MATH SUMMER ASSIGNMENT
HIGH HONORS GEOMETRY

Mathematics is foundational and it is crucial that students maintain certain skills and conceptual understandings to be able to succeed in future mathematics courses. It is for this reason that we have developed numerous summer assignments that are designed to help students review, refresh, and improve upon **prerequisite skills** to prepare for future courses.

This year, we are requiring students to complete summer assignments to ensure that they are prepared for the year. The assignments were designed by content teachers to help students be better prepared for math work in the fall. Students will be given time in class to clarify questions, practice concepts and will be assessed during the first week of school.

For High Honors Geometry, the summer assignment will be reviewed the first week of class to help prepare students for a formative assessment.

Name _____

HIGH HONORS GEOMETRY SUMMER ASSIGNMENT

ALL ANSWERS ON THESE SHEETS. DO NOT HAND IN ANY OTHER PAPERS ***Please see the examples and video links for assistance.**

1. Solve:
   $7x + 2 = 3x + 94$ $15 – a = 23 –2a$ $4w – 2(1 – w) = -38$

2. Solve each formula for the indicated variable:
   $A = \frac{1}{2} bh$ (solve for h) $V = \pi r^2 h$ (solve for h)

3. For each function find f(-5) and f(1/2)

   $f(x) = \frac{1}{2} x – 2$ $f(x) = 2x + 3$

4. Find the slope of a line through each pair of points:
   (1, 6), (8, -1) (5, -12), (-2, -6)

5. Write the equation of a line with slope = 3 that goes through the point (1,5)

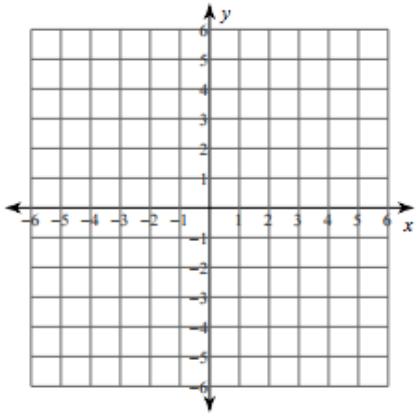
6. Write the equation of a line that passes through (-10, 3) and (-2, -5)

7. Find the slope and y-intercept of the line with the equation f(x) = 2/3 x +4

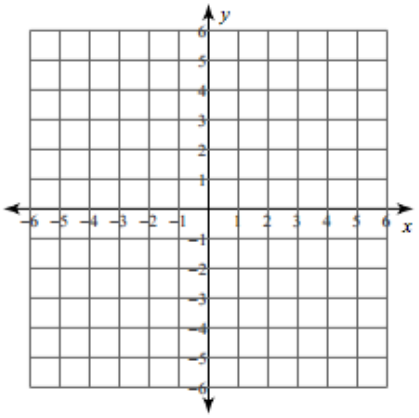
8. Write the equation of the line through (-2,1) and parallel to y= -3x +1

9. Graph each equation or inequality

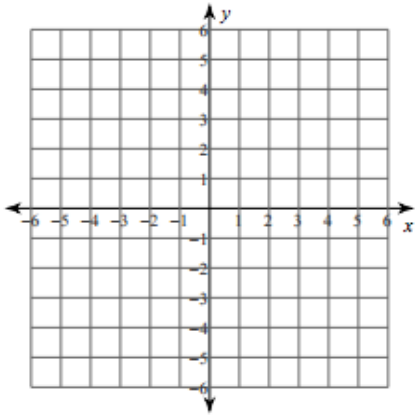
y = 2x –4



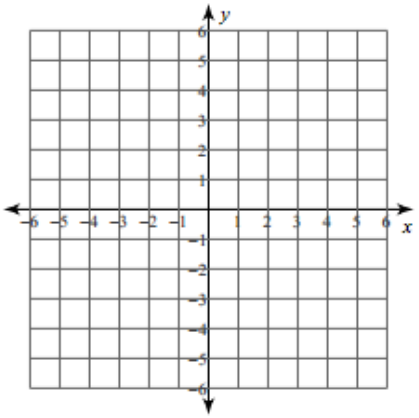
3x + 4y = -12



y – 3 = .5(x + 1)



