2020-2021 Geometry Honors Summer Packet

The purpose of the packet is to help you review and reinforce concepts and skills necessary for Geometry Honors. This packet has been designed to provide a review of 6th Grade Math through Algebra I. Completion of this packet over the summer will be of great value to helping you successfully meet the academic challenges awaiting in Geometry Honors.

Instructions: Complete all sections of this packet. You will show this completed packet to your Geometry Honors teacher the first day of school. All work must be shown and final answers should be circled. Students must show work that supports their understanding. It may be necessary to seek assistance on some questions/concepts... that is fine! The summer packet will NOT be taken as a grade, but all material covered in the packet will be assumed prior mastered knowledge.

A simple 4 function calculator should be all you need to complete this practice. Note: a graphing calculator should not be used. Do as much as possible without the use of a calculator at all. Geometry Honors assessments include both non-calculator and calculator portions. You need to be comfortable doing math without the use of any calculator.

Websites that may be of assistance: www.khanacademy.com, www.mathforum.org/dr.math, www.allmath.com, www.mathforum.com, www.AAmath.com, www.coolmath.com, www.figurethis.org

The more math you explore, the more prepared you will be in August!

Solve each equation.

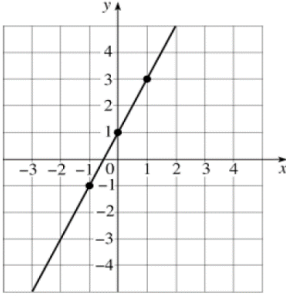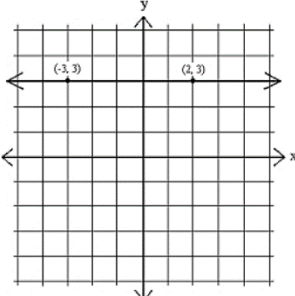|	
1. $-x - 9 = x + 3$	**2.** $7x - 4 + 2x = 12 + 7x$
3. $-5 - 4(n + 3) = -19 - 3n$	**4.** $-3(3 - k) = 3(k + 3)$
5. $\frac{3}{4}(d - 3) = 6$	**6.** $\frac{6}{w} = -24$
7. $\frac{1}{2}(6 + 4x) - \frac{1}{4}(8x - 12) = \frac{1}{2}(2x - 4)$	**8.** $24 = \frac{5}{8}x + 4$

Solve the following proportions algebraically.

9. $\frac{y}{50} = \frac{3}{100}$	**10.** $\frac{14}{n+30} = \frac{2}{n}$
11. $\frac{p+15}{42} = \frac{p+5}{14}$	**12.** $\frac{r}{3r+1} = \frac{2}{3}$
13. $\frac{8}{9} = \frac{30+a}{45}$	**14.** You made a model of the Space Needle in Seattle, Washington, for a report on architecture in the United States. You used a scale of 1in:50ft. Your model is 12.1 inches tall. Estimate the actual height of the Space Needle.

Literal Equations are also on the PSAT & SAT exams. Solve for the indicated variable.

15. $d = rt$ for r	**16.** $ax + by + c = 0$ for y
17. $A = \frac{e+f}{2}$ for e	**18.** $V = \frac{4}{3}\pi r^3$ for r
19. $a^2 + b^2 = c^2$ for b	**20.** $V = \pi r^2 h$ for h

Find the slope of the line.

21.	**22.**
23. $(3,4)$ and $(-5,0)$	**24.** Find the value of x if $m = 3/4$; $(7,5)$ and $(x,2)$.
25. $5x + 4y = 40$	**26.** $7x + 42 = 2y$

Write the equation that describes each line in slope-intercept form.

