

## Algebra 2 Honors Packet Review

Name \_\_\_\_\_

Solve each equation for the variable:

1.  $2(y + 2) + y = 19 - (2y + 3)$  \_\_\_\_\_

2.  $7 - \frac{16}{x} = -1$  \_\_\_\_\_

3.  $\frac{1}{2}x + 7 = \frac{3}{4}x - 4$  \_\_\_\_\_

4.  $4x + 3 - 2x = 2x + 7$  \_\_\_\_\_

5.  $23x + 34 = 23 - 12x + 7x$  \_\_\_\_\_

6.  $16x - 3(4x + 7) = 6x - (2x + 21)$  \_\_\_\_\_

7.  $3(x - 3) - 7(x + 3) = 4(2x - 3) - 8(2x + 3)$  \_\_\_\_\_

8.  $2|2x + 3| = 12$  \_\_\_\_\_

9.  $4x - (x + 6) = 3x - 4$  \_\_\_\_\_

10.  $9(2 - x) + 3(5 + 2x) = 2(7 - 2x) - 4(x - 1)$  \_\_\_\_\_

11. Solve for F:  $C = \frac{5}{9}(F - 32)$  \_\_\_\_\_

12. Solve for s:  $-5 = t + 4s$  \_\_\_\_\_

13. Solve for P:  $A = P + Prt$  \_\_\_\_\_

14. Solve for v:  $t = \frac{u+v}{v}$  \_\_\_\_\_

15. Solve for h:  $S = 2lw + 2lh + 2wh$  \_\_\_\_\_

16. A rectangle is 5 feet longer than it is wide. The perimeter of the rectangle is 34 feet. What is the length of the rectangle? \_\_\_\_\_

17. A garden that is 5 ft. by 6ft. has a walkway 2ft. wide around it. What is the amount of fencing needed to surround the walkway? \_\_\_\_\_


18. The area of an 11 cm. wide rectangle is 176 square centimeters. What is the length of the rectangle? \_\_\_\_\_

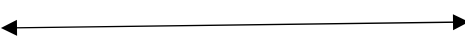
19. A rectangle has a perimeter of 40 cm. and a length of 12 cm. What is the area of the rectangle? \_\_\_\_\_


20. The diameter of a circle is 14 ft. What is the circumference and the area of the circle?  
Circumference \_\_\_\_\_ and Area \_\_\_\_\_


Solve each inequality and graph the solution on a number line


21.  $-5x \geq 2x - 6$  

22.  $-10 < -2x - 2 < -4$  

23.  $x + 7 \geq 4$  or  $x - 2 < 2$  

24.  $|x - 12| < 6$  

25.  $|x + 4| \geq 2$  

26.  $-3|x - 10| < 9$  

27. The length of two sides of a triangle are 8 ft. and 12ft. Find the range of possible lengths for the third side of the triangle. \_\_\_\_\_

28. Write an absolute value inequality that represents, "All real numbers less than 4 units from 6 on a number line." \_\_\_\_\_

29. Write an absolute value inequality that represents, "All real numbers at most 7 units from 3 on a number line." \_\_\_\_\_

30. A horse's body temperature  $h$ , is considered to be normal if it is within at least  $0.9^\circ\text{F}$  of  $99.9^\circ\text{F}$ . Find the range of normal body temperatures for a horse. \_\_\_\_\_

Solve using the zero product property:

31.  $x^2 - 6x - 7 = 0$  \_\_\_\_\_

32.  $4x^2 - 64 = 0$  \_\_\_\_\_

33.  $2x^3 - 12x^2 + 18x = 0$  \_\_\_\_\_

34.  $2x^2 - 6x + 4 = 0$  \_\_\_\_\_

35.  $4x^2 + x - 5 = 0$  \_\_\_\_\_

36. Given the sets of ordered pairs, find the following:

I. ( 3, 9) and ( 1, 5)

II. (- 9, -5) and (3, -2)

A. Find the slope

B. Find the distance of the segment joining the points

C. Find the midpoint

D. Write the equation of the line in slope intercept form.

E. Find the equation of the line in point slope form perpendicular to the line in part D passing through the point (-1, 5)

Simplify:

37.  $3\sqrt{27} + 2\sqrt{125}$  \_\_\_\_\_

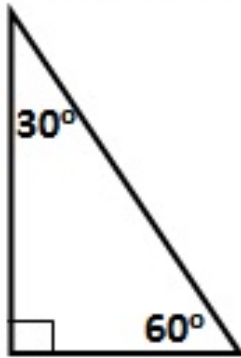
38.  $\sqrt{20} + \sqrt{45} - \sqrt{5}$  \_\_\_\_\_

39.  $4\sqrt{5} \cdot 3\sqrt{10}$  \_\_\_\_\_

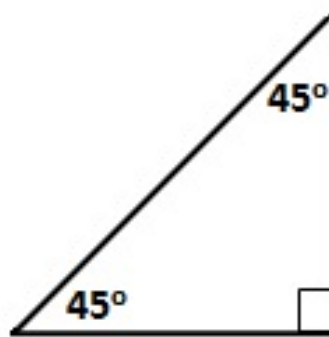
40.  $(7 - \sqrt{2})(8 + \sqrt{2})$  \_\_\_\_\_

41.  $(-5 - \sqrt{3})^2$  \_\_\_\_\_

### 30-60-90 Triangle



### 45-45-90 Triangle



Using the above special right triangles, find the following

42. Find the remaining sides of the 30-60-90  $\Delta$  if the short leg is 3cm. \_\_\_\_\_
43. Find the length of the legs of the 45-45-90  $\Delta$  if the hypotenuse is  $5\sqrt{2}$  in. \_\_\_\_\_
44. Find the remaining sides of the 30-60-90  $\Delta$  if the short leg is  $4\sqrt{2}$  cm. \_\_\_\_\_
45. Find the remaining sides of the 30-60-90  $\Delta$  if the hypotenuse is  $12\sqrt{3}$  mm. \_\_\_\_\_
46. Find the remaining sides of the 30-60-90 $\Delta$  if the long leg is 7 cm. \_\_\_\_\_
47. An escalator lifts people to the second floor of a building 25 ft. above the first floor. The escalator rises at a  $30^\circ$  angle. To the nearest foot, how far does a person travel from the bottom to the top of the escalator? \_\_\_\_\_
48. In right triangle ABC,  $A = 40^\circ$  and  $c = 12$  cm. Sketch and solve for all parts of the triangle.
49. A ladder is leaning against the wall. The top of the ladder is 4 ft. above the ground and the bottom of the ladder makes an angle of  $60^\circ$  with the ground. How long the ladder is is the ladder and how far from the wall is the bottom of the ladder?
50. In a garden, a bird bath 2 ft. 6 in. tall casts an 18 in. shadow at the same time an oak tree casts a 90 ft. shadow. How tall is the oak tree?

51. **Graph** the absolute value functions listed below. For each, state the domain and range.

a.  $y = |x - 3|$

b.  $y = -|x + 1| - 2$

c.  $y = 2|x - 1| - 4$

52. Solve the system of equations using BOTH elimination and substitution methods

a.  $3x + y = 13$

$2x - y = 2$

b.  $y = -3x$

$x = 6y + 38$

53. **Graph** and **classify** the following systems

a.  $2x + 3y = 12$

$18 - 6y = 4x$

b.  $4x - 3y = 12$

$12x + 9y = -36$

54. Mary has a total of 30 dimes and nickels in her pocket worth \$ 2.35. How many of each coin does she have?

55. How many ounces of a 25 % acid solution should be mixed with a 50 % acid solution to produce 100 ounces of a 40 % acid solution?