

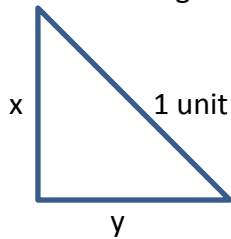
NAME \_\_\_\_\_

**AMHS GSE Advanced Algebra Summer Assignment**

The following problems reflect information that will be used during the upcoming year. These topics should have been covered in previous courses, not necessarily last year. You are responsible for knowing this material prior to entering Advanced Algebra. **This work is due August 18, 2017.** Use graph paper and show ALL work as needed.

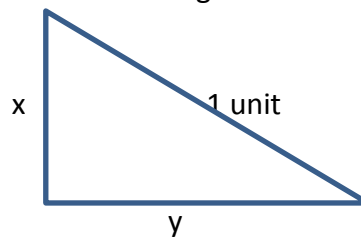
Find the missing lengths in each triangle. Leave answers in simplest radical form.

1. 45-45-90 triangle



$x = \underline{\hspace{2cm}}$      $y = \underline{\hspace{2cm}}$

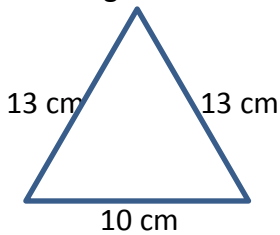
2. 30-60-90 triangle



$x = \underline{\hspace{2cm}}$      $y = \underline{\hspace{2cm}}$

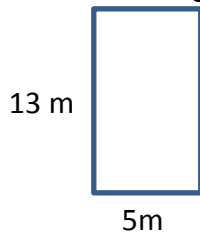
Find the perimeter and area of each figure.

3. Triangle



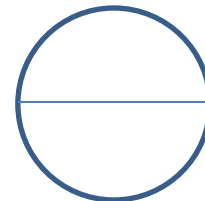
$P = \underline{\hspace{2cm}}$      $A = \underline{\hspace{2cm}}$

4. Rectangle



$p = \underline{\hspace{2cm}}$      $A = \underline{\hspace{2cm}}$

5. Circle with diameter 6m.



$C + \underline{\hspace{2cm}}$      $A = \underline{\hspace{2cm}}$

Evaluate each expression for the given value of x.

6.  $x^2 - 3x + 5$  for  $x = -4$

7.  $(x - 3)^2 - 5$  for  $x = -3$

8.  $\frac{x-6}{x}$  for  $x = 3$

Solve each equation for y.

9.  $3x + y = 4$

10.  $x - 2y = 10$

11.  $5x + 6y = -60$

Solve each inequality.

12.  $2x + 9 < 18$

13.  $6 - .5y \leq 19$

14.  $2x + 3 > 6x - 7$

Check to see if the given ordered pair is a solution to the inequality. Justify your answers.

15.  $y > 0$ ;  $(-4, 5)$

16.  $2x - 3y > 6$ ;  $(6, 2)$

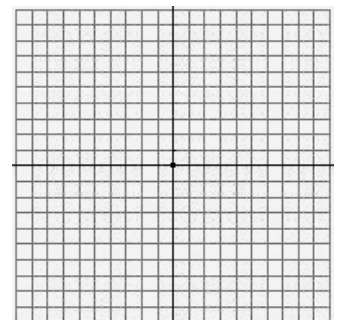
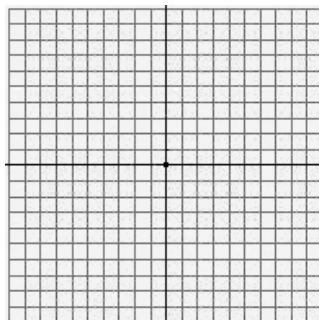
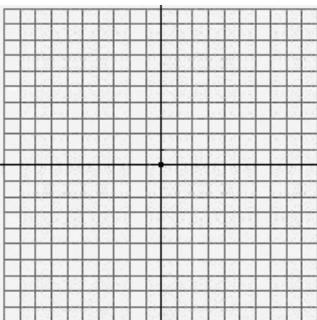
17.  $x + y \geq 3$ ;  $(-7, 10)$

Graph each equation or inequality.

