



Pensacola Catholic High School
Math Department
Summer Packet | For Students Entering Algebra II Honors

Dear Parent/Guardian and Student,

The Math Department at Pensacola Catholic High will require the completion of a summer packet for each student entering an Honors math course. The problems on this packet are due the second day of Math class (Tuesday, August 10th or Wednesday, August 11th depending on your course schedule). The packet has two purposes: (1) to help you retain the math knowledge you've gained in your previous math classes, and (2) to get a sense of what we expect you to know going into your next class. Here are some tips for working through the packet:

1. We encourage you to work on this packet throughout the summer rather than doing the entire packet at the start or end of the summer. That way you keep the topics you learned fresh in your mind. Do not wait until the last minute to complete this packet!
2. You should complete every problem on the packet and show your work on each problem. Use extra paper if absolutely needed, clearly identifying each problem. All work should be neat, complete, and organized. No problem should be left blank, and no work means no credit.
3. You should not feel obligated to hire an outside tutor. We will spend the first week reviewing material that is necessary. However, you will be tested at the end of the first week on all material in the packet. If you are struggling with the packet, there are free resources, like Khan Academy, that can help.
4. Calculators are allowed for the completion of this packet, but please do not rely on your calculator for the answer. Your assessment will be taken without a calculator.
5. This packet will be graded for accuracy and will be one of the first grades of Quarter 1.

Enjoy your Summer and Best of Luck!!
Mr. Forte

Solve each equation.

1. $-4(3 - x) = 8$

2. $3x + 14 = 4(x + 3)$

3. $\frac{x+2}{5} = \frac{x-8}{3}$

4. $\frac{6}{5} = \frac{x}{9}$

Solve each system of equations using the method of your choice.

5.
$$\begin{cases} -2x + y = 8 \\ y = -3x - 2 \end{cases}$$

6.
$$\begin{cases} 5x + 4y = 2 \\ 4x + 2y = -2 \end{cases}$$

Factor each polynomial completely.

7. $x^2 - x - 72$

8. $a^2 - 10a + 24$

9. $10m^3n^2 - 15m^2n$

10. $x^2 + 12x + 36$

11. $x^2 - 64$

Determine each of the following:

12. Write an expression for the perimeter of a rectangle with Length $l = 2x + 3$ and width $w = x - 2$

13. Write an expression for the area of a square with side $s = 2x + 5$

14. The length of each leg of an isosceles right triangle is 4 cm. What is the length of the hypotenuse?

Simplify each of the following.

15. $(-3x^2 + 4x - 7) + (2x^2 - 7x + 8)$

16. $(-4a^3 + 2a^2 - a - 7) - (3a^3 - 2a^2 - a + 8)$

17. $(x + 7)(x + 5)$

18. $-3xy^3(x - 2y)$

19. $(15a^4b^2c)^0$

20. $(8a^3b^2)(2a^{-4}b^5)$

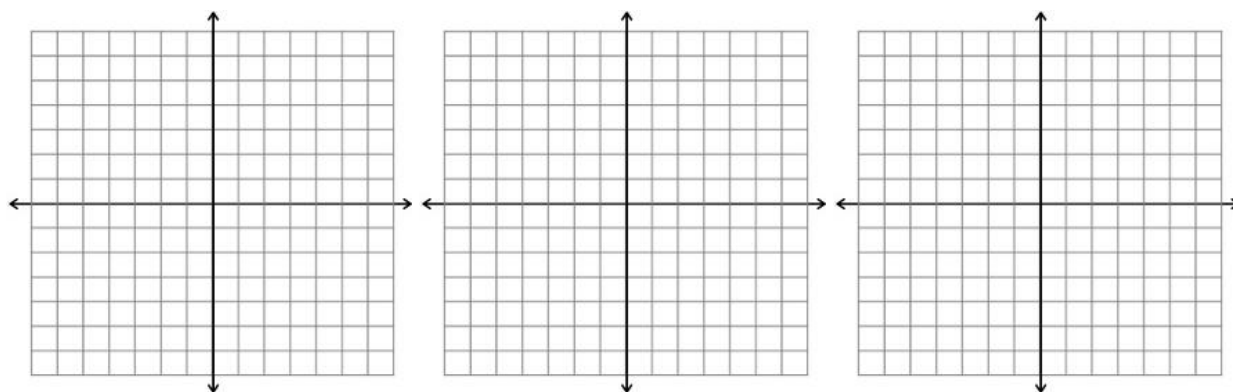
21. $\frac{3x^3y^2}{6x^{-2}y^5}$

Graph each of the following equations.

