HONORS FIZZIX POP Q1 BL6

© D Taylor 2015

HONORS FIZZIX - POP QUIZ #1 BL6 2015

Work with A (ONE, UNO, SINGLE) Human. EACH of you must submit your own solutions. Use g=10 m/s^2 for math-based Q's.
Notes are allowed, but NO INTERWEBS!

* Required

1. Which one of the following situations is not possible?

- A) A body has zero velocity and
- B) A body travels with a northwa
- C) A body travels with a northward velocity and a southward acceleration.
- D) A body travels with a constant velocity and a time-varying acceleration.
- E) A body travels with a constant acceleration and a time-varying velocity.

CONSTANT velocity means a = 0

2. For which one of the following situations will the path length equal the magnitude of the displacement?

- A) A jogger is running around a circular path.
- B) A ball is rolling down an inclined plane.
- C) A train travels 5 miles east; and then, it stops and travels 2 miles west.
- D) A ball rises and falls after being thrown straight up from the earth's surface.
- E) A ball on the end of a string is moving in a vertical circle.

HONORS FIZZIX - POP QUIZ #1 BL6 2015

Work with A (ONE, UNO, SINGLE) Human. EACH of you must submit your own solutions. Use g=10 m/s^2 for math-based Q's.
Notes are allowed, but NO INTERWEBS!

* Required

1. Which one of the following situations is not possible?

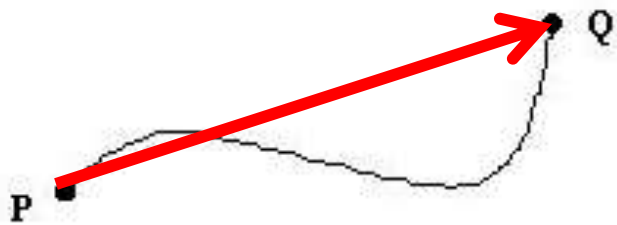
- A) A body has zero velocity and non-zero acceleration.
- B) A body travels with a northward velocity and a northward acceleration.
- C) A body travels with a northward velocity and a southward acceleration.
- D) A body travels with a constant velocity and a time-varying acceleration.
- E) A body travels with a constant acceleration and a time-varying velocity.

2. For which one of the following situations will the path length equal the magnitude of the displacement?

- A) A jogger is running around a circular path.
- B) A ball is rolling down an inclined plane.
- C) A train travels 5 miles east, and then, it stops and travels 2 miles west.
- D) A ball rises and falls after being thrown straight up from the earth's surface.
- E) A ball on the end of a string is moving in a vertical circle.

3. A particle travels along a curved path between two points P and Q as shown below. The displacement of the particle does not depend on

- A) the location of P.
- B) the location of Q.
- C) the distance traveled from P to Q.
- D) the shortest distance between P and Q.
- E) the direction of Q from P.



4. A ball is shot straight up from the surface of the earth with an initial speed of 20 m/s. Neglect any effects due to air resistance. How much time elapses between the throwing of the ball and its return to the original launch point?

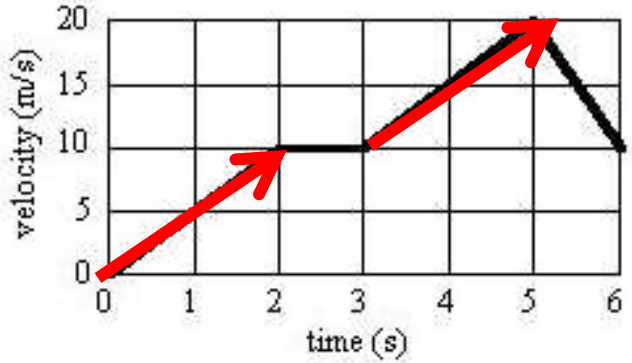
- A) 2 sec
- B) 4 sec
- C) 8 sec
- D) 12 sec
- E) 16 sec

$$t = \frac{v_f - v_o}{a} = \frac{-20-20}{-10}$$

CONCEPT: 2 sec up, 2 sec down...