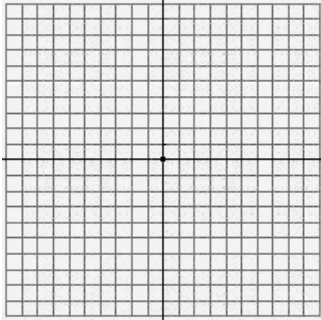
18.  $y = \frac{1}{2}x + 1$

19.  $2x + 5y = 20$

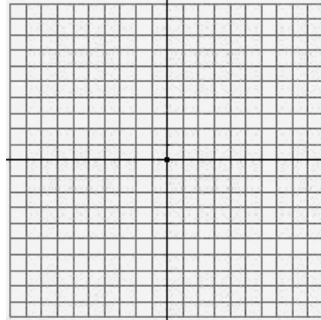
20.  $y = 3$



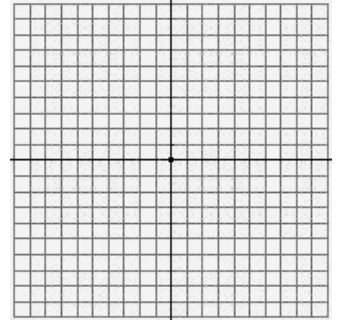
21.  $x < -2$



22.  $y > -x$



23.  $2 - 2y \geq 8$



**Solve each equation.**

24.  $3x - 5 = 7x - 16$

25.  $4(x + 6) = 12$

26.  $x - 5 = \pm 3$

**Simplify each expression.**

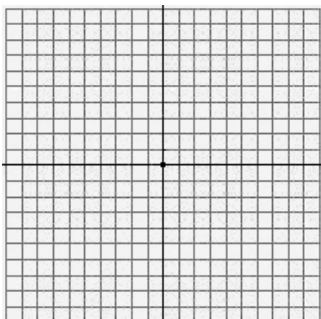
27.  $4x^2 - 5x + 3 - x + x^2$

28.  $2(8x - 13) - 19x$

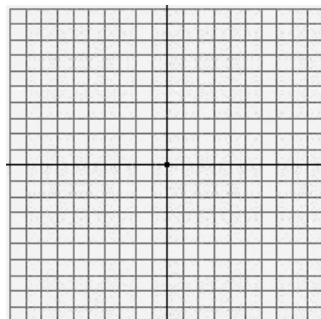
29.  $x^3 - x^2 - 3x^3 - x$

**Sketch the graph of each quadratic function. Label its vertex.**

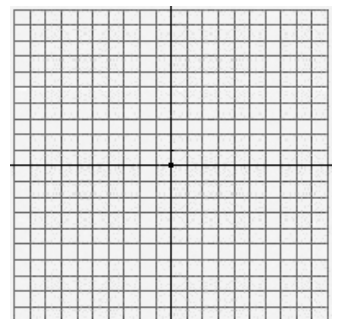
30.  $y = (x - 1)^2 - 7$



31.  $y = -2(x - 4)^2$



32.  $y = -(x + 3)(x - 1)$



Completely factor each polynomial. You may have to factor out the GCF first. Show how you re-wrote and grouped the terms to factor. Use #48 as an example.

33.  $x^2 - 6x + 9$

34.  $6x^2 + 7x - 5$   
 $6x^2 + 10x - 3x - 5$   
 $(6x^2 + 10x) + (-3x - 5)$   
 $2x(3x + 5) - 1(3x + 5)$   
 $(3x + 5)(2x - 1)$

35.  $x^2 + 10x + 21$

36.  $x^2 + 5x - 36$

37.  $2x^2 - 16x + 30$

38.  $x^5 - 15x^4 + 26x^3$

39.  $6x^2 - 23x + 10$

40.  $5x^2 - 33x - 14$

41.  $12x^2 + 7x + 1$

Solve each equation. Use factoring or completing the square, but show your work.

42.  $x^2 + 6x - 27 = 0$

43.  $2x^2 + 5x = 12$

44.  $2x^2 = 98$

45.  $3x^2 + 27x = -54$

46.  $6x^2 - 6x + 10 = 2x^2 - 2x + 25$

47.  $5x^2 - 605 = 0$

Simplify each expression.

48.  $(a^5bc^2)^3$

49.  $(9x^{-3})(-2x^5)$

50.  $\left(\frac{3x}{y}\right)\left(\frac{3x^2y^{-3}}{12y^2}\right)$

**Perform the indicated operations.**

51.  $5x^3(x - 3)$

52.  $(5x - 2)^2$

53.  $(2x - 3) - (9x + 5)$

**Evaluate each expression.**

54.  $4^{-3}$

55.  $\left(\frac{3}{2}\right)^3$

56.  $\left(\frac{9}{2}\right)^0$

57.  $-5^2$

58.  $\left(\frac{3}{4}\right)^{-2}$

**Write the equation of the line in  $y = mx + b$  form.**

59.  $m = 2$ ; through  $(3, -1)$

60.  $m = \frac{1}{2}$ ; through  $(0, 2)$

61. through  $(2, -2)$  and  $(1, -3)$

**Simplify each expression. Leave in simplest radical form.**

62.  $\sqrt{96}$

63.  $\sqrt{-18}$

64.  $\frac{2}{\sqrt{2}}$

65.  $\frac{2}{\sqrt{3}}$

66.  $\sqrt{\frac{3}{4}}$

67.  $\sqrt{-1}$

**Use the quadratic formula to solve each of the following.**

68.  $2x^2 + 5x - 13 = 0$

69.  $x^2 - 3x - 11 = 0$

70.  $3x^2 + 5x + 14 = 0$