22. $y = -\frac{2}{5}x + 2$

23. $y = 8$

24. $4x + 3y = 12$



Determine each of the following:

25. Determine the slope of the line containing the points (6, -2) and (-1, 5).

26. Determine the equation of a line that passes through the points (3, 8) and (1, 4).

Solve each inequality. If it contains x and y, solve for y.

27. $2x - 3 > 11$

28. $-6 < 2x < 12$

29. $-3x \leq 15$

30. $2y > 2x - 5$

31. $-3y \geq 6x - 9$

32. $2x + 5y \leq -10$

Simplify each radical expression.

33. $\sqrt{75}$

34. $\sqrt{8}\sqrt{18}$

35. $\frac{\sqrt{96}}{\sqrt{8}}$

36. $\sqrt{144}$

Evaluate.

37. $12a - 4a^2 + 7a^3$ if $a = -3$

Simplify each expression. Answers should be written using positive exponents.

38. $x^3 \cdot x^2 \cdot x$

39. $(m^3)^5$

40. $(y^{-2})^{-3}$

41. $\frac{a^4}{a^7}$

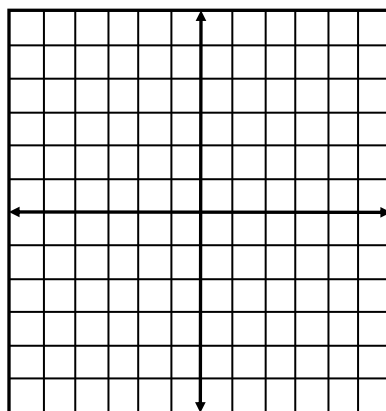
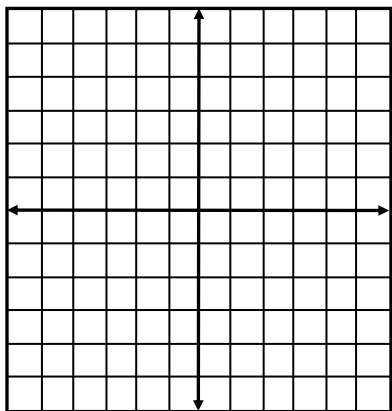
42. $\frac{3xy^5}{12x^2y^0}$

43. $\left(\frac{2}{3}\right)^3$

Graph the quadratic equations:

44. $y = (x - 3)^2 + 1$

45. $y = -2(x - 3)^2 - 3$



Solve each absolute value equation.

46. $|d - 10| = 3$

47. $|7m| + 3 = 73$

48. $-10|v + 2| = -70$

Solve each inequality.

49. $12 - 3(6x - 2) > 4(x + 5) - (9 - x)$

50. $5x - 11 - x > 2x + 23$

51. $|4x + 5| > 13$

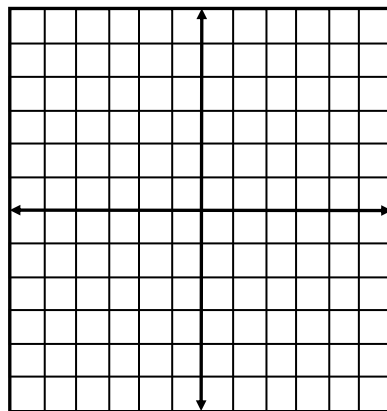
52. $|7 - 2r| \leq 19$

53. $-4 < 6x - 10 \leq 14$

54. $3x + 5 \leq 11$ or $5x - 7 \geq 23$

55. The equation $y = -|x + 5|$ describes a function that is translated from a parent function. Describe the translation.

56. Graph the function $y = |x - 2| - 4$.



Solve each quadratic equation:

57. $x^2 + x - 42 = 0$

58. $(x - 2)^2 = 25$

59. $6x^2 - 13x = -6$

Simplify each radical. Be sure the answer is in simplest form.

60. $\sqrt{32}$

61. $\sqrt{48}$

62. $\sqrt{1000x^3}$

63. $\sqrt{20xy^2}$

64. $-\sqrt{144a^2}$

65. $\sqrt{27a^2}$

66. $2\sqrt{50x^2yz^3}$

67. $\sqrt{243m^5n^2}$

68. $\sqrt{128x^3}$

69. $4\sqrt{24p^2qr^3}$

Determine each product. Be sure the answer is in simplest form.

70. $5\sqrt{6} \cdot 2\sqrt{2}$

71. $\sqrt{x} \cdot \sqrt{9x}$

72. $\sqrt{2x} \cdot \sqrt{10x^2y}$

73. $2\sqrt{x^3} \cdot 4\sqrt{x}$

74. $4x\sqrt{5} \cdot \sqrt{8xy^2}$

75. $-7\sqrt{3y} \cdot \sqrt{6y}$

Simplify each radical expression.

