HONORS GEOMETRY SUMMER ASSIGNMENT

Directions: This contains skills and concepts that were taught in middle school and/or in Algebra 1. Reviewing this material will help you recall skills needed to be successful in Honors Geometry. The skills and concepts you will be reviewing and applying to problems are as follows:

PART 1: SOLVE MULTI-STEP EQUATIONS WITH ONE VARIABLE

PART 2: QUADRATIC EQUATIONS

- Solve quadratic equations by factoring and quadratic formula
- Graph quadratic functions

PART 3: RADICALS

- Simplify radicals
- Solve quadratic equations by finding square roots
- Use the Pythagorean Theorem

PART 4: PERIMETER, AREA, VOLUME

- Apply perimeter and area of rectangles, triangles, trapezoids, circles
- Find surface area and volume of rectangular prisms

PART 5: TRANSFORMATIONS

- Reflections
- Rotations
- Translations
- Dilations

Anything you need to review should be able to be found on the internet. See suggested websites below for additional practice.

www.purplemath.com
www.khanacademy.org
www.helpingwithmath.com

Name: _____

PART 1
MULTI-STEP EQUATIONS WITH ONE VARIABLE

Solve the equation.

1. $17 = 2(3x + 1) - x$	2. $-12 = \frac{1}{2}x + x$
3. $5m - (4m - 1) = -12$	4. $\frac{2}{3}x + \frac{3}{4}x = -34$

Solve the systems of equations below by the linear combination (elimination) method.

5. 2x - y = 1 -2x - 5y = 5	6. 3x + y = 6 3x - 4y = -9
7. -2x + 3y = 14 X - 4y = -12	8. -5x + 3y = 15 6x - 2y = -18

Solve the systems of equations below by the substitution method

9. x + 4y = -4 3x + 2y = 8	10. 3x = 9 -2x + y = -8

PART 2

QUADRATIC EQUATIONS

$y = ax^2 + bx + c$

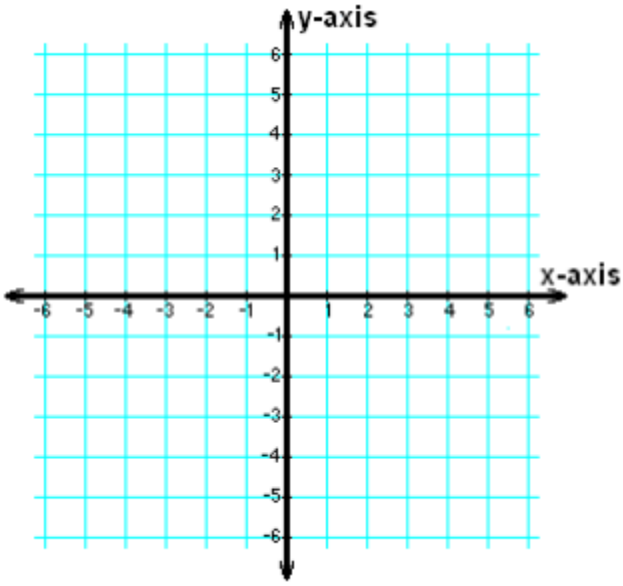
11. x^2 - 11x + 30 = 0	12. x^2 - 3x - 70 = 0
13. x^2 - 2x = 63	14. x^2 - 12x = 64
15. $3x^2$ + 9x - 12 = 0	16. $5x^2$ - 22x - 15 = 0
17. $8x^2$ - 16x + 6 = 0	18. $2x^2$ - 15x = -28

Remember - The graph of a quadratic is a parabola

19. Graph x^2- 6x + 5 = 0

What are the x-intercepts? (___ , ___)

