

# Horizontal Projectile Motion Drills

- 1 Cupid shoots an arrow horizontally into the air with a velocity of 73 m/s from a cloud 54.06 m above the ground. How long does it take the arrow to land?
- 2 Evil Knievel rides his motorcycle at 47 m/s off a cliff 4.42 m above the ground. How far from the ramp does the motorcycle land?
- 3 Evil Knievel rides his motorcycle at 34 m/s off a cliff 2.99 m above the ground. How long does it take the motorcycle to land?
- 4 Cupid shoots an arrow horizontally into the air with a velocity of 78 m/s from a cloud 53.46 m above the ground. How far from the cloud does the arrow land?
- 5 Evil Knievel rides his motorcycle at 45 m/s off a cliff 2.27 m above the ground. What is the impact velocity of the motorcycle ?
- 6 A student tosses a crumpled ball of paper horizontally into the recycling bin with a velocity of 3.0 m/s from a height of 1.96 m above the ground. What is the impact velocity of the popcorn ?
- 7 Wile E. Coyote, in an effort to catch the Road Runner, launches a net horizontally from a gun with a muzzle velocity of 32 m/s off a cliff 395.27 m high. How far from Wile E. does the net go?
- 8 A soccer player kicks a ball at 85 m/s off a platform 3.78 m above the ground. How far from the player does the ball land?
- 9 A cat chasing a butterfly leaps horizontally with a velocity of 4.9 m/s from a branch 5.77 m above the ground. What is the impact velocity of the cat ?
- 10 A ski-jumper leaves a jump horizontally with a velocity of 18 m/s. The end of the jump is 71.17 m high. What is the impact velocity of the ski-jumper ?

Note:  $3.4E4 = 3.4 \times 10^4$ . Use  $g = -9,8 \text{ m/s}^2$

## Answers:

1. 3.3 s 2. 45 m 3.  $7.8E-1$  s 4. 256 m 5. 45 m/s [8.4 deg down from horizontal] 6. 6.9 m/s [64 deg down from horizontal] 7. 284 m 8. 74 m 9. 12 m/s [65 deg down from horizontal] 10. 42 m/s [64 deg down from horizontal]