

Name \_\_\_\_\_ Date \_\_\_\_\_  
Teacher \_\_\_\_\_ Period \_\_\_\_\_

## Projectile Motion Review Worksheet

1. Define a projectile.
2. Define a trajectory.
3. If a football is thrown horizontally with the same initial velocity on Earth and on the moon, is there a difference in the amount of time it takes to travel 10 yards?  
  
No
4. What is true about the total initial velocity of a projectile and the total final velocity of the same projectile when it returns to its original launch height?  
  
They are the same
5. A ball is launched with a velocity of 29.4 m/s at an angle of  $30^\circ$  to the horizontal. What is the horizontal velocity, horizontal acceleration, vertical velocity, and vertical acceleration at the following times in its flight: 0s, 1.5s, and 3s.

Time	$v_x$	$a_x$	$v_y$	$a_y$
0 s	25.5	0	14.7	-9.8
1.5 s	25.5	0	0	-9.8
3 s	25.5	0	-14.7	-9.8

6. A student throws a rock horizontally off a 13 m high ledge at a speed of 22 m/s.
- a. How long before the rock hits the ground?

$$t = 1.63 \text{ s}$$

- b. How far from the base of the ledge does the rock strike the ground?

$$x = 36 \text{ m}$$

- c. What was the vertical and horizontal components of the rock's velocity just before it hits the ground?

$$v_x = 22 \text{ m/s}; v_y = -16 \text{ m/s}$$

7. A golfer chips a ball at an angle of  $60.0^\circ$  to the horizontal and at a velocity of 34 m/s.
- a. What is the vertical component of the ball's velocity just after it leaves the club?

$$v_{0y} = 29.4 \text{ m/s}$$

- b. How long does the ball stay in the air?

$$t = 6.0 \text{ s}$$

- c. How far from the player will the ball land?

$$\text{Range} = 102 \text{ m}$$

8. A catapult is set to launch at an angle of  $42^\circ$ . The target is 568 m from the canon. What should the launch velocity of the canon ball be so it hits the target?

$$75 \text{ m/s}$$