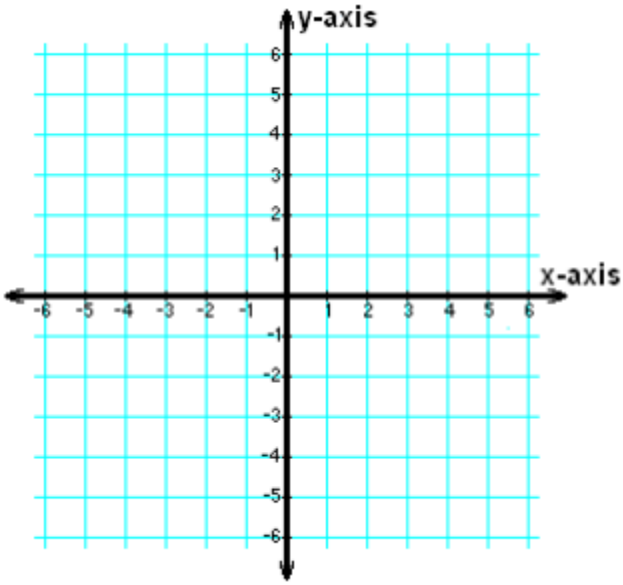
What is the vertex: (___ , ___)



20. Graph x^2- 2x - 8 = 0

What are the x-intercepts? (___ , ___)

What is the vertex: (___ , ___)



Solve the following quadratic equations by using the quadratic formula.

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

21. $4x^2 - 13x + 3 = 0$	22. $3x^2 - 5x - 12 = 0$
23. $8x^2 + 6x - 1 = 0$	24. $9x^2 + 14x + 3 = 0$

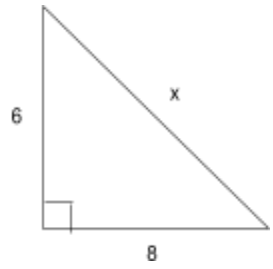
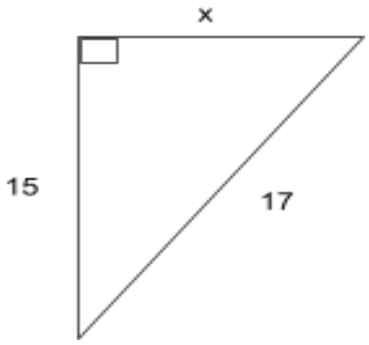
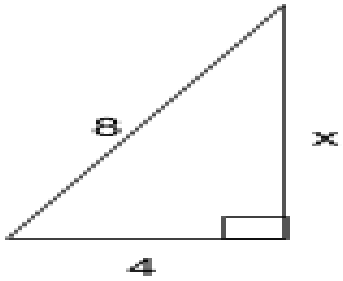
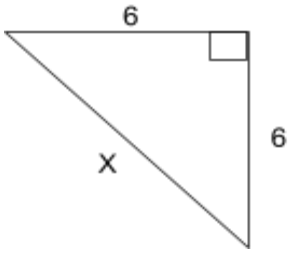
PART 3

RADICALS

In problems 25 - 28, simplify the radicals. In problems 29 - 32, solve for x. If necessary, express your answer as a simplified radical. Find all solutions for x.

25. $\sqrt{32}$	26. $\sqrt{72}$	27. $\sqrt{363}$	28. $\sqrt{245}$
29. $X^2 = 81$	30. $3x^2 = 363$	31. $5x^2 + 3 = 128$	32. $2x^2 = 144$

In problems 33 - 36, find the length of the missing side of the right triangle. Review the Pythagorean Theorem: $a^2 + b^2 = c^2$. Express your answer as a simplified radical.

33. 	34. 
35. 	36. 

PART 4

PERIMETER, AREA, SURFACE AREA, VOLUME

37. Find the length of the side of a rectangle with area of 96 *in²* and width of 12 *in*.

38. Find the perimeter of a square with an area of 256 ft²

39. Area of a trapezoid is $\frac{1}{2}$h (b_1 + b_2). The area is 144 in² and the sum of the bases is 36 in. What is the height?

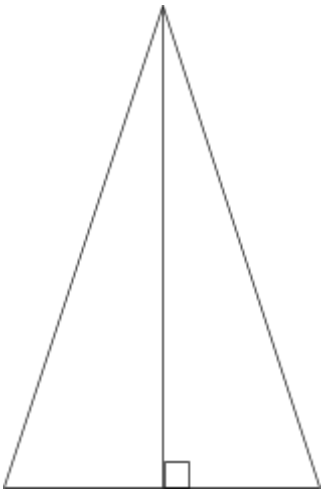
40. Room dimensions

The area of a room shown below is 320 ft². If the length is 20 in, what is the perimeter?

