GEOMETRY WITH ALGEBRAIC THINKING SUMMER

WORK 2019

Please do your work on a separate sheet of paper. Bring completed work with you to class at the start of the year. Do your best. Know that you will have an opportunity to ask questions if there are problems that you don't know how to do or don't remember fully. There will be a diagnostic assessment in the first few weeks of class, so that your teacher can assess your understanding. The answers are at the end of the document, so check as you go.

1. A part of a line consisting of two endpoints and all the points between is called a _____.

2. A part of a line consisting of one end point and all the points in one direction from that endpoint is called a _____.

3. Two lines that do not intersect in the same plane are called _____ lines.

4. An angle that measures 90° is called a _____ angle.

5. Solve $\dfrac{x}{4} = 2$.

6. Solve $\dfrac{24}{x} = 8$.

7. Solve $\dfrac{x}{4} = -5$.

8. An angle that measures between 0° and 90° is called an _____ angle.

9. An angle that measures between 90° and 180° is called an _____ angle.

10. An angle that measures 180° is called a _____ angle.

11. Solve $2\left(\dfrac{x}{4} + 1\right) = 6$.

12. Solve $8\left(\dfrac{12}{x} + 1\right) = 40$

13. Solve $3\left(\dfrac{x}{4}+3\right)=21$

14. Solve $\dfrac{4}{3}x+11=23$

15. Solve $\dfrac{6}{5}x-3=15$

16. Solve $\dfrac{3}{7}x+2=11$

17. A right triangle has legs length s and t and a hypotenuse of 12. Write an expression that represents the area of this triangle.

18. A triangle has sides of length 4, 3 and t. Write an expression that represents the perimeter of this triangle.

19. A rectangle has consecutive sides of length s and t. Write an expression that represents the perimeter of this rectangle.

20. Simplify $\sqrt{256}$

21. Simplify $\sqrt{1024}$

22. Simplify $\sqrt{441}$

23. Graph $x<5$ on a number line.

24. Graph $x\geq 6$ on a number line.

25. Graph $x\leq -3$ on a number line.

26. Solve $-\dfrac{1}{5}x<12$

27. Solve $\dfrac{2}{3}x\geq 6$

28. Solve $-4x\leq 24$

29. If a box has 10 red balls, 5 blue balls, and 12 yellow balls, what is the ratio of red to yellow balls?

30. If a box has 12 red balls, 10 blue balls, and 14 yellow balls, what is the ratio of blue balls to all the balls in the box?

31. If a box has 8 red balls, 18 blue balls, and 16 yellow balls, what is the ratio of yellow balls to non-yellow balls?

32. How many quarts are in $5\frac{1}{2}$ gallons?

33. How many minutes are in 3.5 hours?

34. How many inches are in $2\frac{1}{3}$ feet?

35. If the legs of a right triangle measure 10 and 24 what is the length of the hypotenuse?

36. If one leg of a right triangle measures 3 and the hypotenuse measures 5 what is the length of the other leg?

37. If the legs of a right triangle measure 8 and 15 what is the length of the hypotenuse?

38. Simplify $\dfrac{16}{(12+2)-3}+4$.

39. Simplify $\dfrac{15}{12-3}+4\cdot3$.

40. Simplify $4+\dfrac{13}{6\div2}-8$

41. Simplify $8x^3\cdot3x^{-2}$

42. Simplify $-14x^0\cdot7x^4$

43. Simplify $2x^{-5}\cdot(-3x^5)$

44. Simplify $\dfrac{15(12x-2y)^0}{3x^{-2}}$

45. Simplify $\dfrac{7xy^2}{x^4 y^{-1}}$

46. Multiply $(3x+4)(2x-1)$

47. Multiply $(x+4)(5x-1)$

48. Multiply $(2x-4)(x+7)$

49. Solve $x^2 + 6x = -8$

50. Solve $x^2 - 2x - 15 = 0$

51. Solve $6x^2 + 7x = -2$

52. Factor $16x^2 - 9$

53. Factor $144 - x^2$

54. Factor $36x^3 - 4x$

55. Solve $-4x + 5 < 12$

56. Solve $2x - 3 > 5$

57. Solve $-x + 4 \leq 6$

58. Write the equation in slope-intercept form of a line that crosses through (1, 4) and has a slope of -2.

59. Write the equation in slope-intercept form of a line that crosses through (-2, 3) and has a slope of $-\dfrac{1}{6}$.

