

Projectile Motion Quiz

(Each question is worth 2 points → 28 points quiz) (use **9.8 m/s²** for *g*)

1. The free-body diagram of a projectile shows what forces are acting on the projectile. If air resistance is ignored, what other forces is acting on the projectile?

- a. Friction b. Kinetic c. Dynamic d. Gravitational e. Electrical

2. The path of a projectile is called

- a. Kinematic b. Trajectory c. Binary d. Coulomb e. Gravity

For 3 – 5. A cliff diver pushes off a cliff with a horizontal of 2.1 m/s and falls 8 meters to the water below.

3. Determine the time it takes for the diver to hit the water below.

- a. 0.35 s b. 0.69 s c. 1.26 s d. 0.23 s

4. What horizontal displacement of the diver?

- a. 3.2 m b. 2.7 m c. 4.6 m d. 5.1 m

5. With what velocity does diver enters the water? (actual velocity)

- a. 3.2 m/s b. 6.4 m/s c. 5.8 m/s d. 12.8 m/s

For 6 – 8. Li Ping Phar, the famous Chinese ski jumper, leaves the ramp with an initial velocity of 34.9 m/s at an angle of 35° (horizontal velocity of 28.59 m/s and vertical velocity of 20.02 m/s)

6. Determine the total time of flight.

- a. 4.09 s b. 2.05s c. 3.61 s d. 6.13 s

7. Determine the horizontal displacement.

- a. 58.4 m b. 78 m c. 117 m d. 128 m

8. Determine the peak height (relative to the starting height). Assume that Li lands at the same height as the top of the ramp and that Li is a projectile.

- a. 18.2 m b. 20.4 m c. 26.7m d. 31.4 m

For 9 and 10. A search plane is dropping a survival raft to survivors of a sunken boat without the use of a parachute. If the plane is flying horizontally with a velocity of 100 m/s and an altitude of 200 m,

9. determine the time it would take the survival raft to hit the water below.

- a. 2.45 s b. 5.48 s c. 3.61s d. 6.39 s

10. How far from the survivors should the airplane release its raft? (horizontal displacement)

- a. 245 m b. 548 m c. 361 m d. 639 m

11. One of the groups in class did the SURGEFIRE (a single shot nerf dart projectile machine) activity and they measured an average of 0.38 m drop from the intended target on the whiteboard. They were standing 5.5 meters from the whiteboard. Determine their horizontal velocity.

- a. 19.75 m/s b. 8.65 m/s c. 32.8 m/s d. 12.36 m/s

For 12 – 14.

You throw a stone horizontally at a speed of 5.0 m/s from the top of a cliff that is 78.4 m high.

12. How long does it take the stone to reach the bottom of the cliff?

- a. 1 s b. 2 s c. 3 s d. 4 s

13. How far from the base of the cliff does the stone hit the ground?

- a. 5 m b. 10 m c. 15 m d. 20 m

14. What is the actual velocity of the stone just before it hits the ground?

- a. 39.5 m/s b. 43.6 m/s c. 18.4 m/s d. 22.5 m/s