

Name: \_\_\_\_\_

Dear Honors Geometry Students,

Here are some topics that are important for you to know for next year. Bring this completed assignment with you on the first day of school and be prepared to take a quiz on these types of problems our first week back.

Make sure to show all work for credit. Use a pencil and be neat.

Have a great summer and I'll see you in August.

I. Solve by factoring.

1.  $16x^2 - 36 = 0$

2.  $x^3 + 2x^2 - 16x = 32$

3.  $9x^2 - 9x - 28 = 0$

4.  $4x^2 - 28x = 120$

5.  $15x^2 - x - 10 = 18$

6.  $45x^2 - 60x + 20 = 0$

7.  $2x^3 - 3x^2 - 18x + 27 = 0$

8.  $2x^2 + 3x - 5 = 0$

9.  $25x^3 + 20x^2 + 4x = 0$

10.  $(x + 6)(x - 1) = 78$

11.  $2x^2 + 13x = 24$

12.  $x^2 = -17x$

13. For what values of  $k$  will the equation  $x^2 - 4x + k = 0$  have a double root?

**II. Solve the following systems.**

$$\begin{aligned} 14. \quad & -7x + 2y = -5 \\ & 10x - 2y = 6 \end{aligned}$$

$$\begin{aligned} 15. \quad & 3x + 4y = 9 \\ & 4y - 3x = -1 \end{aligned}$$

$$16. \quad -x + \frac{1}{3}y = -6$$

$$3x - y = -6$$

$$17. \quad 3x - 2y = 8$$

$$x + \frac{3}{2}y = 20$$

$$\begin{aligned} 18. \quad & 5x - 3y = 11 \\ & 2x + 3y = -25 \end{aligned}$$

$$\begin{aligned} 19. \quad & y = 4x - 7 \\ & x + y = 8 \end{aligned}$$

**III. Simplify. Leave answers in simple radical form.**

20.  $\sqrt{20} \cdot \sqrt{10}$

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

22.  $\frac{8}{\sqrt{2}}$

23.  $\left(\frac{4\sqrt{3}}{3}\right)^2$

24.  $(8\sqrt{2})^2$

25.  $\frac{4}{1-\sqrt{3}}$

26.  $(\sqrt{6} + 5)^2$

27.  $(2\sqrt{3} - 3)^2$

28.  $(7\sqrt{3} - 6)(7\sqrt{3} + 6)$

29.  $\sqrt{108}$

30.  $\sqrt{720}$

31.  $\sqrt{\frac{20}{7}}$

32.  $\sqrt{\frac{60}{y^2}}$

33.  $\sqrt{96x^4}$

34.  $\frac{\sqrt{5}}{\sqrt{55}}$

**IV. Equations of lines**

35. Write an equation, in slope intercept form, of the line that passes through (2, -3) and is perpendicular to the line  $2x - y = 10$ .

36. What is the slope of a line parallel to the line whose equation is:  $y = -\frac{1}{2}x + 3$ ?

37. What are the slope and y-intercept of the line:  $\frac{1}{2}y = x + 4$ ?

38. What is the slope of the line joining (-4, 7) and (-5, 0)?

39. How far is the point (-3, -4) from the origin?

#### **IV. Proportions**

40. Solve for w:  $\frac{3w+6}{28} = \frac{3}{4}$

41. Solve for r:  $\frac{r}{3r+1} = \frac{2}{3}$

42. Find  $\frac{x}{y}$  :  $\frac{5x+8}{24} = \frac{2y+3}{9}$

#### **V. Absolute value**

43. Solve for x:  $|2x-4| = 10$

44.  $|2x-3| < 7$

45.  $|3-2x| = 5$

46.  $|5x+7| > 15$

**VI. Evaluate.**

47.  $|4 - x|$  if  $x = -2$

48.  $|a| - |2b|$  if  $a = -5$  and  $b = 1$

49.  $-|m + n|$  if  $m = 3$  and  $n = -12$

50. If  $f(x) = x^2 - x + 1$ , evaluate each of the following:

a.  $f(2)$                       b.  $f\left(\frac{1}{2}\right)$                       c.  $f(-1)$                       d.  $f(a + 2)$

**VII. Solve for x.**

51.  $2(x - 3) + 5 = 4(x - 1)$

52.  $-3(x - 8) - 5 = 9(x + 2) + 1$

53.  $2(x - 8) + 7 = 6(x + 2) - 3x - 19$

**VII. Solve for x.**

54.  $\frac{x + y}{c} = d$

55.  $5(2a + x) = 3b$

**VIII. Find the product.**

56.  $(r - 3)(r + 7)$

57.  $(x + 5)(3x - 2)$

58.  $(x + 2y)^2$

59.  $(n - 3)(n^2 + 3n + 9)$

60.  $(3x - 5)^2$

61.  $(x - y)^3$

**IX. Solve using the quadratic formula.**

62.  $x^2 - 5x + 7 = 0$

63.  $3x^2 + x = 5$

64.  $4x^2 - 3x + 5 = 2x$

65. Simplify:  $\frac{2x^2 - x - 28}{4x^2 - 49}$





