PHYSICS
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Unit 2G
Horizontally Launched Projectiles
Practice Problems

Name:

Date:

Work each of the following problems. SHOW ALL WORK.

1. A soccer ball is kicked horizontally off a cliff with an initial speed of 8 m/s and lands 16 m from the base of the cliff.

    a. What is the time of flight of the soccer ball?

    b. What is the height of the cliff?

2. A ball is thrown horizontally from a height of 1 m and lands 5 m away.

    a. What is the time of flight of the ball?

    b. What is the initial velocity of the ball?

3. A potato gun is fired horizontally from a height of 1.5 meters with the potato launched at 25 m/s.

    a. What is the time of flight of the potato?

    b. How far from the gun will the potato land?

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4. A water park is designing a new water slide that finishes with the rider flying horizontally off the bottom of the slide. The slide is designed to end 1.2 m above the water level, and the average rider is estimated to leave the bottom of the slide at 25 m/s. How far will the rider fly through the air before hitting the water?

5. A marble rolls horizontally off a table that is 0.8 m tall. If the marble lands 0.6 m from the base of the table, what is the initial velocity of the marble?

6. The launch velocity of a toy car launcher is determined to be 5 m/s. If the car is to be launched from a height of 0.5 m, where should a target be placed so that the toy car lands on it?

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7. A stunt car traveling at 20 m/s flies horizontally off a cliff and lands 39.2 m from the base of the cliff. How tall is the cliff?

8. A blow dart is fired horizontally from a height of 1.2 meters. If the dart hits a target that is 0.6 m high and 12 m away, what is the initial velocity of the dart?

9. A B-52 bomber jet flies at a horizontal velocity of 286.2 m/s and at an altitude of 7500 m above the ground. How far away horizontally should a payload be dropped to land on a target?