

Type 2 Projectiles

1. Determine the range of an apple being kicked at 25 m/s at an angle of 45° above the horizontal. (63.8 m)
2. What is the maximum height of the apple in #1? At what time does this occur? (15.9 m, 1.8 s)
3. A can is kicked on level ground with a velocity of 12 m/s at an angle of 50° to the horizon. What are its "hang time", range and maximum height? (1.88 s, 14.5 m, 4.3 m)
4. A golfer strikes a ball giving it a velocity of 35 m/s at an angle of 35° above the horizontal. If the course is completely flat, how far will the ball travel before bouncing? (117 m)
5. Use the information in #4 to find the maximum height of the golf ball. (20.4 m)
6. A ball is thrown horizontally at 10 m/s and hits the ground 5.0 seconds later. From what height was it thrown, and what horizontal distance did it travel? (Type 1 Projectile) (123 m, 50.0 m)
7. A cannon is fired at 200 m/s and 30° above the horizon. Calculate the range, max height and velocity of the max height of the cannon ball. (3530 m, 510 m, 173 m/s)
8. What is the range and max height of an artillery shell fired at 417 m/s and angle of 30.2° , and what is its velocity after 34.0 seconds? (15,400 m, 2245 m, 381 m/s at 19° S of E)
9. An air rifle is to shoot a target, which is 80.0 m away at the same height. If the bullet leaves the muzzle at 20° , what was the initial velocity (magnitude only) of the pellet? (34.9 m/s)
10. A baseball is hit at 30.0 m/s on an angle of 40° . What is its maximum height? (19.0 m)
11. What is the velocity of the baseball in #10 3.0 seconds after leaving the bat? (25.1 m/s at 24° S of E)
12. What is the velocity of the baseball in #10 when it reaches a height of 10 meters? (26.6 m/s at 30° S of E and N of E)
13. A soccer ball is kicked at an angle of 30° and travels a distance of 45 meters through the air. What was its initial velocity? (22.6 m/s)