Entering

Geometry

&

Honors Geometry

Summer Math Packet

Summer 2020

Students,

As we have completed a unique semester we have decided summer packets are more important than ever, given we had to do half of the spring semester remotely.

Therefore, this packet is to be completed by the first day of school and will be graded for completion this year. We will not have an assessment over the topics in this packet as we have in years past. However, we want you to use this packet as a way to get prepared for the next course.

It is a mistake to do this entire 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. Please show all steps when working through the packet.

As a 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
- www.patrickjmt.com
- www.youtube.com to find specific math related topics with accompanying videos

Sincerely,

Fellowship Math Department

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

_____6. $(-6)(7)$

_____7. $(-5.3)(2.1)$

_____8. $-\dfrac{1}{3}\div\dfrac{1}{15}$

_____9. $-\dfrac{2}{9}\div-\dfrac{2}{3}$

_____10. $\left(-\dfrac{2}{3}\right)\left(\dfrac{1}{5}\right)-\left(\dfrac{7}{15}\div\dfrac{28}{3}\right)$

_____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. $\dfrac{-1}{2}y = 4$

_____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. $\dfrac{5m^7}{m^3}$

_____24. $\dfrac{-10x^5}{2x^2}$

_____25. $\dfrac{-27x^2y^3}{3xy}$

_____26. $\dfrac{(2x^5y^3)^2}{(6x)^3}$

_____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. $m^5 - m^3$

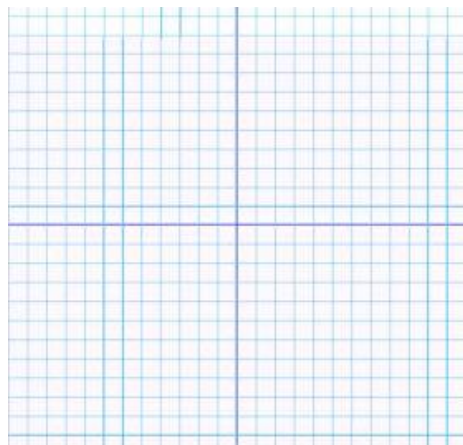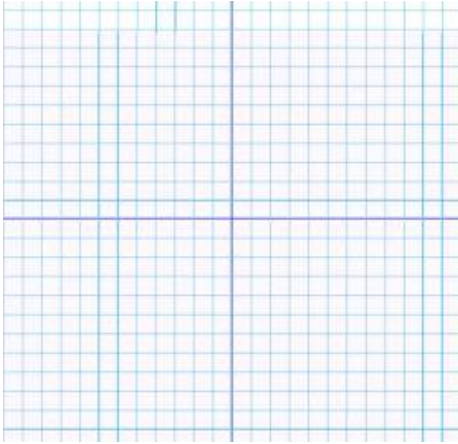_____37. $49x^2 - 64$

_____38. $x^3 - 50x^2 + 625x$

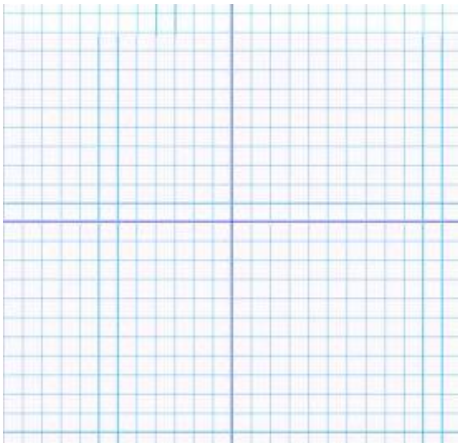_____39. $30x^4 + 21x^3 - 36x^2$
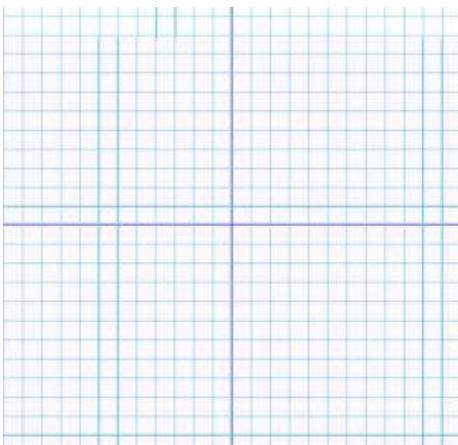
Graph.

40. $2x + 4y = 4$
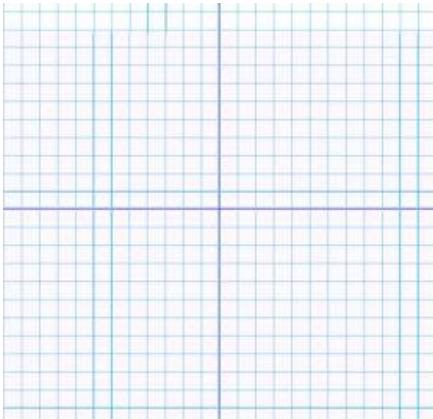
41. Graph $x = -3$

42. Graph $y = 2$

43. Graph $y = 2x - 5$

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

Find the slope _and_ y-intercept of each line.

_____ 45. $y = \dfrac{1}{2}x - 6$
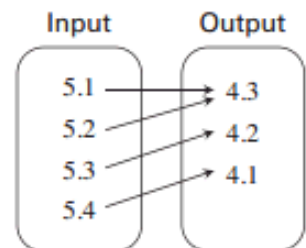
_____ 46. $2y = -6x + 4$

_____ 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.

Input	Output
5.1	4.3
5.2	4.2
5.3	4.1
5.4	

_____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!

$x + y = 6$ and $2x - y = 6$

_____53. Is (1,2) a solution to this system of equations? Show your work!

$3y = -6$ 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?

<u>Solve</u> 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. $\sqrt{6}\left(\sqrt{10} + \sqrt{15}\right)$

_____67. $\left(2 - 2\sqrt{5}\right)^2$

Rationalize and simplify completely.

_____68. $\sqrt{\dfrac{1}{5}}$

_____69. $\dfrac{\sqrt{5}}{\sqrt{10}}$

_____70. $\sqrt{\dfrac{x^2}{12}}$

_____71. The grasshopper population in Georgia is currently 4,000. It's growing by 2.3% each year. Write and equation that models the situation
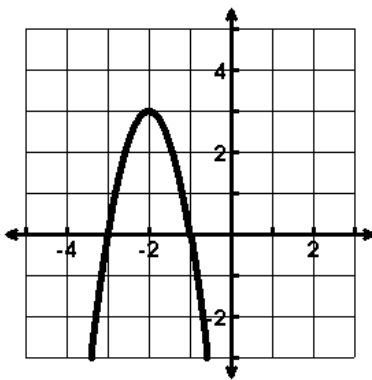
a) _____

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→∞, y→_____ x→-∞, y→_____

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 $y = -3x^2 + 6x - 2$