

Horizontally Launched Projectiles

1. A model rocket flies horizontally off the edge of a cliff at a velocity of 50 m/s. If the canyon is 100 m deep, how long is the rocket in the air? How far from the edge of the cliff does it land?
2. Harry accidentally falls out of a helicopter that is traveling horizontally at a speed of 60 m/s. He plunges into the water below 3 seconds later. Assuming no air resistance, what is the horizontal distance he travels while falling? How high was the helicopter when Harry fell out?
3. Harry jumps horizontally from the top of a building that is 20 m high. He is hoping to reach a swimming pool that is at the bottom of the building, 14 m horizontally from the edge of the building. If he is to reach the pool what must his original jumping speed be? How long is he in the air?
4. A ball is thrown horizontally off a tall cliff. Neglecting air drag, what is the vertical distance the ball has fallen 3 seconds later. If the ball lands 400 meters from the base of the cliff and it takes 6 seconds to land, how high was the cliff? What was the ball's original velocity?
5. A ball rolls off the edge of a horizontal room at a speed of 10 m/s. What is the horizontal speed of the ball one second later? What is its vertical speed after 1 second? If the ball lands 250 meters from the base of the building, how tall is the building?
6. A rock is thrown horizontally off the edge of a 50 meter high cliff. It lands 45 meters from the base of the cliff. How long is it in the air? How fast was it going when it was thrown?
7. A car goes off the edge of an icy bridge with a speed of 10 m/s. It lands 15 meters away from the edge of the cliff. How long was the car in the air? How high was the bridge?