



**FELLOWSHIP**  
**CHRISTIAN SCHOOL**  
COLOSSIANS 1: 9-12

Entering

**Geometry**

&

**Honors Geometry**

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**Summer Math Packet**

Students,

This packet is to be completed by the first day of school and will be used as a study guide for the first assessment in the course. Please show all steps when working through the packet.

It is a mistake to do this packet at the beginning of the summer. We want these techniques to be relatively fresh in your mind in the fall. If you work a couple of problems a day, the whole packet will be completed in no time.

As math department, we hope you take this seriously, as we sincerely wish for you to be successful throughout this next year. Your preparation over the summer will be rewarded in unexpected ways during the year.

Here are some helpful websites to use, if needed:

- [www.khanacademy.org](http://www.khanacademy.org)
- [www.patrickjmt.com](http://www.patrickjmt.com)
- [www.youtube.com](http://www.youtube.com) to find specific math related topics with accompanying videos

Sincerely,

Fellowship Math Department

**DIRECTIONS:** Be sure you have read the cover page CAREFULLY. Remember... **SHOW ALL WORK FOR CREDIT** in the spaces provided. Be sure to put your answers in the blanks, whenever possible.

**Evaluate.**

\_\_\_\_\_ 1.  $(x-4)+6$  for  $x=10$

\_\_\_\_\_ 2.  $(y-2)^2+(y+5)^2$  for  $y=-3$

\_\_\_\_\_ 3.  $(x-y)^2+2(x+y)$  for  $x=9$  and  $y=-2$

**Simplify. Reduce fractions to simplest form.**

\_\_\_\_\_ 4.  $-11.5+1.6+(-5.2)+0.7$

\_\_\_\_\_ 5.  $-\frac{1}{6}-5+\frac{2}{5}-\frac{1}{15}$

\_\_\_\_\_ 6.  $(-6)(7)$

\_\_\_\_\_ 7.  $(-5.3)(2.1)$

\_\_\_\_\_ 8.  $-\frac{1}{3} \div \frac{1}{15}$

\_\_\_\_\_ 9.  $-\frac{2}{9} \div -\frac{2}{3}$

\_\_\_\_\_ 10.  $\left(-\frac{2}{3}\right)\left(\frac{1}{5}\right)-\left(\frac{7}{15} \div \frac{28}{3}\right)$

\_\_\_\_\_ 11. What percent of 75 is 5?

\_\_\_\_\_ 12. 150 is what percent of 750?

**For #13-18, solve for x or y.**

\_\_\_\_\_ 13.  $5x - 12 = 48$

\_\_\_\_\_ 14.  $0.4x - 1.6 = 2.4x$

\_\_\_\_\_ 15.  $\frac{-1}{2}y = 4$

\_\_\_\_\_ 16.  $y - 6 < 10$

\_\_\_\_\_ 17.  $8y - 3 > 2y + 15$

\_\_\_\_\_ 18.  $23 - 7x \geq 3x \geq -7$

\_\_\_\_\_ 19. Two fifths of the automobiles entering the city every morning will be parked in city parking lots. These cars fill 5282 parking spaces. How many cars enter the city each morning?

\_\_\_\_\_ 20. A rectangular wading pool is 4.5 meters wide. What length will make the area 54 meters squared?

**Simplify completely.**

\_\_\_\_\_ 21.  $a^3 \cdot a^2$

\_\_\_\_\_ 22.  $(-2x)(5x^2)$

\_\_\_\_\_ 23.  $\frac{5m^7}{m^3}$

\_\_\_\_\_ 24.  $\frac{-10x^5}{2x^2}$

\_\_\_\_\_ 25.  $\frac{-27x^2y^3}{3xy}$

\_\_\_\_\_ 26.  $\frac{(2x^5y^3)^2}{(6x)^3}$

\_\_\_\_\_ 27.  $-4x^2y^3z^5(2xy^2 - z)$  (Hint: Be Sure to use the distributive property!)