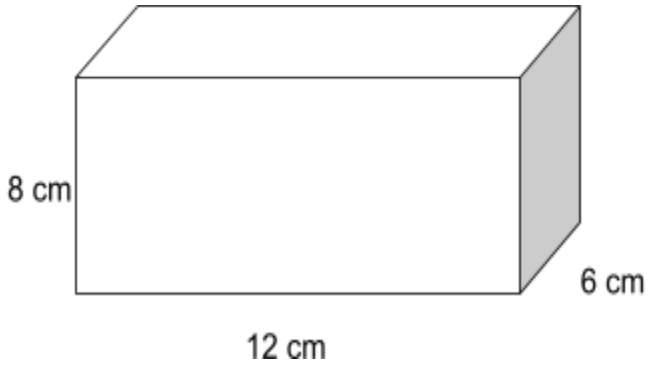


41. Dimensions of a Triangle

The area of an isosceles triangle is 52 in². The height is 8 in. What is the length of the base?



42. The following is a rectangular prism. Find its surface area and volume.

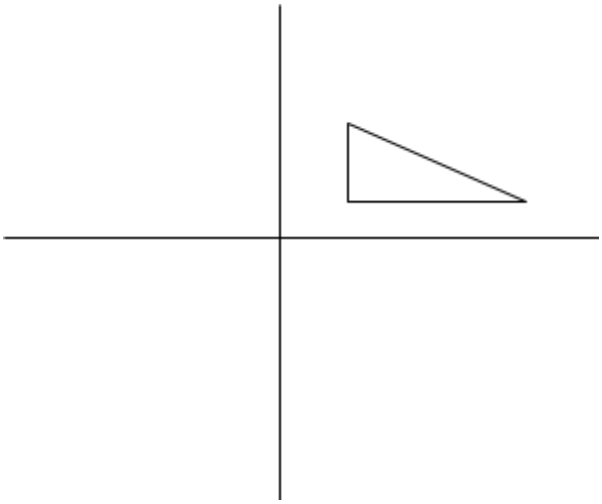


PART 5

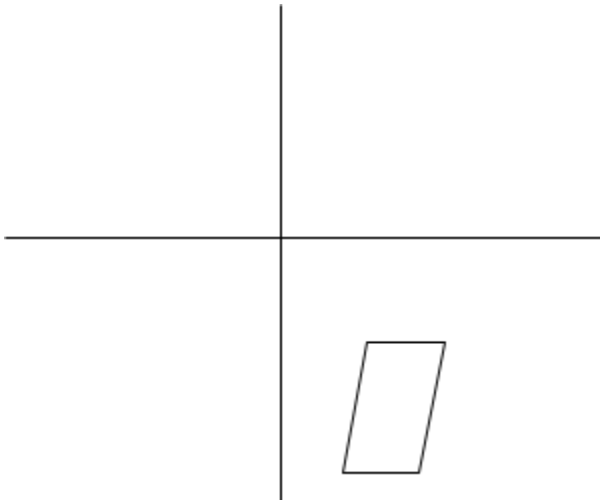
TRANSFORMATIONS

Vocabulary to review: Reflection, Rotation, Translation, Dilation

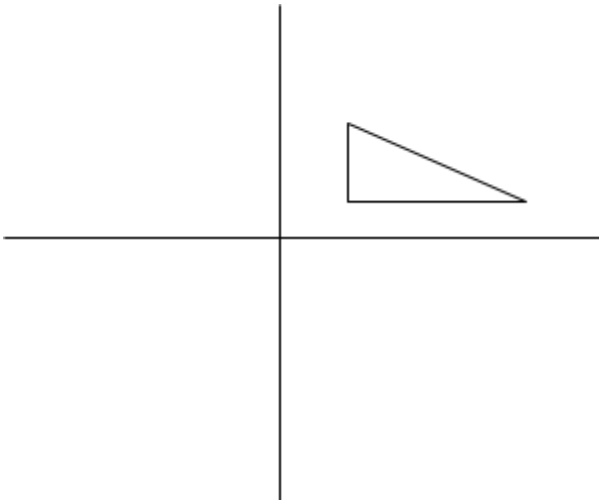
43. Draw a reflection of the figure shown over the x-axis.