y > 2x + 1



10. Solve each system of equations or inequality

$y = x - 2$ and $y = -2x + 7$

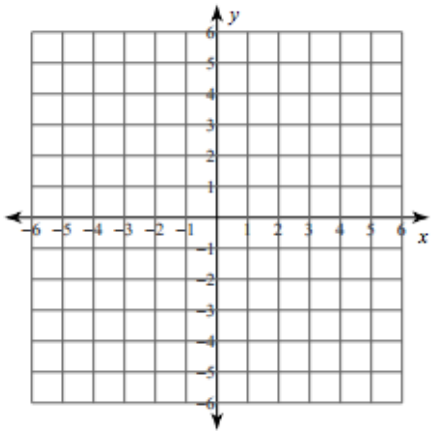
$x + y = 12$ and $x - y = 2$

$4x + 2y = 7$ and $y = 5x$

$y < 2x + 2$ and $y > -x + 1$

11. Graph the function and label the vertex and axis of symmetry*

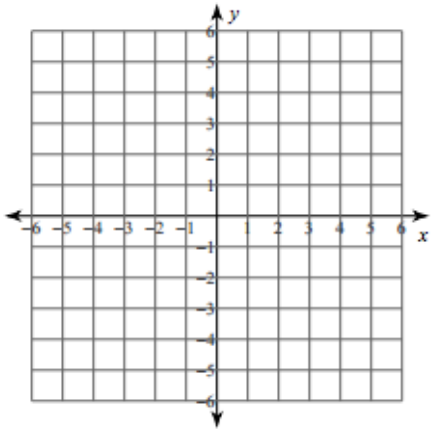
$y = x^2 + 2x + 1$



12. Write in vertex form*

$y = x^2 + 2x + 7$

13. Sketch the parabola* $y = (x + 2)^2 - 3$



14. Solve each equation*

$x^2 + 6x + 8 = 0$ $3x^2 - 16x - 12 = 0$

$x^2 = 49$ $5x^2 = 20$

15. Multiply: $8b(b^2 - 5b + 4)$

$(P + 2)(2P^2 - 5P + 4)$

16. Divide: $\dfrac{21x^3 + 7x^2 - 14x}{7x}$

17. Factor* $x^2 - 5x - 14$ $2x^2 + 9x + 4$

$4x^2 - 49$ $4x^2 + 36x + 81$

18. Simplify (no negative exponents in final simplification)

$(w^2k^op^3)^2$ $(-3x^3)^2(2xy^2)$

$\left(\dfrac{a^3}{m}\right)^{-4}$ $\dfrac{r^3t^{-7}}{t^5}$

19. Add* $\sqrt{5}+3\sqrt{5}$

20. Subtract* $7\sqrt{2}-3\sqrt{18}$

21. Multiply* $2\sqrt{3}\ 3\sqrt{15}$

22. Divide* $\dfrac{\sqrt{20}}{\sqrt{5}}$

23……Simplify*

$\sqrt{16x^2}$

$\sqrt{x^8y^{18}}$

$\sqrt{8y^5}\sqrt{40y^2}$

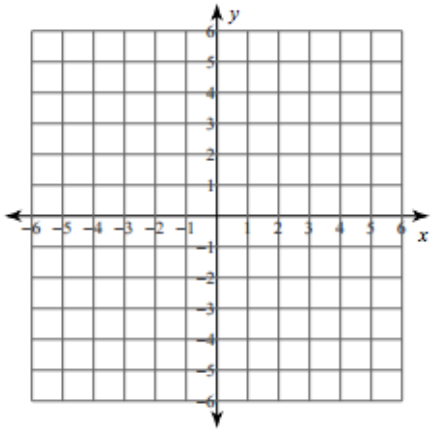
24. Rationalize the denominator: $\dfrac{5}{\sqrt{3}}$

25. The sides of a rectangle are x and 3 – 2x. Express the rectangle's area as a function of x. Express the rectangle's perimeter as a function of x. Explain why x cannot equal 2.

26. Sketch the graphs of $y = x^2 - 4x + 3$ and $x - 2y = -6$ pm the same set of axes. Find the coordinates of each point of intersection.

27. Solve: $4x^4 - 21x^2 + 27 = 0$

28. Graph the inequality $y = (x - 2)^2 - 1$



29. Let f(x) = 3x + 2 Find f(a) and f(2a)

30. Find the vertex and the axis of symmetry for the parabola $y = 2x^2 + 8x + 5$

31. Give the dimensions of three different rectangles with the area of 6 cm^2.

32. Give the dimensions of three different triangles with the area of 8 cm^2.

33. Each leg of an isosceles triangle is twice as long as its base. Express the perimeter in terms of the length of the base.

Graphing Quadratics: [How-To Video: Graphing Quadratics]

Example 2B: Graphing Quadratic Functions by Using a Table of Values

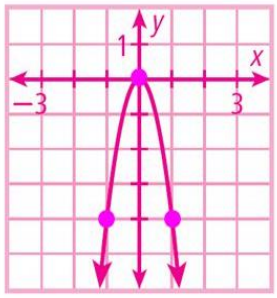
Use a table of values to graph the quadratic function.

$y = -4x^2$

x	y
–2	–16
–1	–4
0	0
1	–4
2	–16

Make a table of values. Choose values of x and use them to find values of y.