5. An object is moving along a straight line. The graph below shows the object's velocity as a function of time. During which interval(s) of the graph does the speed of the object increase by equal amounts in equal times?

- A) 0 to 2 s
- B) 2 s to 3 s
- C) 3 s to 5 s
- D) 0 to 2 s and 3 s to 5 s
- E) 0 to 2 s, 3 to 5 s, and 5 to 6 s



6. A car starts from rest and accelerates at a constant rate in a straight line. In the first second the car covers a distance of 2.0 meters. How fast will the car be moving at the end of the second second?

- A) 2.0 m/s
- B) 4 m/s
- C) 8 m/s
- D) 16 m/s
- E) 32 m/s

$$v_f = v_i + at = 0 + 4(2)$$

WHY is $a = 2$?

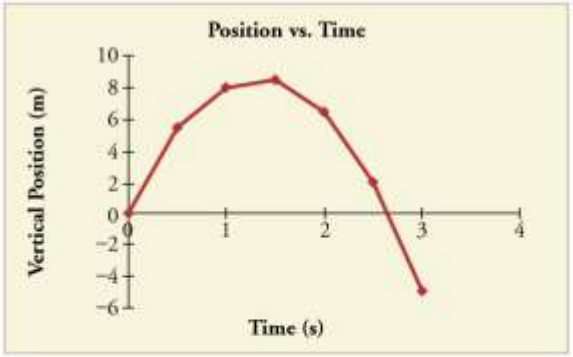
7. A car travels 30 miles at an average speed of 60 MPH and then 30 miles at an average speed of 30 MPH. What is the average speed of the car for the entire 60 mile trip?

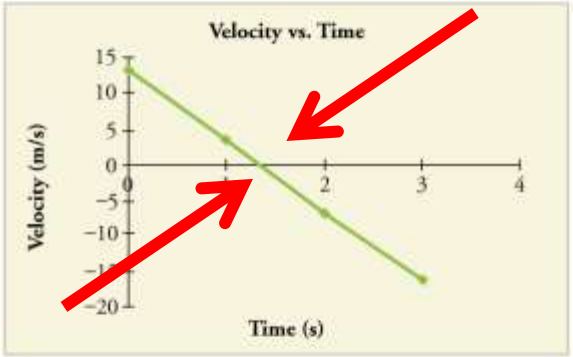
- A) 10 MPH
- B) 35 MPH
- C) 40 MPH
- D) 45 MPH
- E) 53 MPH

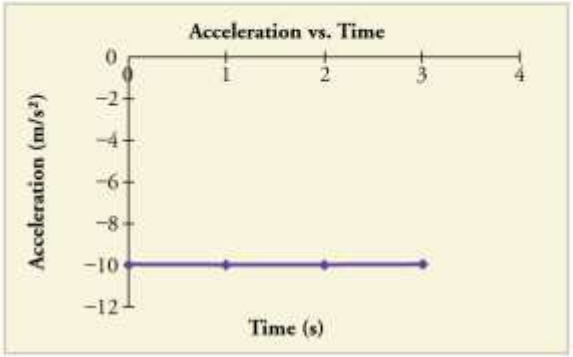
$$\bar{v} = \frac{d}{t} = \frac{d_{total}}{t_{total}} = \frac{60}{1.5}$$

8. A ball is thrown vertically upward from the surface of the earth. C
quantities: (1) the speed of the ball (2) the velocity of the ball (3) the
Which of these is (are) zero when the ball has reached the maximum

- A) 1 only
- B) 2 only
- C) 1 & 2
- D) 1 & 3
- E) 1, 2, & 3







9. The slope of a displacement-time graph represents

- A) distance traveled
- B) Initial velocity
- C) final velocity
- D) average velocity
- E) acceleration

$$m = \frac{\Delta y}{\Delta x} = \frac{d}{t} = \bar{v}$$

10. The slope of a velocity-time graph represents

- A) distance traveled
- B) Initial velocity
- C) final velocity
- D) average velocity
- E) acceleration

$$m = \frac{\Delta y}{\Delta x} = \frac{\Delta v}{t} = \bar{a}$$