

## Factoring to Find Solutions

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

1)  $x^2 + 4x - 32 = 0$

2)  $x^2 - 64 = 0$

3)  $t^2 + 9t = -8$

4)  $3t^2 + 6t = 0$

5)  $3n^2 + 15n = 18$

6)  $3y^2 - 2y = 8$

7) The height  $h$  of a ball in feet  $t$  seconds after being thrown from a roof can be estimated by the equation  $h = -16t^2 + 64t + 80$ . Find the time when the ball will hit the ground. (Hint: the height is 0 feet at ground level)

8) During a game of golf, Kayley hits her golf ball out of a sand trap. The height of the golf ball is modeled by the equation  $h = -16t^2 + 20t - 4$ , where  $h$  is the height in feet and  $t$  is the time in seconds since the ball was hit. Find how long it takes Kayley's golf ball to hit the ground.

9) The velocity of a particle is given by the equation  $v(t) = 45t^2 - 9t$ . Determine the time(s) when the particle is at rest (where the velocity is zero).

10) Two objects are moving in the  $xy$ -plane according to the equations  $y_1 = 4x^2 - 20x + 50$  and  $y_2 = 4x + 15$ . When do the two objects cross paths?

11) The number of people at a block party at a given time is modeled by the equation  $P(t) = -7t^2 + 21t + 84$ . Determine the time(s) when there are 56 people at the block party.