

To solve projectile problems, you must divide up your information into two parts:
_____ which has _____ motion and
_____ which has _____ motion. What
equations will you use for each type of motion?

1. A ball rolls off a 1.0 m high table and lands on the floor, 3.0 m away from the table.
 - a. How long is the ball in the air?
 - b. With what horizontal velocity did the ball roll off the table?
 - c. What is the vertical velocity of the ball just before it hits the floor?
 - d. What is the horizontal velocity of the ball just before it hits the floor?

2. A carpenter tosses a shingle off a 9.4 m high roof, giving it an initial horizontal velocity of 7.2 m/s.
 - (a) What is the final vertical velocity of the ball?
 - (b) How long does it take to reach the ground?
 - (c) How far does it move horizontally in this time?

3. A tiger leaps horizontally from a 12 m high rock with a speed of 4.5 m/s. How far from the base of the rock will she land?

4. A diver running 1.6 m/s dives out horizontally from the edge of a vertical cliff and reaches the water 3.0 s later. How high was the cliff and how far from its base did the diver hit the water?

5. You toss an apple horizontally at 9.5 m/s from a height of 1.8 m. Simultaneously, you drop a peach from the same height. How long does it take the peach to reach the ground?

6. An arrow fired horizontally at 41 m/s travels 23 m horizontally before it hits the ground. From what height was it fired?

7. A ball is thrown horizontally from the roof of a building 50. m tall and lands 45 m from the base. What was the ball's initial speed?