

Horizontal Projectile Motion Drills

- 1 A ski-jumper leaves a jump horizontally with a velocity of 23 m/s. The end of the jump is 61.68 m high. How long does it take the ski-jumper to land?
- 2 A ski-jumper leaves a jump horizontally with a velocity of 17 m/s. The end of the jump is 49.65 m high. How long does it take the ski-jumper to land?
- 3 A student tosses a crumpled ball of paper horizontally into the recycling bin with a velocity of 2.9 m/s from a height of 0.54 m above the ground. What is the impact velocity of the popcorn ?
- 4 Cupid shoots an arrow horizontally into the air with a velocity of 80 m/s from a cloud 78.55 m above the ground. How long does it take the arrow to land?
- 5 Cupid shoots an arrow horizontally into the air with a velocity of 69 m/s from a cloud 65.67 m above the ground. How long does it take the arrow to land?
- 6 A student tosses a crumpled ball of paper horizontally into the recycling bin with a velocity of 2.1 m/s from a height of 1.27 m above the ground. How long does it take the popcorn to land?
- 7 Cupid shoots an arrow horizontally into the air with a velocity of 71 m/s from a cloud 87.51 m above the ground. How long does it take the arrow to land?
- 8 A cat chasing a butterfly leaps horizontally with a velocity of 1.1 m/s from a branch 7.93 m above the ground. What is the impact velocity of the cat ?
- 9 A cat chasing a butterfly leaps horizontally with a velocity of 7.9 m/s from a branch 5.54 m above the ground. What is the impact velocity of the cat ?
- 10 A soccer player kicks a ball at 69 m/s off a platform 17.61 m above the ground. How far from the player does the ball land?

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

Answers:

1. 3.5 s
2. 3.2 s
3. 4.4 m/s [48 deg down from horizontal]
4. 4.0 s
5. 3.7 s
6. $5.1E-1 \text{ s}$
7. 4.2 s
8. 13 m/s [85 deg down from horizontal]
9. 13 m/s [53 deg down from horizontal]
10. 131 m