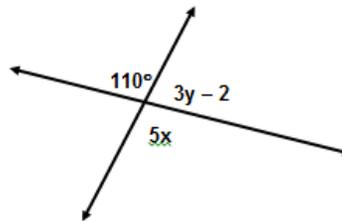
- Solve for x when $m\angle LKM = 90$.

$x =$ _____



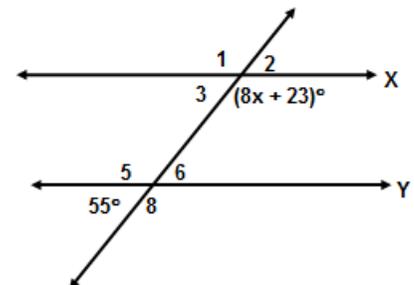
Use the image to answer questions 6–7.

- Solve for x , $x =$ _____
- Solve for y , $y =$ _____



Given that $X \parallel Y$ use the figure below to answer questions 8 - 11.

- What is the measure of $\angle 8$?
- What is the measure of $\angle 3$?
- What is the angle relationship between $\angle 1$ and $\angle 5$?
- Use the information given in the figure to determine the value of x .



Unit 2: Equations & Exponents

Directions: 1. Solve each problem. 2. Show ALL Work! 3. Check Your Work!

12. Solve: $3(x - 4) = 15$
13. Solve: $8(x - 10) + 2(x + 60) = 0$
14. Solve: $\frac{1}{5}x + 3 = 10$
15. Solve: $-4(-3x + 5) = 30 + 2x$
16. Solve: $3(2y - 4) = 8y + 9 - 9y$
17. Solve: $x^2 - 12 = 13$
18. Solve: $x^3 - 6 = 44$
19. Solve: $7(2x - 2) = 9x - 18 + 5x$

20. Label each of the following as **rational or irrational**?

$\sqrt{121}$ $\sqrt{2}$ π $\sqrt{50}$ 1.3 $\sqrt{10}$ $\frac{3}{7}$ 0.27

#21 - #28: Simplify. Leave your answer expressed as an exponent:

21. $40^{15} \times 40^2$

22. $(5^7)^6$

23. $\frac{12^8}{12^3}$

24. 99^0

25. 4^5

26. $3^8 \times 9^8$

27. 3^{-7}

28. $2^{10} \cdot 2^3$

29. Write the number 4.765×10^5 in standard form.

30. Write the number 8.987×10^{-4} in standard form.

31. Express the number 42,600,000 in scientific notation.

32. Express the number 0.00453 in scientific notation.

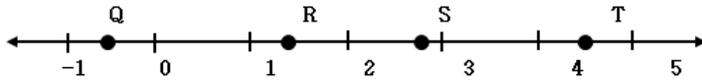
33. Calculate $(2.45 \times 10^4) \times (3.2 \times 10^2)$. Express your answer in scientific notation.

34. Calculate $(4.2 \times 10^9) \div (2.1 \times 10^2)$. Express Your answer in scientific notation.

35. Label each of the following as **rational or irrational** ?

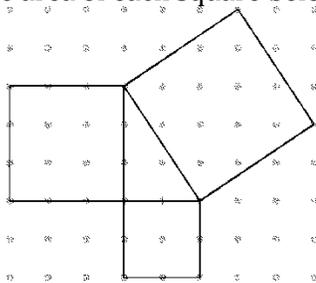
$\sqrt{121}$ $\sqrt{2}$ π $\sqrt{50}$ 1.3 $\sqrt{10}$ $\frac{3}{7}$ 0.27

36. A part of the real number line is shown. Which letter best represents the location of $\sqrt{2}$?



Unit 3: Geometric Applications of Exponents

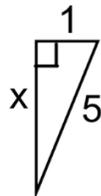
37. Find the area of each square below.



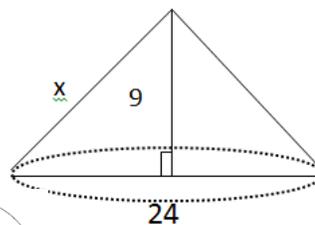
38. Choose the set of side lengths that could make a right triangle.

