Horizontally Launched Projectiles: Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Horizontal Motion | Vertical Motion |
| v=x / t  x = vt  t = x / v | y = Vi(t) + ½ gt² |
| y = ½ gt² |
| Vf = Vi +gt |

1.) A pool ball leaves a 0.60 meter high table with an initial horizontal velocity of 2.4 m/s.

Picture:

a. Find the time required for the pool ball to fall to the ground?

Formula:

Plug in numbers:

Answer:

b. Find the horizontal distance in which the ball landed from the table.

Formula:

Plug in numbers:

Answer:

c. What is the final vertical velocity?

Formula:

Plug in numbers:

Answer:

2. A soccer ball is kicked horizontally off a 22 meter high hill and lands a distance of 35 m from the edge of the hill at an initial velocity of 11 m/s.

Picture:

a. How long will it take the ball to hit the ground?

Formula:

Plug in numbers:

Answer:

b. How far did the ball travel horizontally?

Formula:

Plug in numbers:

Answer:

c. What is the final vertical velocity?

Formula:

Plug in numbers:

Answer:

3. Willie Robertson shoots horizontally at a duck from a height of 6m. If the initial velocity of the bullet is 95 m/s.

Picture:

a. Find the time it takes for the bullet to hit the ground.

Formula:

Plug in numbers:

Answer:

b. find the horizontal distance traveled during that time…. Assuming he missed the duck.

Formula:

Plug in numbers:

Answer:

c. What is the final vertical velocity?

Formula:

Plug in numbers:

Answer:

4. A rock is fired horizontally from a slingshot with an initial velocity of 17 m/s. If the slingshot is 1.2 m high.

Picture:

a. How long will it take for the rock to reach the ground?

Formula:

Plug in numbers:

Answer:

b. What is the horizontal distance the rock traveled?

Formula:

Plug in numbers:

Answer:

c. What is the final vertical velocity?

Formula:

Plug in numbers:

Answer: