Immaculate Heart Academy

SUMMER ASSIGNMENT
GEOMETRY CPE COURSE CODE: (5220)

You are taking **Geometry CPE (5220)** in the fall. A mastery of and proficiency performing the following Algebra skills will be necessary for success in **Geometry course**. Work on each problem in order. Show all work in a neat and organized manner. Write your final answer on the line provided.

This assignment is mandatory and the math department strongly encourages you do this assignment on your own and to the best of your ability. Since the material contained in the summer math packet is *prerequisite material* you are responsible for having learned and retained. If you have forgotten any of these important mathematical concepts, you will find at the end of this assignment, several links to websites that you might find helpful should you have any problems or need some additional support on this assignment.

At the end of this assignment are several links to websites that you might find helpful should you have any problems with your assignments.

Name: _____ Date: _____

Last Math Class Taken:_____

Teacher: _____

Immaculate Heart Academy - Geometry Summer Assignment

Complete the following problems and show all supporting work for the solution. This assignment will be due the first day of class.

Adding/Subracting Fractions and Mixed Numbers: Answers:

1. $6-\frac{1}{6}$ 1. _____

2. $\left(-\frac{4}{5}\right)-\frac{7}{8}$ 2. _____

3. $\frac{1}{3}-\left(-\frac{5}{3}\right)$ 3. _____

4. $\left(-\frac{10}{7}\right)+\frac{1}{6}$ 4. _____

5. $\frac{9}{5}+\left(-\frac{4}{3}\right)$ 5. _____

6. $3\frac{6}{7}+\left(-1\frac{1}{7}\right)$ 6. _____

7. $2\frac{1}{3}+\left(-1\frac{2}{3}\right)$ 7. _____

Multiplying/Dividing Fractions and Mixed Numbers:

8. $-\frac{2}{3}\cdot\frac{5}{4}$ 8. _____

9. $-2\frac{2}{3}\cdot 4\frac{1}{10}$ 9. _____

10. $-2\frac{1}{5}\cdot -1\frac{3}{4}$ 10. _____

11. $-2\frac{3}{8}\cdot 2\frac{1}{2}$ 11. _____

12. $\frac{-3}{2}\div\frac{-10}{7}$ 12. _____

13. $\frac{-9}{5}\div 2$ 13. _____

14. $\frac{1}{9}\div -1\frac{1}{3}$ 14. _____

15. $1\frac{6}{7}\div 5\frac{3}{4}$ 15. _____

Evaluate Expressions: Evaluate each expression When x = 4 and y = -5.

ANSWERS:

1. 3x + 4y

1. _____

2. 2x – y

2. _____

3. $4xy + y^2$

3. _____

4. x + 4y – 2xy

4. _____

Solve each equation. Show all the steps.

5. 2x + 1 = 15

5. _____

6. -11 + 4x = 25

6. _____

7. 13 – 5x = 22

7. _____

8. 7 – 3x = -10

8. _____

9. $7x + 2 = 0$ 9. _____

10. $2x - 15 + x = 9$ 10. _____

11. $7x - 90 = 120 + x$ 11. _____

12. $8x + 8 = x + 1$ 12. _____

13. $22 - 13x = -8 - 2x - 18x$ 13. _____

14. $-2(x + 3) = 6$ 14. _____

15. $5(x + 7) = 0$ 15. _____

16. $6(x - 4) + 5 = 11$ 16. _____

17. $-2(14x + 5) = -8$ 17. _____

18. $x - 5 = 3 - 5x + 3x + 4$ 18. _____

19. $\frac{1}{3}(x-15) = -1$ 19. _____

20. $-\frac{3}{4}(x+12) = -3$ 20. _____

Solving Equations: Solve each equation for x.

21. $3x - 4 = 11$ 21. _____

22. $-5x + 7 = 10$ 22. _____

23. $5x - 7 = 2x + 1$ 23. _____

24. $4(3x - 1) = 10$ 24. _____

25. $\frac{1}{2}(4x - 10) = 13$ 25. _____

26. $-3(x - 4) + 7x = 12$ 26. _____

Solve each proportion.

27. $\frac{10}{4} = \frac{x + 8}{8}$ 27. _____

28. $\frac{10}{8} = \frac{x - 9}{9}$ 28. _____

29. $\frac{6}{10} = \frac{x-2}{6}$ 29. _____

30. $\frac{x+1}{10} = \frac{2}{3}$ 30. _____

Multiply the polynomials. Show all steps.

31. $(x+4)(3x+5)$ 31. _____

32. $(x-5)(2x^2-x-8)$ 32. _____

33. $(2x-4)(x^2+3x+2)$ 33. _____

34. $(x^2+3)(x^2+6x+12)$ 34. _____

35. $(2x^2-6)(x^2-3x+7)$ 35. _____

36. $(x^3+15)(2x^2+3x-4)$ 36. _____

Calculate the slope of the line containing the pairs of points. You may leave answer as an improper fraction, but it should be in lowest terms.

37. (3, 8) and (0, 4) 37. _____

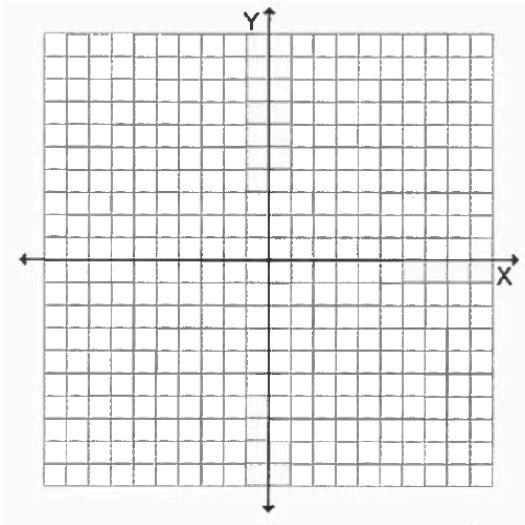
38. (-1, 2) and (6, 5) 38. _____

39. (-4, -1) and (9, -3) 39. _____

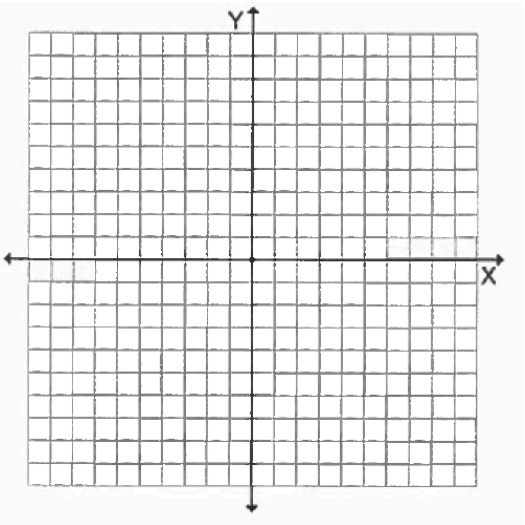
40. (4, 2) and (-7, -8) 40. _____

Use the coordinate planes to graph the following equations.

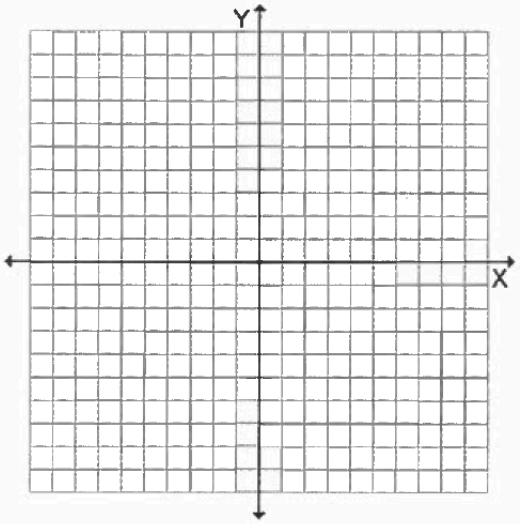
41. $y=-x+3$



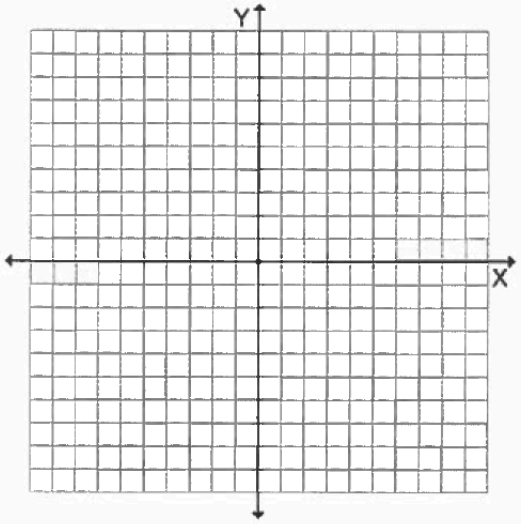
42. $y=-2x-5$



43. $y+\frac{2}{3}x=1$



44. $y-\frac{7}{2}x=0$



Find the slope of a line parallel to each given line.

45. $y=\frac{3}{5}x$ 45. _____

46. $y=3x+5$ 46. _____

47. $y=-\frac{2}{3}x+2$ 47. _____

48. $y=\frac{1}{2}x-5$ 48. _____

Find the slope of a line perpendicular to each given line.

49. $y=-3x-1$ 49. _____

50. $y=-x-3$ 50. _____

51. $y=6x+1$ 51. _____

52. $y=-x+3$ 52. _____

Factor the polynomials.

53. $x^2 - 11x + 24$ 53. _____

54. $x^2 + 15x + 54$ 54. _____

55. $x^2 - 10x + 16$ 55. _____

56. $x^2 + 2x - 63$ 56. _____

57. $x^2 - 5x - 36$ 57. _____

58. $x^2 + 22x + 121$ 58. _____

59. $x^2 - 25$ 59. _____

60. $x^2 - 100$ 60. _____

61. $x^2 - 144$ 61. _____

62. $x^2 + 20 - 125$ 62. _____

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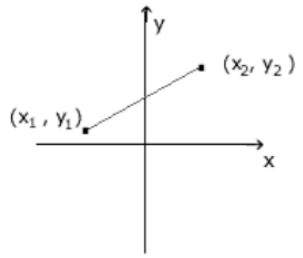
DISTANCE FORMULA

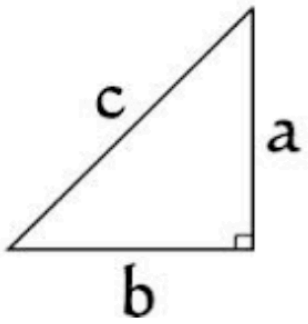
x_2 and y_2 are the x,y coordinates for one point
x_1 and y_1 are the x,y coordinates for the second point
d is the distance between the two points

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



PYTHAGOREAN THEOREM

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



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Use the Distance Formula to find the length between two points, to the nearest tenth in problem 63 and 66. Use Pythagorean Theorem to find the length of each graphed line, to the nearest tenth in problem 67 and 68.

