

# Horizontal Projectile Motion Drills

- 1 A soccer player kicks a ball at 65 m/s off a platform 9.6 m above the ground. What is the impact velocity of the ball ?
- 2 A certain physics teacher, frustrated by her computer, tosses it horizontally with a velocity of 6.7 m/s from the top of the school, 21.88 m high. How far from the school does the computer crash?
- 3 Evil Knievel rides his motorcycle at 33 m/s off a cliff 4.28 m above the ground. How far from the ramp does the motorcycle land?
- 4 A cat chasing a butterfly leaps horizontally with a velocity of 4.6 m/s from a branch 7.11 m above the ground. How long does it take the cat to land?
- 5 A soccer player kicks a ball at 84 m/s off a platform 3.27 m above the ground. What is the impact velocity of the ball ?
- 6 A cat chasing a butterfly leaps horizontally with a velocity of 3.5 m/s from a branch 9.46 m above the ground. What is the impact velocity of the cat ?
- 7 A certain physics teacher, frustrated by her computer, tosses it horizontally with a velocity of 5.6 m/s from the top of the school, 25.79 m high. How far from the school does the computer crash?
- 8 A certain physics teacher, frustrated by her computer, tosses it horizontally with a velocity of 7.8 m/s from the top of the school, 20.91 m high. How long does it take the computer to land?
- 9 Wile E. Coyote, in an effort to catch the Road Runner, launches a net horizontally from a gun with a muzzle velocity of 30 m/s off a cliff 379.18 m high. What is the impact velocity of the net ?
- 10 A ski-jumper leaves a jump horizontally with a velocity of 19 m/s. The end of the jump is 69.43 m high. How long does it take the ski-jumper to land?

Note:  $3.4E4 = 3.4 \times 10^4$ . Use  $g = -9.8 \text{ m/s}^2$

## Answers:

1. 67 m/s [12 deg down from horizontal] 2. 14 m 3. 30 m 4. 1.2 s 5. 84 m/s [5.5 deg down from horizontal] 6. 14 m/s [76 deg down from horizontal] 7. 13 m 8. 2.1 s 9. 91 m/s [71 deg down from horizontal] 10. 3.8 s