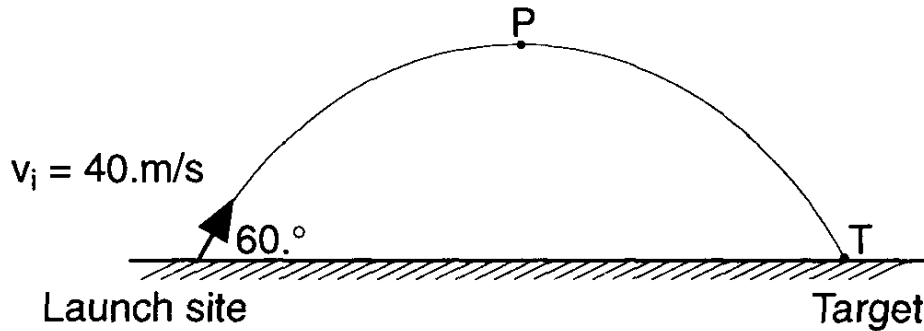


Two Dimensional Motion

Multiple Choice

- ___ 1. Based on the given situation: which shows the paths of two objects, A and B, assuming that object A was thrown at the same time that object B was dropped, which statement is NOT true?
- Object A will have a higher velocity when it hits the ground.
 - Both objects experience acceleration with a magnitude of 9.8 m/s^2 .
 - Assuming that air resistance is negligible, both objects are in free fall.
 - Object A will hit the ground first.
- ___ 2. The path through space followed by a projectile is called the
- thrust.
 - trajectory.
 - transparency.
 - acceleration due to gravity.
- ___ 3. "Free fall" is the condition in which
- the motion of a body is due to velocity alone, when air resistance is negligible.
 - the motion of a body is due to gravity alone, when air resistance is applicable.
 - the motion of a body is due to gravity alone, when air resistance is maximized.
 - the motion of a body is due to gravity alone, when air resistance is negligible.
- ___ 4. A soldier throws a grenade horizontally from the top of a cliff. Which of the following curves best describes the path taken by the grenade?
- Ellipse
 - Parabola
 - Hyperbola
 - Circle
- ___ 5. The rate at which an object's velocity changes is called its ____.
- displacement
 - average velocity
 - acceleration
 - scalar magnitude
- ___ 6. The acceleration due to Earth's gravity is:
- -98 m/s^2
 - -9.8 mi/s^2
 - -9.8 ft/s^2
 - -9.8 m/s^2
- ___ 7. A golfball is launched towards the green with an initial velocity of 2.3 m/s at an angle of 25 degrees. What are the horizontal and vertical initial velocities of the golfball?
- 0.97 m/s horizontal; 2.08 m/s vertical
 - 0.304 m/s vertical; 2.28 m/s horizontal
 - 0.97 m/s vertical; 2.08 m/s horizontal
 - 0.304 m/s horizontal; 2.28 m/s vertical
- ___ 8. An object that has negative acceleration is definitely doing what?
- speeding up
 - slowing down
 - accelerating in a direction that is opposite to a stated positive direction.
 - maintaining a constant speed
- ___ 9. Which of the following is NOT an example of accelerated motion?
- a ball being thrown straight up
 - a bicyclist moving in a straight line at constant speed
 - an airplane taking off down a straight runway
 - a boulder falling off of a cliff in a straight path
- ___ 10. Which of the following is true about the object's velocity in the Y direction in the picture below:



- a. From point P to the Target the object's velocity is pointing up and increasing
- b. From point P to the Target the object's velocity is pointing up and decreasing.
- c. From point P to the Target the object's velocity is pointing down and decreasing.
- d. From point P to the Target the object's velocity is pointing down and increasing.
- ___ 11. A car travels 2 km east, 6 km north, and then 10 km west. What is the total resultant distance of the car?
- a. 6 km
- b. 10 km
- c. 18 km
- d. 14 km
- ___ 12. The path of a projectile through space is called its:
- a. trajectory
- b. torque
- c. equilibrant
- d. range
- ___ 13. An object that is shot through the air is called a
- a. parabola.
- b. projectile.
- c. proboscis.
- d. protractor.
- ___ 14. Karl is at a carnival. One of the midway games requires him to shoot at falling targets with an air rifle. Where should Karl aim?
- a. He should aim above the falling target.
- b. He should aim below the falling target.
- c. He should aim directly at the target.
- d. He should aim at the ground below the target.
- ___ 15. Why do two identical objects (with different masses) hit the ground at the exact same time?
- a. they actually don't hit the ground at the same time.
- b. their inertia to force of gravity ratio is the same.
- c. the force of gravity is acting on them the same.
- d. they have the same mass.
- ___ 16. To determine the x-component of a projectile's velocity, what operation is performed on the angle of the launch?
- a. secant
- b. tangent
- c. sine
- d. cosine
- ___ 17. A strobe-light series of pictures is taken of a red ball and a blue ball. The red ball was allowed to drop straight down, and the blue ball was given an initial horizontal velocity. Lines are drawn connecting each red ball image with the corresponding blue ball image. Describe the lines connecting the images.
- a. The lines are horizontal.
- b. The lines are vertical.
- c. The lines slope up from the red ball to the corresponding blue ball.
- d. The lines slope down from the red ball to the corresponding blue ball.

- ____ 18. To determine the y-component of a projectile's velocity, what operation is performed on the angle of the launch?
- | | |
|-----------|------------|
| a. sine | c. tangent |
| b. secant | d. cosine |

Problem SHOW YOUR WORK IF YOU WANT CREDIT!!!

19. A football is kicked from a tee at 10 m/s at 64° above the horizontal. What is the distance the football traveled?
20. A roadrunner is running along a straight desert road at a constant velocity of 15 m/s. If a certain coyote wants to capture the roadrunner using a net dropped from an overpass that is 12.5 m high, how far away from the overpass is the roadrunner when the coyote drops the net?
21. A human cannonball is launched from a cannon at 18 m/s at 50° above the horizontal. What is the total flight time of the human cannonball? how high did the cannon ball go?
22. A bolt is shot horizontally from a crossbow and the initial velocity is 48 m/s. It went 32m before hitting the ground. How high off the ground was the arrow shot?