\_\_\_\_\_ 28.  $-50a^2bc \div 2.5a^3c$

\_\_\_\_\_ 29.  $23a^2 - 17a - 3a^2 - a + 5$

\_\_\_\_\_ 30.  $(3m^2 - 9) + (5m^3 - 2m^2 + 1)$

\_\_\_\_\_ 31.  $(-5a^2 - 2a) - (a^2 - 7a) + 2$

\_\_\_\_\_ 32.  $(-7a^3 - 2a^2 + 5) + (-5a^4 + 3a^3 - 6a^2 - 1)$

\_\_\_\_\_ 33.  $(2b - 1)(2b + 1)$

\_\_\_\_\_ 34.  $(a-3)^2$

\_\_\_\_\_ 35.  $(2m-6)^2$

**Factor completely. (Hint: For #36, 38, & 39, take out a common factor first, and then factor again.)**

\_\_\_\_\_ 36.  $m^5 - m^3$

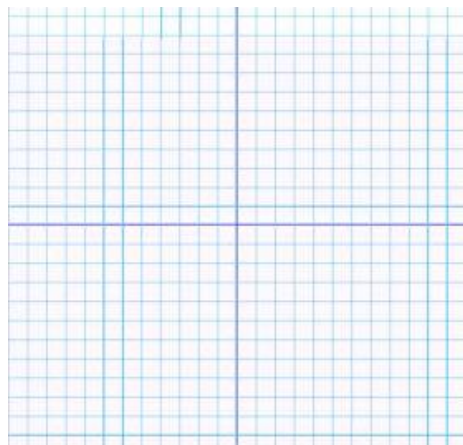
\_\_\_\_\_ 37.  $49x^2 - 64$

\_\_\_\_\_ 38.  $x^3 - 50x^2 + 625x$

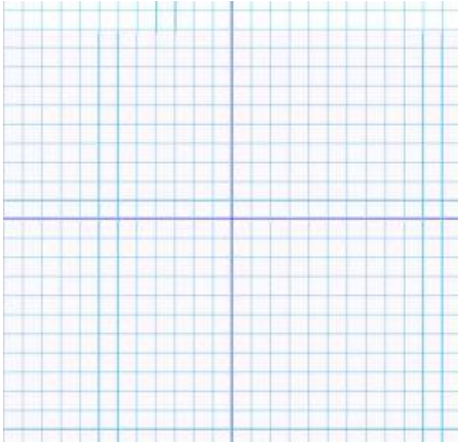
\_\_\_\_\_ 39.  $30x^4 + 21x^3 - 36x^2$

**Graph.**

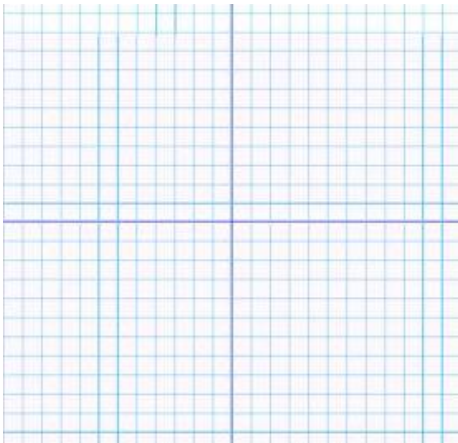
40.  $2x + 4y = 4$



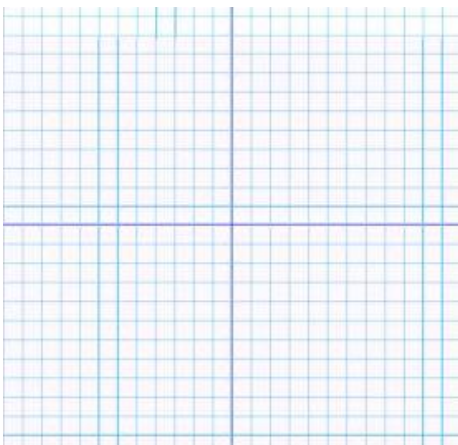
41. Graph  $x = -3$



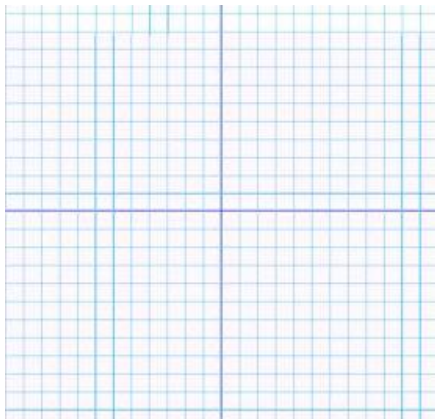
42. Graph  $y = 2$



43. Graph  $y = 2x - 5$



44. Graph  $y = -\frac{1}{2}x + 3$



Find the slope and y-intercept of each line.