- a. 8 cm, 9 cm, 15 cm
- b. 8 cm, 15 cm, 17 cm.
- c. 1 cm, 2 cm, 5 cm
- d. 8 cm, 9 cm, 13 cm

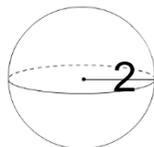
39. Find the missing side length.



40. What is the slant height of the cone?



41. Find the volume of the sphere.



42. Amy wants to fill a can of radius 2 in and height 6 inches with water. Determine the volume of the can.

43. How much ice cream would it take to fill a cone with radius 5 cm and height 12 cm?

44. A suitcase measures 14 inches long and 20 inches high. What is the diagonal length of the suitcase?

45. Find the distance between (3, 4) and (7, 6) Distance Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Unit 4: Functions

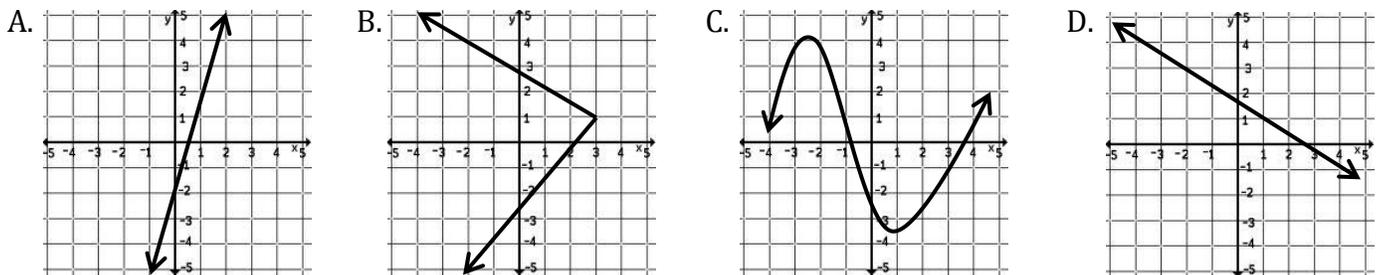
46. Which relation is a function?

- a. $\{(0, 0), (1, 1), (2, 2), (3, 3), (3, -3)\}$
- b. $\{(0, 0), (1, 1), (2, 2), (2, 3), (3, -3)\}$
- c. $\{(0, 0), (1, 1), (2, 2), (3, 3), (4, -4)\}$
- d. $\{(0, 0), (1, 0), (0, 2), (4, 3), (3, -3)\}$

47. Which relation is NOT a function?

- a. $\{(-5, 1), (-4, 2), (-3, -2), (-2, -1)\}$
- b. $\{(5, 1), (-2, 5), (6, 2), (7, 3)\}$
- c. $\{(5, 1), (6, -2), (7, 1), (8, -2)\}$
- d. $\{(5, 1), (5, -2), (6, 2), (7, 3)\}$

48. Which graph does NOT show a function?



Unit 5: Linear Equations

49. Which line passes through (0, -4) with a positive slope?

- a. $y = -4x$
- b. $y = 4x - 4$
- c. $y = 4x + 4$
- d. $y = -4x + 4$

50. The number of gallons of water, y, in a swimming pool after x hours is modeled by the equation:

$y = 40x + 200$ Describe what you know about the rate.

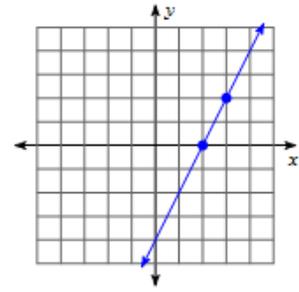
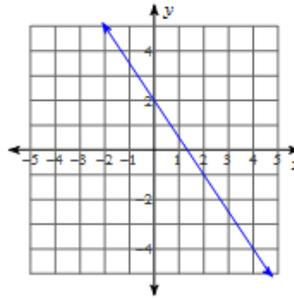
51. Jamie pays \$25 for a concert ticket. It costs her \$5 per hour to park her car in the parking deck of the arena.

