

AP PHYSICS
HORIZONTALLY LAUNCHED PROJECTILE PROBLEMS

You must show all your **work** on a separate sheet of paper for full credit:

1. Data
2. Equation
3. Rearrange Equation
4. Plug in numbers and solve
5. Round to 3 Sig Figs and Provide units

1. A stone is dropped from rest off the top of a 69.6-m high cliff. How much time (in seconds) does it take the stone to reach the ground below?

2. A stone is thrown with an initial horizontal velocity of 5.34 m/s off the top of a 69.6 m high cliff.

A) How much time (in seconds) does it take the stone to reach the ground below?

B) How far (in meters) from the base of the cliff does the stone land?

3. Tom the cat is chasing Jerry the mouse across a table surface 1.11 m high. Jerry steps out of the way at the last second, and Tom slides off the edge of the table at a speed of 4.23 m/s.

A) How many meters from the bottom edge of the table will Tom strike the floor?

B) What is the horizontal component of velocity (in m/s) of the cat just prior to hitting the floor?

C) What is the vertical component of velocity (in m/s) of the cat just prior to hitting the floor?

4. A watermelon is rolled off a high-diving platform with an initial speed of 2.53 m/s. The melon lands in the water 3.26 s later.

A) Determine the height (in meters) of the diving platform.

B) How far (in meters) from the base of the platform does the watermelon land?

C) What is the speed (in m/s) of the watermelon the instant before it strikes the water?

5. The Acapulco cliff divers dive from a cliff that is 58.3 m high. The rocks below the cliff extend horizontally outward for 20.3 m. What is the minimum horizontal velocity (in m/s) a diver must have when leaving the cliffs to clear the rocks safely? Assume that the divers take a horizontal leap off the cliff.