27. $m = 3$ and passes through point $(-1,2)$	**28.** $(-2,4)$ and $(1,2)$
29. Passes through point $(-5,-5)$ and is parallel to $6x - y = 1$	**30.** $m = -\frac{1}{2}$; $(8,-1)$ is on the line
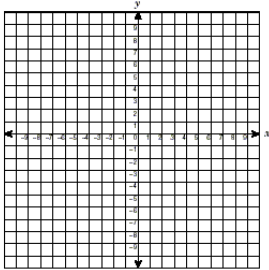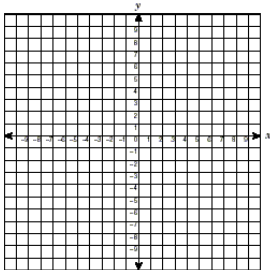
Determine the slopes of lines that would be parallel and perpendicular to each equation.

31. $y = \frac{2}{3}x + 3$ ∥ Slope= ⊥ Slope=	**32.** $3x + 4y = 8$ ∥ Slope= ⊥ Slope=
33. $7x + 3y = 14$ ∥ Slope= ⊥ Slope=	**34.** $\frac{x}{3} - y = 3$ ∥ Slope= ⊥ Slope=

Write an equation in point-slope form for the line with the given slope that contains the given point.

35. Slope=4; $(5, 6)$	**36.** Slope=-3; $(7, -2)$

Graph the line described by each equation.

37. $y + x = 3$	**38.** $5x - 2y = 10$

Parallel and Perpendicular Lines.

39. Determine which of the following, if any, are parallel or perpendicular. Line a: $y = 8x - 5$ Line b: $y = \frac{1}{8}x + 1$ Line c: $8x + y = 2$	**40.** Write the equations of the lines that pass through the given point and that are parallel and perpendicular to the given line. $(-5, -5)$, $6x - y = 1$

Solve each system.

41. $\begin{cases} y = 2x + 3 \\ y = -x + 9 \end{cases}$	**42.** $\begin{cases} y = -3x + 4 \\ y = 2x + 4 \end{cases}$

43. $\begin{cases} -2x + 2y = 4 \\ 4x + 3y = -15 \end{cases}$	**44.** $\begin{cases} 9x + 6y = 12 \\ -18x - 8y = -4 \end{cases}$

Add or subtract.

45. $12x^2 + 11y^2 - 5x^2$	**46.** $(-8k^2 + 5) - (3k^2 + 7k - 6)$

Multiply.

47. $-4x(x^2 - 5x + 7)$	**48.** $(y - 7)(y - 4)$
49. $(x - 4)^2$	**50.** $(5x + 2)^2$

Factor each polynomial.

51. $12x^3 - 5x$	**52.** $6x^2 - 18x + 6$
53. $x^2 + 11x + 28$	**54.** $64x^2 - 1$
55. $2x^2 - 5x - 3$	**56.** $3x^2 - 19x + 20$

Simplify each radical. Leave answers in simplest radical form. No decimals
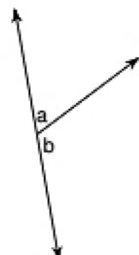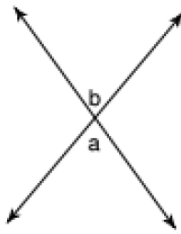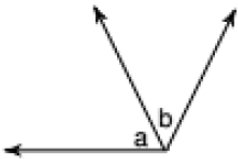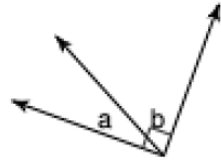
57. $\sqrt{200}$	**58.** $\sqrt{45}$
59. $\sqrt{169}$	**60.** $\sqrt{\dfrac{16}{81}}$
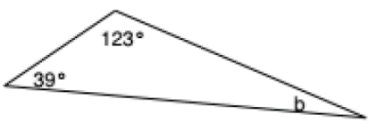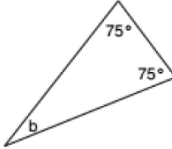
Find the distance between the points using the Pythagorean Formula:

61. $B(3,-8)$ and $C(9,-2)$	**62.** $X(-5,3)$ and $Z(4,1)$
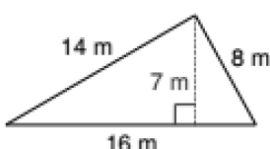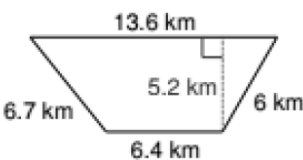
Name the relationship(s): complementary, supplementary, vertical, or adjacent.