Write an equation to represent the total charge in dollars Jamie will pay.

52. Write an equation to describe the relationship between x and y in the table shown:

X	Y
-3	2
-2	3
0	5
1	6

53. Write an equation to represent each graph.



54. Write the equation in Slope-Intercept Form:

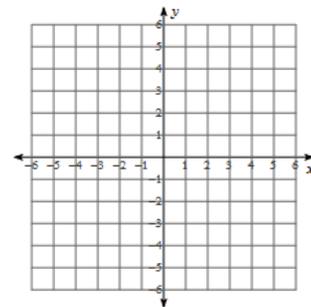
a. $4x + y = 9$

b. $5x + 7y = 14$

c. $6x - 2y = -10$

d. $3x - y = -5$

55. Write an equation and sketch the graph of a line with a slope of 2 and a y-intercept of (0, -3)



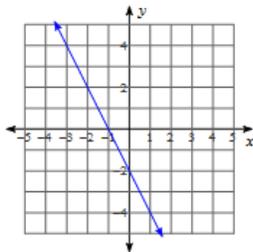
Unit 6 Study Guide- Linear Tables & Models

56. Write the equation of a line with a slope of $-5/7$ and a y-intercept of 1.

57. Write the equation of a line with a slope of 4 that passes through the point (-1, 2)

58. Write the equation of a line that passes through the points (-5, 8) and (4, -1).

59. Write the equation of the line in the following graph:



60. If the line with equation $y = \frac{1}{3}x$ is shifted up 5 units, what will the new equation be?

61. Write an equation to represent the relationship between x and y:

X	Y
-6	-3
9	2
12	3

62. All vertical lines have a slope of _____. Draw an example. All horizontal lines have a slope of _____. Draw an example.

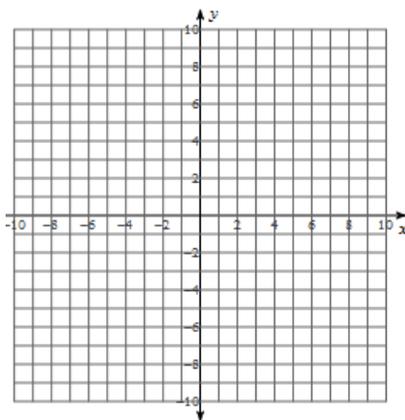
63. Mrs. Beusse needs to buy more pencils for our classroom because they are always mysteriously disappearing. Based on the chart from the office supply catalog, how much will it cost her to buy 100 pencils personalized with her name on it?

Number of Pencils	Cost
1 - 20	\$5.35
21 - 40	\$4.70
41 - 60	\$4.05
61 - 80	
81 - 100	

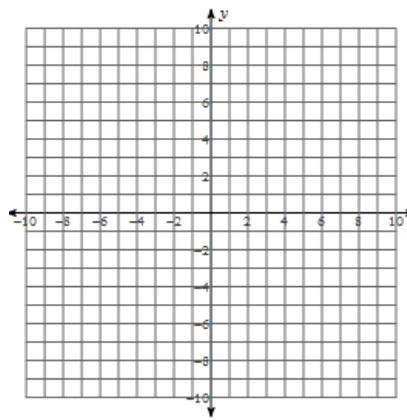
Unit 7 Study Guide : Systems of Equations

64. Graph each system to solve.

a. $y = x - 3$
 $y = -7x + 5$



b. $y = -x + 3$
 $y = \frac{7}{2}x - 6$



65. Solve each system by substitution.

$y = 3x - 22$
 $y = x - 8$

$y = 7x - 1$
 $y = 6x$

$7x + 2y = -16$
 $y = x - 8$

$-4x - y = 22$
 $y = 4x + 18$

66. Solve each system by elimination.

$7x - 6y = -25$
 $-7x + 3y = 16$

$10x + 9y = -16$
 $10x - y = 24$

$3x + y = 26$
 $-6x + 5y = -17$

$-2x - 4y = 14$
 $-10x + 2y = -18$

$-3x - 2y = 13$
 $-10x + 7y = -25$