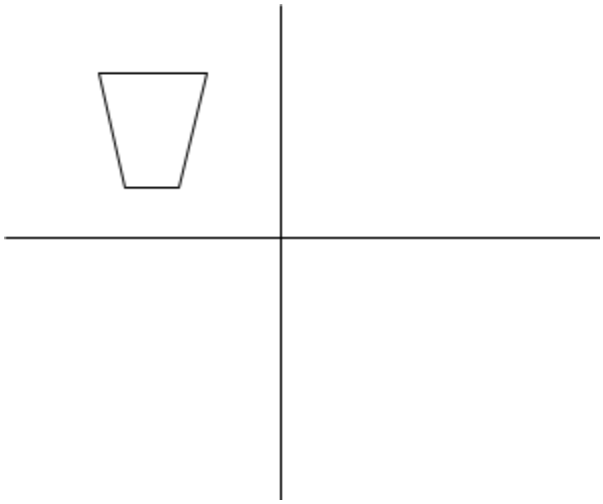
44. Draw a reflection of the image shown over the y-axis.



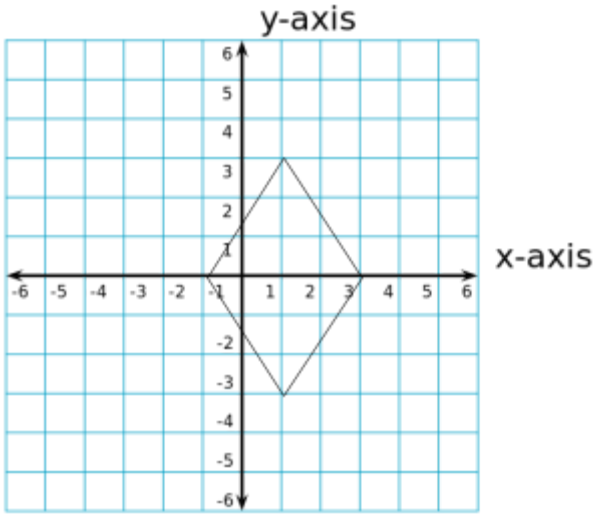
45. Draw a rotation of 90° clockwise about the origin for the figure shown.



46. Draw a rotation of 180° about the origin for the figure shown.



47. Translate the following figure to the right 3 units and then down 5 units.



48. The coordinates or rectangle ABCD are (2, -2), (8, -2), (8, -5), (2, -5).

What are the coordinates of rectangle A'B'C'D' after a translation of (x - 3, y + 5)

49. Draw a 4 x 4 square at the center of the coordinate plane and label its vertices ABCD. What are the coordinates of the square?

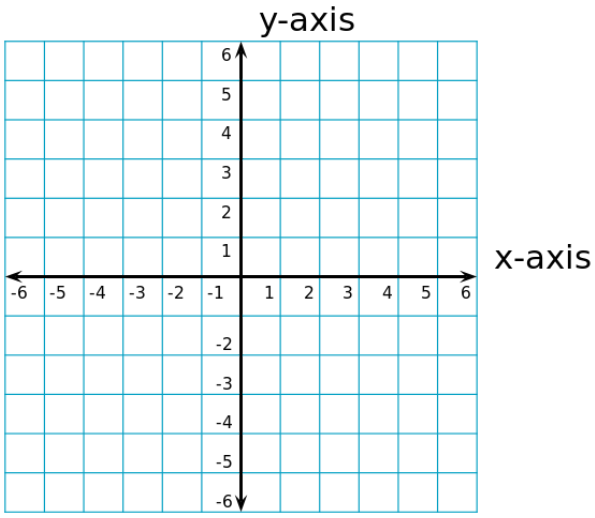
A (___ , ___) B (___ , ___) C (___ , ___) D (___ , ___)

Find the square's area and perimeter.

Dilate the square by a factor of two and label its vertices A'B'C'D'. What are the coordinates of the new square?

A' (___ , ___) B' (___ , ___)
C' (___ , ___) D' (___ , ___)

Find the dilated squares area and perimeter.



Calculate the ratio of the perimeter of the dilated square to that of the original square. Calculate the ratio of the area of the dilated square to that of the original square. Are these two ratios the same? Why or why not? Explain your answer.