60. Write the equation in slope-intercept form of a line that crosses through (10, -5) and has a slope of $\dfrac{1}{5}$.

61. Write the equation in slope-intercept form of a line that crosses through (2, 3) and (-4, 7).

62. Write the equation in slope-intercept form of a line that crosses through (-1, 5) and (-3, -9).

63. Write the equation in slope-intercept form of a line that crosses through (2, 6) and (-1, 3).

64. Graph $y = -2x + 5$

65. Graph $y = -\dfrac{1}{4}x + 6$

66. Graph $y = \dfrac{2}{3}x - 5$

67. Graph $2x + 3y = 6$

68. Graph $-x + 4y = -8$

69. Graph $2x + 5y = -20$

70. Solve the system of equations $\begin{cases} 5x + 2y = 13 \\ 3x - 2y = -5 \end{cases}$

71. Solve the system of equations $\begin{cases} y = 3x - 2 \\ 4y = 20 \end{cases}$

72. Solve the system of equations $\begin{cases} y = -2x + 7 \\ 15 = 3x \end{cases}$

73. Solve the system of equations $\begin{cases} 2x + 3y = 12 \\ y = 2x \end{cases}$

74. Simplify $\dfrac{(x + 5)}{3x + 15}$.

75. Simplify $\dfrac{(x - 2)}{x^2 - 4}$

Answers:

1. Segment
2. Ray
3. Parallel
4. Right
5. $x = 8$
6. $x = 3$
7. $x = -20$
8. Acute
9. Obtuse
10. Straight
11. $x = 8$
12. $x = 3$
13. $x = 16$
14. $x = 9$
15. $x = 15$
16. $x = 21$
17. $A = \frac{s \cdot t}{2}$
18. $p = 7 + t$
19. $p = 2s + 2t$
20. 16
21. 32
22. 21
23.

24.

25.

26. $x > -60$
27. $x \geq 9$
28. $x \geq -6$
29. $5:6$
30. $5:18$
31. $8:13$
32. 22 quarts
33. 210 minutes
34. 28 inches
35. 26
36. 4
37. 17
38. $\frac{60}{11}$

