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Cartesian coordinate system

In Cartesian coordinate system, a point is at (12, 7). After translate the point by left 4 unit and down 19 unit, what would the new position of the point?

1. (8, 9)

2. (8, -12)

3. (9, -12)

4. (8, -11)

2. (8, -12)

An object goes from one point in space to another. After it arrives at its destination, its displacement is:

1. either greater than or equal to

2. always equal to

3. either less than or equal to

4. not related to the distance it traveled.

3. either less than or equal to

Displacement can be negative, and when it is, it is less than

distance, which is the absolute value of displacement!

Time

If the periodic of a Simple Pendulum is t, how long does it cost about moving from the highest place to its lowest place?

1. t/2

2. t

3. 2t

4. t/16

1. t/2

Mass

A 1 kg ball is hung at the end of a rod 1m long. The mass of the rod is 0. If the system balances at a point on the rod 0.25 m from the end holding the ball, what is the mass of the ball in the other end?

1. 1/5 kg

2. 1/2 kg

3. 1/4 kg

4. 1/3 kg

4. 1/3 kg

Velocity and Acceleration

A skydiver is falling straight down, along the negative y direction. During the initial part of the fall, her speed increases from 16 to 28 m/s in 1.5 s.

What sign are the velocity and acceleration?

1. v=0, a<0

2. v=0, a>0

3. v=0, a=0

4. v<0, a<0

3. v<0, a<0

During a later part of the fall, after the parachute has opened, her speed decreases from 48 to 26 m/s in 11 s.

Which of the following is correct?

1) v>0, a>0

2) v>0, a<0

3) v<0, a>0

4) v<0, a<0

3) v<0, a>0

If speed is increasing, v and a are in same direction.

If speed is decreasing, v and a are in opposite direction.

A ball is thrown straight up in the air and returns to its initial position.

For the time the ball is in the air, which of the following statements is true?

1. Both average acceleration and average velocity are zero.

2. Average acceleration is zero but average velocity is not zero.

3. Average velocity is zero but average acceleration is not zero.

4. Neither average acceleration nor average velocity are zero.

3. Average velocity is zero but average acceleration is not zero.

Free fall: acceleration is constant (-g)

Initial position = final position: Δx=0

ave vel = Δx/ Δt = 0

An object is dropped from rest. If the object has speed v at time t then what is the speed at time 2t ?

1. v/4

2. v/2

3. v

4. 2v

4. 2v

Correct v=at

An object is dropped from rest. If it falls a distance D in time t then how far will if fall in a time 2t ?

1. D/4

2. D/2

3. 2D

4. 4D

4. 2D

Correct x=1/2 at2

A ball is thrown downward (not dropped) from the top of a tower. After being released, its downward acceleration will be:

1. greater than g

2. exactly g

3. smaller than g

4. I don’t know

2. exactly g

after the ball is released, it is only being accelerated by gravity, the throw just sets the initial velocity

A ball is thrown vertically upward. At the very top of its trajectory, which of the following statements is true:

1. velocity is zero and acceleration is zero

2. velocity is not zero and acceleration is zero

3. velocity is zero and acceleration is not zero

4. velocity is not zero and acceleration is not zero

3. velocity is zero and acceleration is not zero

At the top of the path, the velocity of the ball is

zero,but the acceleration is not zero. The velocity at

the top is changing, and the acceleration is the rate at

which velocity changes.

Without air resistance, an object dropped from a plane flying at constant speed in a straight line will

1. Quickly lag behind the plane.

2. Remain vertically under the plane.

3. Move ahead of the plane

4. I don’t know

2. Remain vertically under the plane.

There is no acceleration along horizontal - object continues to travel at constant speed (same as that of the plane) along horizontal.

Due to gravitational acceleration the object’s speed downwards increases.

An object is held in place by friction on an inclined surface. The angle of inclination is increased until the object starts moving.

If the surface is kept at this angle, the object

1. slows down

2. moves at uniform speed

3. speeds up

4. none of the above

3. speeds up

When the object is at rest net force on it is zero.

When the object starts to move there is change in velocity - i.e., there is acceleration or a net force due to gravity

The force remains constant when inclination is kept at that angle leading to constant acceleration - continuous speed up.