Graph the points. Then connect the points with a smooth curve.



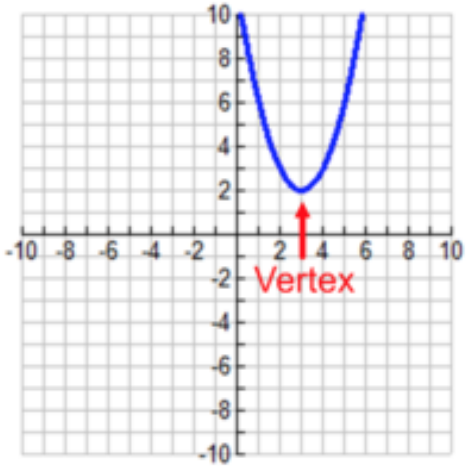
Vertex Form: **[How-To Video: Vertex Form]**

Vertex Form

$y = (x - 3)^2 + 2$

h k

Vertex: (h, k)
Vertex: (3, 2)



Solving Quadratics by Factoring: [How-To Video: Solve Quadratics by Factoring]

Solve: $x^2 + 2x - 15 = 0$
$x^2 + 2x - 15 = 0$
$(x - 3)(x + 5) = 0$
$x - 3 = 0$ OR $x + 5 = 0$
$x = 3$ OR $x = -5$
Solution Set $\{-5, 3\}$

Solving Quadratics Quadratic Formula: [How-To Video: Solving Quadratics using Quadratic Formula]

$$2x^2 - 8x - 24 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(2)(-24)}}{2(2)}$$

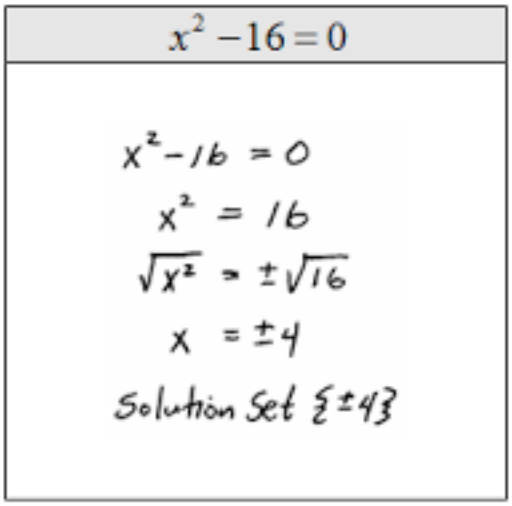
$$x = \frac{8 \pm \sqrt{64 - (-192)}}{4}$$

$$x = \frac{8 \pm \sqrt{256}}{4}$$

$$x = \frac{8 \pm 16}{4} = 2 \pm 4$$

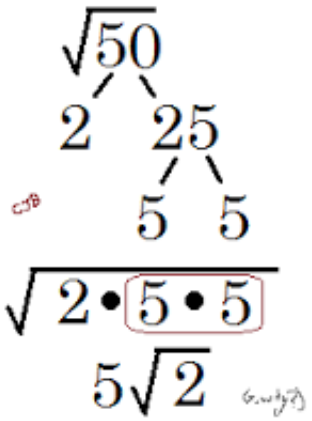
$$x = 6, -2$$

Solving Quadratics Square Root: [How-To Video: Solving Quadratics Square Roots]



Factoring:
[Trinomials ax2 +bx + c]
[Difference of Two Squares]

Simplify Radicals: [How-To Video: Simplifying Radicals]



Radical Operations

Adding: [How-To Video: Adding Radical Expressions]

$$2x + 5x = 7x$$

$$2\sqrt{2} + 5\sqrt{2} = 7\sqrt{2}$$

$$14x - 4x = 10x$$

$$14\sqrt{3} - 4\sqrt{3} = 10\sqrt{3}$$

Multiplying: [How-To Video: Multiplying Radical Expressions]

$$\begin{aligned}\sqrt{6}\left(\sqrt{3}+\sqrt{12}\right) &= \sqrt{6}\cdot\sqrt{3}+\sqrt{6}\cdot\sqrt{12}\\ &= \sqrt{18}+\sqrt{72}\\ &= \sqrt{9\cdot 2}+\sqrt{36\cdot 2}\\ &= 3\sqrt{2}+6\sqrt{2}\\ &= 9\sqrt{2}\end{aligned}$$

Dividing:

$$\frac{\sqrt{16x^5y^4}}{\sqrt{2xy}} = \sqrt{\frac{16x^5y^4}{2xy}}$$

Apply the quotient rule for radicals and cancel.

$$= \sqrt{8x^4y^3}$$

Simplify.

$$= \sqrt{4\cdot 2\cdot (x^2)^2\cdot y^2\cdot y}$$

$$= 2x^2y\sqrt{2y}$$