Projectile Motion Practice Test

Question 1

A projectile is launched horizontally off a 70 meter cliff with velocity 43 m/s on a planet where g = -6 m/s/s. How much time in seconds does the object spend in the air?

Question 2

A projectile is launched horizontally off a 65 meter cliff with velocity 20 m/s on a planet where g = -12 m/s/s. How far from the cliff's edge in meters will the object land?

Question 3

A projectile is launched horizontally off a 69 meter cliff with velocity 25 m/s on a planet where g = -9 m/s/s. What will be the impact speed in m/s?

Question 4

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 30 degrees from the horizontal and the velocity magnitude at launch is 46 m/s. What is the initial x component of velocity at launch in m/s?

Question 5

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 30 degrees from the horizontal and the velocity magnitude at launch is 46 m/s. What is the initial y component of velocity at launch in m/s?

Question 6

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 30 degrees from the horizontal and the velocity magnitude at launch is 24 m/s. g = -7 m/s/s on the planet where the object is launched. What will be the maximum vertical height in meters reached by the projectile?

Question 7

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 30 degrees and the velocity magnitude at launch is 24 m/s. g = -12 m/s/s on the planet where the object is launched. What will be the maximum range in meters reached by the projectile? Range is the horizontal distance traveled by the projectile.

Question 8

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 21 degrees and the velocity magnitude at launch is 35 m/s. g = -10 m/s/s on the planet where the object is launched. What will be the impact velocity of the projectile?

Question 9

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 51 degrees and the velocity magnitude at launch is 80 m/s. g = -10 m/s/s on the planet where the object is launched. What will be the angle of impact in degrees of the projectile?

Question 10

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 60 degrees and the velocity magnitude at launch is 80 m/s. g = -10 m/s/s on the planet where the object is launched. What will be the projectile's horizontal velocity in m/s at 2 seconds after it has launched?

Question 11

A ball is tossed straight up from a vertical height of +99 meters with an upward velocity of +27 m/s. The ball is then allowed to travel up, back down, and then drop to the ground at height 0 meters; g = -11 m/s/s on the planet where the ball is tossed. What is the maximum height (measured from the ground) reached by the ball in meters?

Question 12

A ball is tossed straight up from a height of +25 meters at a velocity of 38 m/s and is allowed to travel up, back down, and then drop to the ground at height 0 meters . g = -7 m/s/s on the planet where the ball is tossed. What is the impact speed of the ball in m/s?

Question 13

A ball is thrown straight down from a height of 44 meters at a velocity of 18 m/s and is allowed to hit the ground at height 0 meters . g = -14 m/s/s on the planet where the ball is thrown. What is the impact speed of the ball in m/s?

Question 14

A ball is launched from a cliff at an upward angle of 30 degrees from a height of 108 meters at a velocity magnitude of 50 m/s. The ball is allowed to travel up then to the ground at height 0 meters. g = -8 m/s/s on the planet where the ball is launched. What is the maximum height reached by the ball in meters?

Question 15

A projectile is launched at an upward angle and will land at the same height at which it is launched. The launch angle is 60 degrees and the velocity magnitude at launch is 78 m/s. g = -10 m/s/s on the planet where the object is launched. What will be the projectile's vertical velocity in m/s when it is at its maximum vertical height?

Question 16

A projectile has a constant launch velocity of 40 m/s on level ground. The projectile is launched at an angle of 30 degrees and travels a certain horizontal distance before landing. At what other angle could the projectile be launched and still travel the exact same horizontal distance (aka range)?