63.	**64.**
65.	**66.**
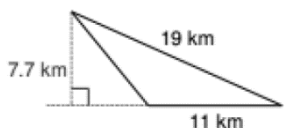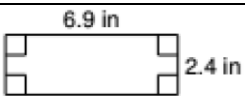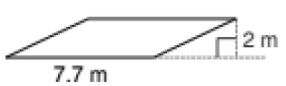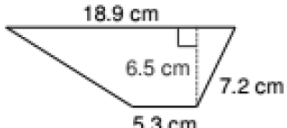
Find the measure of angle b.

67.	**68.**

Find the perimeter of each figure.

69.	**70.**

Find the area of each figure.

71.	**72.**
73.	**74.**

75. Write an expression to represent the perimeter and area of the following rectangle.

2x

3x+2
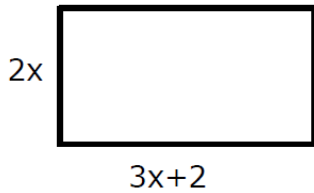
76. Use the information about the figure to find the indicated measure. $A = 345\ cm^2$, **find the base "b".**

50 cm

b
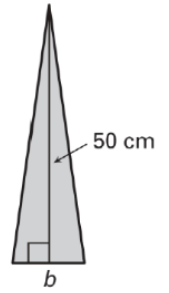
Find the area and circumference of each circle.

77.

14 in

78.

30.2 cm
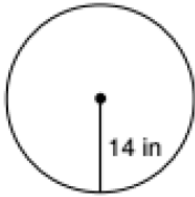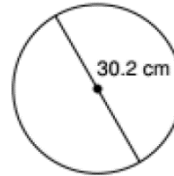
Use Pythagorean Theorem to find the missing length.

79.

2   6

80.

6   3
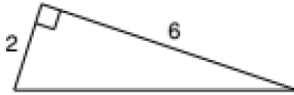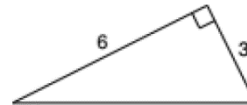
The polygons in each pair are similar. Find the scale factor of the smaller figure to the larger figure.

81.

18   6

18   6

82.

4   12

4   12

5   15
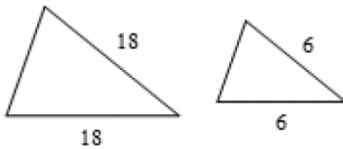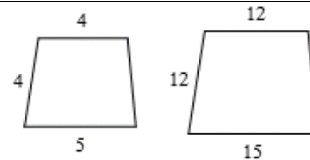
Find the surface area, lateral area, and volume of each figure.

83.

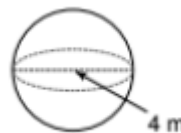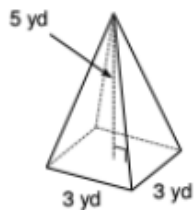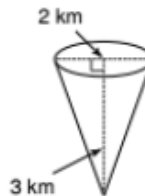10 m

4 m

17 m

17 m

4 m

84.

5 yd   3 yd

2.5 yd   3 yd

6 yd

85.

3 in

4 in

86.

4 m

87.

5 yd

3 yd   3 yd

88.