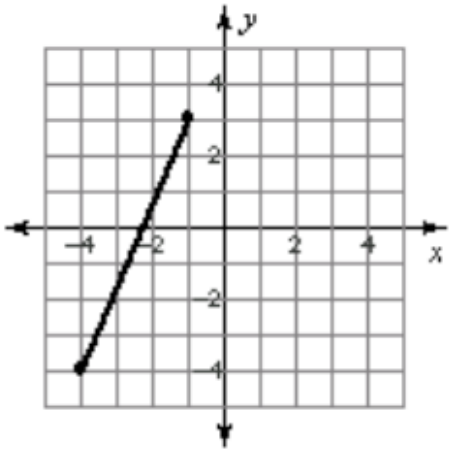
63. (1, -2), (-4, 4) 63. _____

64. (-2, 7), (-2, -8) 64. _____

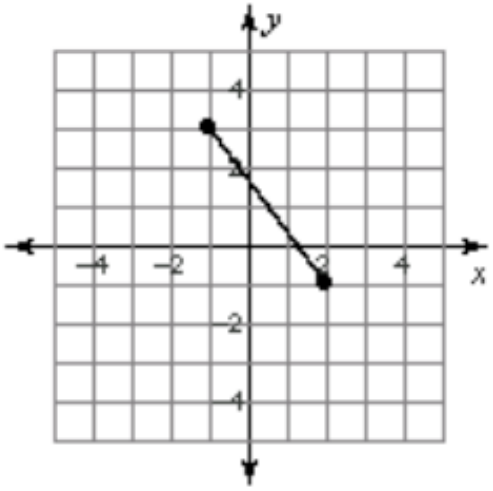
65. (2, -1), (-4, 8) 65. _____

66. (-2, 3), (2, -2) 66. _____

67. 67. _____



68. 68. _____



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Mid-point Formula

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

Find the coordinates of M, the midpoint of $\overline{ST}$, for $S(-6, 3)$ and $T(1, 0)$.

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$
$$= \left(\frac{-6 + 1}{2}, \frac{3 + 0}{2}\right)$$
$$= \left(\frac{-5}{2}, \frac{3}{2}\right) \text{ or } M\left(-2\frac{1}{2}, 1\frac{1}{2}\right)$$

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Find the midpoint of the line segment with given endpoints.

69. (-4, 6), (-3, 6) 69. _____

70. (1, -1), (-6, 1) 70. _____

71. (-2, -1), (3, 4) 71. _____

72. (-1, 5), (5, 2) 72. _____

Given the midpoint and one endpoint of a line segment, find the other endpoint.

73. Endpoint: (5, -5), midpoint: (-3, -1) 73. _____

74. Endpoint: (1, 3), midpoint: (-2, 3) 74. _____

75. Endpoint: (-3, -1), midpoint: (-2, 3) 75. _____

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Simplify the radical.

Example:

$$\begin{aligned}\sqrt{27} &= \sqrt{9 \bullet 3} \\ &= \sqrt{9} \bullet \sqrt{3} \\ &= 3\sqrt{3}\end{aligned}$$

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76. $\sqrt{24}$ 76. _____

77. $\sqrt{200}$ 77. _____

78. $\sqrt{125}$ 78. _____

79. $\sqrt{48}$ 79. _____

80. $\sqrt{363}$ 80. _____

81. $\sqrt{240}$ 81. _____

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Simplify a radical with an irrational denominator.

Example 1

Simplify

$$\frac{2}{\sqrt{3}}$$

$$\frac{2}{\sqrt{3}} \bullet \frac{\sqrt{3}}{\sqrt{3}}$$

$$\frac{2 \bullet \sqrt{3}}{\sqrt{3} \bullet \sqrt{3}}$$

Example 2

Simplify

$$\sqrt{\frac{5}{8}}$$

$$\frac{\sqrt{5}}{\sqrt{8}}$$

$$\frac{\sqrt{5}}{\sqrt{8}} \bullet \frac{\sqrt{8}}{\sqrt{8}}$$

Remember to rationalize the denominator, multiply the numerator and denominator by the radical you want to eliminate

$\frac{2\sqrt{3}}{(\sqrt{3})^2}$ $\quad$ $\frac{\sqrt{40}}{8}$ Simplify the radical

$\frac{2\sqrt{3}}{3}$ $\quad$ $\frac{2\sqrt{10}}{8}$

$\frac{\sqrt{10}}{4}$

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82. $\frac{3}{\sqrt{5}}$ $\quad$ 82. _____

83. $\frac{4}{\sqrt{6}}$ $\quad$ 83. _____

84. $\sqrt{\frac{3}{8}}$ $\quad$ 84. _____

85. $\sqrt{\frac{24}{11}}$ $\quad$ 85. _____

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1. https://www.mathsisfun.com/algebra/factoring.html

2. http://www.coolmath.com/algebra/08-lines/06-finding-slope-line-given-two-points-01

3. http://mathforum.org/dr.math/