

Lesson 5 Worksheet

1. A rescue pilot drops a survival kit while her plane is flying at an altitude of 2000 m with a forward velocity of 100 m/s. If air friction is ignored, how far in advance of the starving explorer's drop zone should she release the package?
2. A rifle is fired horizontally from 1.90 m above the ground. The bullet is found to have travelled 200 m. Ignoring air friction, at what speed must the bullet have been travelling as it left the barrel?
3. A ski jumper leaves the horizontal end of the ramp with a velocity of 25 m/s and lands 70 m from the base of the ramp. How high is the end of the ramp above the landing area?
4. A stone is thrown horizontally at a speed of 5.0 m/s from the top of a cliff that is 78.4 m high.
 - a. How long does it take the stone to reach the bottom of the cliff?
 - b. How far from the base of the cliff does the stone hit the ground?
 - c. What are the horizontal and vertical components of the stone's velocity just before it hits the ground?
5. A ball is projected horizontally at 21 m/s from a point 40 m above the ground. Determine:
 - a. the horizontal distance travelled by the ball before hitting the ground.
 - b. the ball's instantaneous velocity as it hits the ground.
 - c. the angle at which the ball hits the ground