76. $3\sqrt{3} + 9\sqrt{3} - 4\sqrt{3}$

77. $2\sqrt{5} - 2\sqrt{36} + 3\sqrt{45}$

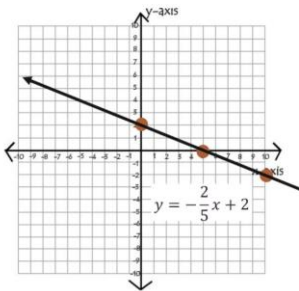
78. $8\sqrt{7} - 9\sqrt{7}$

Extra Practice (Optional)

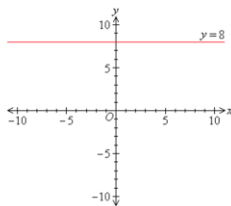
For students who feel like they want additional practice, you are recommended to work through Khan Academy Modules (<http://khanacademy.org/>). Be sure to log in (preferably using your Grauer School email address) to save your progress.

Answer Key

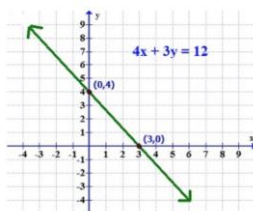
1. 5
2. 2
3. 23
4. 10.8
5. (-2, 4)
6. (-2, 3) Type equation here.
7. $(x-9)(x+8)$
8. $(a-6)(a-4)$
9. $5m^2n(2mn - 3)$
10. $(x + 6)^2$
11. $(x - 8)(x + 8)$
12. $6x+2$
13. $(2x + 5)^2$
14. 5.7 or $4\sqrt{2}$
15. $-x^2 - 3x + 1$
16. $-7a^3 + 4a^2 - 15$
17. $x^2 + 12x + 35$
18. $-3x^2y^3 + 6xy^4$
19. 1
20. $\frac{16b^7}{a}$
21. $\frac{x^5}{2y^3}$
- 22.



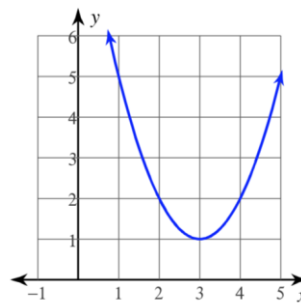
23.



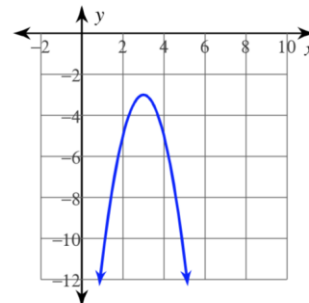
24.



25. -1
26. $y=2x+2$
27. $x>7$
28. $-3 < x < 6$
29. $x \geq -5$
30. $y > x - \frac{5}{2}$
31. $y \leq -2x + 3$
32. $y \leq -\frac{2}{5}x - 2$
33. $5\sqrt{3}$
34. 12
35. $2\sqrt{3}$
36. 12
37. -261
38. x^6
39. m^{15}
40. y^6
41. $\frac{1}{a^3}$
42. $\frac{y^5}{4x}$
43. $\frac{8}{27}$
- 44.



45.



46. $d = 13$ or $d = 7$
47. $m = 10$ or $m = -10$
48. $v = 5$ or $v = -9$

Answers - Continued

49. $x < \frac{7}{23}$

50. $x > 17$

51. $x > 2$ $x < -\frac{9}{2}$

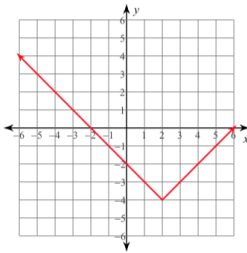
52. $-6 \leq r \leq 13$

53. $1 < x \leq 4$

54. $x \leq 2$ or $x \geq 6$

55. Reflected on the x-axis and translated five units to the left.

56.



57. $x = -7,6$

58. $x = -3,7$

59. $x = \frac{3}{2}, \frac{2}{3}$

60. $4\sqrt{2}$

61. $4\sqrt{3}$

62. $10x\sqrt{10x}$

63. $2y\sqrt{5x}$

64. $-12a$

65. $3a\sqrt{3}$

66. $10xz\sqrt{2yz}$

67. $9m^2n\sqrt{3m}$

68. $8x\sqrt{2x}$

69. $8pr\sqrt{6qr}$

70. $20\sqrt{3}$

71. $3x$

72. $2x\sqrt{5xy}$

73. $8x^2$

74. $8xy\sqrt{10x}$

75. $-21y\sqrt{2}$

76. $8\sqrt{3}$

77. $-12+11\sqrt{5}$

78. $-\sqrt{7}$