39. $\frac{41}{3}$

40. $\frac{1}{3}$

41. $24x$

42. $-98x^4$

43. -6

44. $5x^2$

45. $\frac{7y^3}{x^3}$

46. $6x^2 + 5x - 4$

47. $5x^2 + 19x - 4$

48. $2x^2 + 10x - 28$

49. $x = -4 \; or - 2$

50. $x = 5 \; or - 3$

51. $x = -\frac{2}{3} \; or - \frac{1}{2}$

52. $(4x - 3)(4x + 3)$

53. $(12 - x)(12 + x)$

54. $4x(3x - 1)(3x + 1)$

55. $x > -\frac{7}{4}$

56. $x > 4$

57. $x \geq -2$
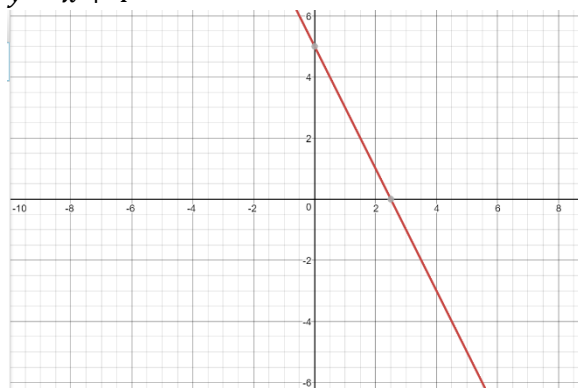
58. $y = -2x + 6$

59. $y = -\frac{1}{6}x + \frac{8}{3}$

60. $y = \frac{1}{5}x - 7$

61. $y = -\frac{2}{3}x + \frac{13}{3}$

62. $y = 7x + 12$
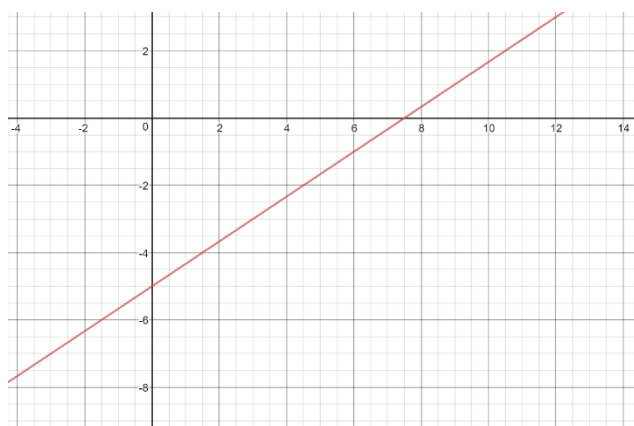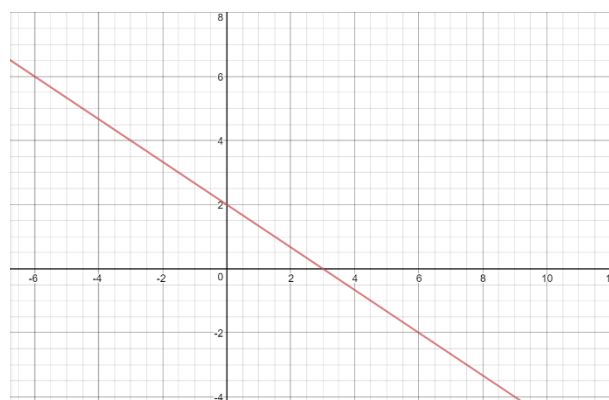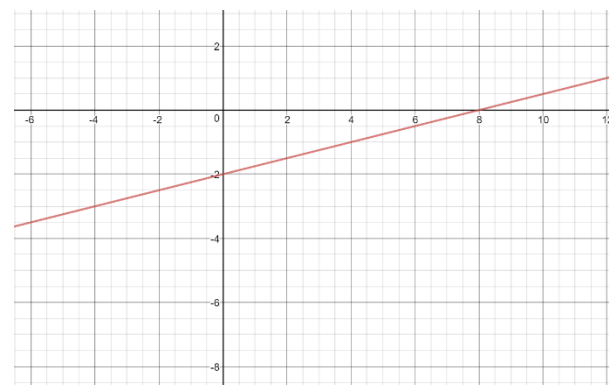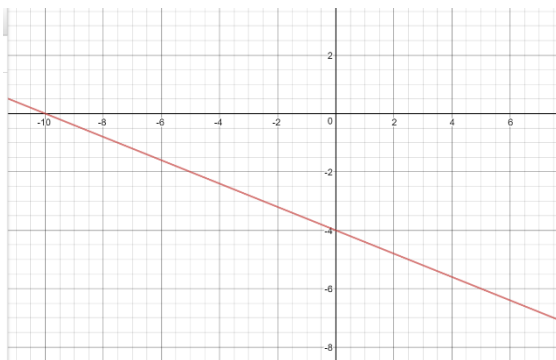
63. $y = x + 4$

64.

65.

66.

67.

68.

69.

70. $(1, 4)$
71. $\left(\frac{7}{3}, 5\right)$
72. $(-3, 5)$
73. $\left(\frac{3}{2}, 3\right)$
74. $\frac{1}{3}$
75. $\frac{1}{x+2}$