\_\_\_\_\_ 45.  $y = \frac{1}{2}x - 6$

\_\_\_\_\_ 46.  $2y = -6x + 4$

\_\_\_\_\_ 47.  $5x - 10y = 250$

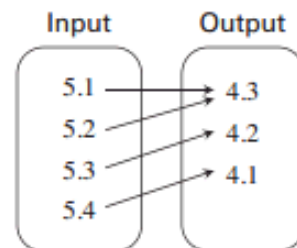
\_\_\_\_\_ 48.  $3y - 5x - 2 = 0$

Tell whether the pairing is a function. If it is a function, identify the domain and range.

\_\_\_\_\_ 49.

Input	Output
7	4
2	2
5	1
3	5

\_\_\_\_\_ 50.





\_\_\_\_\_ 51.

Input	Output
25	14
30	13
30	12
35	11

\_\_\_\_\_ 52.

Is (4,2) a solution to this system of equations? Show your work!

$$x + y = 6 \text{ and } 2x - y = 6$$

\_\_\_\_\_ 53. Is (1,2) a solution to this system of equations? Show your work!

$$3y = -6 \text{ and } y = -2x + 1$$

**Solve each system of equations. You may use either substitution or elimination.**

\_\_\_\_\_ 54.  $y = x - 10$  and  $5y + 10x = 10$

\_\_\_\_\_ 55.  $2x - 3y = 10$  and  $-3x + y = 20$

\_\_\_\_\_ 56.  $2x = 3y + 12$  and  $2x - 5y = 8$

\_\_\_\_\_ 57. The difference of two numbers is 10. Two times the larger number is 20 more than the smaller.

What are the two numbers?

**Solve each quadratic equation by factoring OR by using the quadratic formula. Show all work!**

\_\_\_\_\_ 58.  $s^2 + 10s = 0$

\_\_\_\_\_ 59.  $w^2 - 169 = 0$

\_\_\_\_\_ 60.  $2x^2 - 11x + 15 = 0$

\_\_\_\_\_ 61.  $x^2 + 16 = 8x$

**Simplify completely. Assume variables are nonnegative. Leave answers in simplified radical form.**

\_\_\_\_\_ 62.  $-\sqrt{64a^6}$

\_\_\_\_\_ 63.  $\sqrt{48x^3y^4}$

\_\_\_\_\_ 64.  $\sqrt{(x+3)^2}$

\_\_\_\_\_ 65.  $\sqrt{3xy} \cdot \sqrt{4x^3y}$

\_\_\_\_\_ 66.  $\sqrt{6}(\sqrt{10} + \sqrt{15})$

\_\_\_\_\_ 67.  $(2 - 2\sqrt{5})^2$

**Rationalize and simplify completely.**

\_\_\_\_\_ 68.  $\sqrt{\frac{1}{5}}$

\_\_\_\_\_ 69.  $\frac{\sqrt{5}}{\sqrt{10}}$

\_\_\_\_\_ 70.  $\sqrt{\frac{x^2}{12}}$

\_\_\_\_\_ 71. The grasshopper population in Georgia is currently 4,000. It's growing by 2.3% each year. Write an equation that models the situation

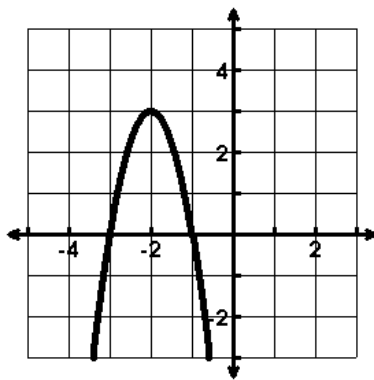
a) \_\_\_\_\_

What is the grasshopper population after 3 years?

b) \_\_\_\_\_

\_\_\_\_\_ 72. What is the asymptote of the exponential function  $y = -\frac{2}{3} \cdot 2^x + 5$

73.



- Vertex: \_\_\_\_\_
- Axis of Sym.: \_\_\_\_\_
- Domain: \_\_\_\_\_
- Range: \_\_\_\_\_
- Increase: \_\_\_\_\_
- Decrease: \_\_\_\_\_
- End Behavior:  $x \rightarrow \infty, y \rightarrow$  \_\_\_\_\_  $x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_

74. Write the quadratic equation of the graph in vertex form  $y=(x-h)^2+k$  that has shifted down 1,

moved left 6, and shrunk by a factor of  $\frac{1}{2}$ : \_\_\_\_\_

75. Change the equation from standard to vertex form  $y = -3x^2 + 6x - 2$