2 km

3 km
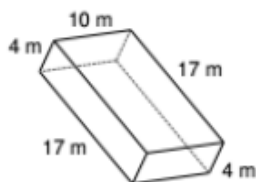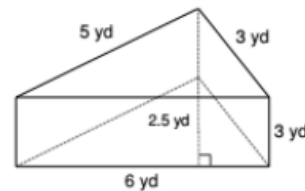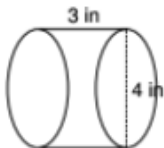
Graph the image of the figure using the transformation given.
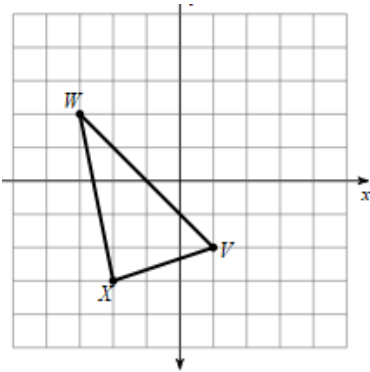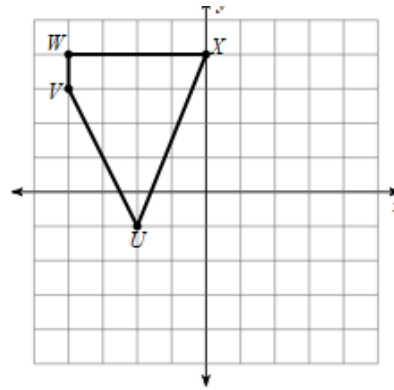
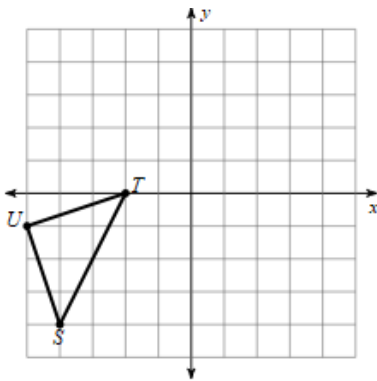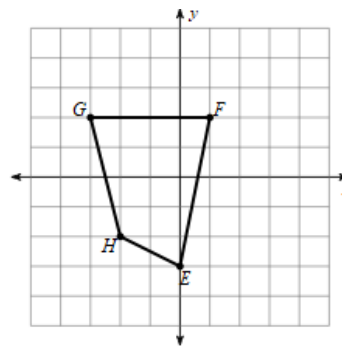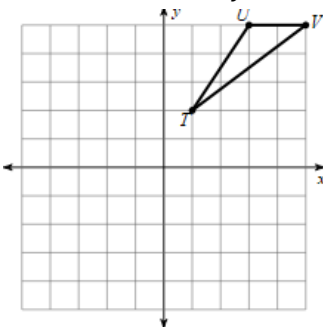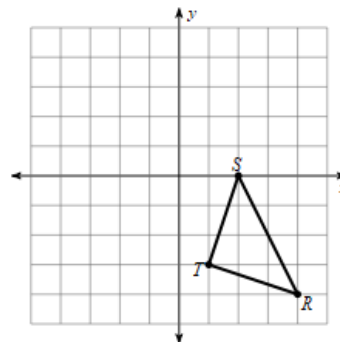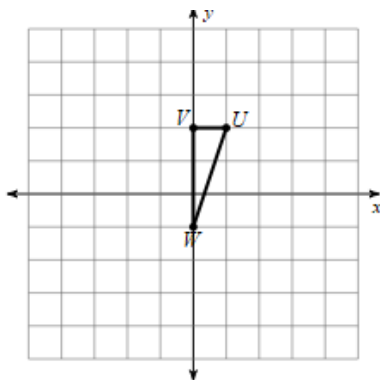|	
89. Translation: 2 units right	**90.** Translation: 4 units left and 1 unit down
91. Rotation 90° counterclockwise about the origin	**92.** Rotation 180° about the origin
93. Reflection across $y = x$	**94.** Reflection across the y axis
95. Dilation of $\frac{5}{2}$ about the origin	**96.** Dilation of $\frac{1}{2}$ about the origin