

Question 1

An object is launched horizontally from a height of 20 m above the ground with speed of 15 m s^{-1} . Determine :

- The time at which it will hit the ground
- The horizontal distance travelled
- The speed with which it hits the ground

Question 2

A projectile is launched at 32° to the horizontal with initial speed of 25 m s^{-1} . Determine the maximum height reached (take $g = 9.81 \text{ m s}^{-2}$.)

Question 3

A projectile is launched horizontally from a height of 42 m above the ground. As it hits the ground, the velocity makes an angle of 55° to the horizontal. Find the initial velocity of launch (take $g = 9.8 \text{ m s}^{-2}$.)

Question 4

A stone is thrown with a speed of 20 m s^{-1} at an angle of 48° to the horizontal from the edge of a cliff 60.0 m above the surface of the sea.

- Calculate the velocity with which the stone hits the sea.
- Discuss qualitatively the effect of air resistance on your answer to a. above.

Question 5

a State what is meant by terminal velocity

b. A ball is dropped from rest. The force of air resistance on the ball is proportional to the ball's speed. Explain why the ball will reach terminal speed.

Question 6

A ball rolls off a table with a horizontal speed of 2.0 m s^{-1} . The table is 1.3 m high. Calculate how far from the table the ball will land.

Question 7

Two particles are on the same vertical line. They are drawn horizontally with the speed of 4.0 ms^{-1} , from 4.0 m and 8.0 m

- Calculate the distance that will separate the two objects when both land on the ground.
- The particle at the 4.0 m height is now launched with a horizontal speed u such that it lands at the same place as the particle lanced from 8.0 m. Calculate u .