

Motion Unit Test

Name: \_\_\_\_\_

Motion ONLY, no forces

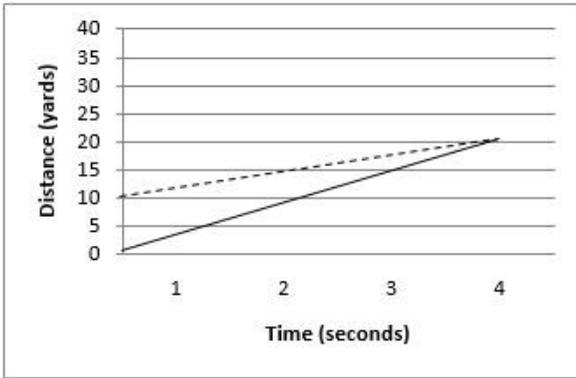
**Question 1 (1 point)**

Examine the graphs below:

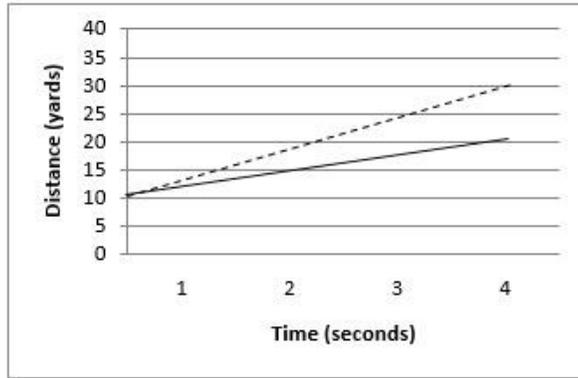
Runner 1= \_\_\_\_\_

Runner 2 = \_\_\_\_\_

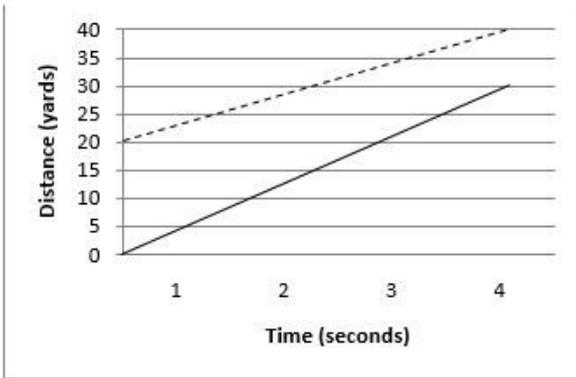
**Graph A**



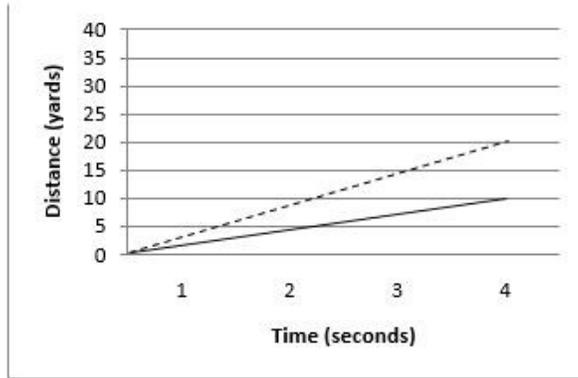
**Graph B**



**Graph C**



**Graph D**



Which of the four graphs shows the runner with the fastest speed?

- A. Graph A
- B. Graph B
- C. Graph C
- D. Graph D

**Question 2 (1 point)**

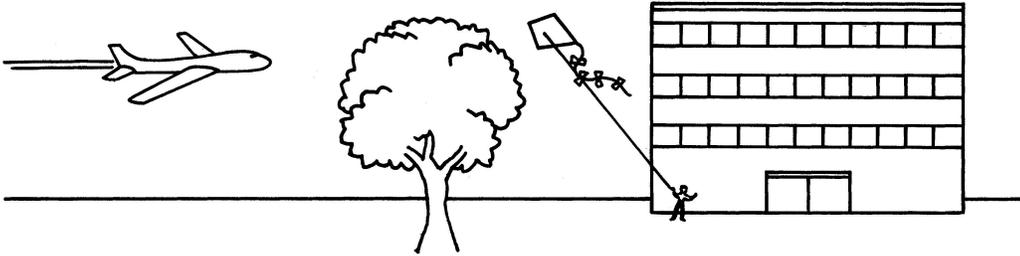
As Earth orbits the sun, it is moving about

- A. 30 kilometers per second.
- B. 30 kilometers per hour.
- C. 3 kilometers per minute.
- D. 300 kilometers per hour.

**Question 3 (1 point)**

Examine the figure below. If you were standing under the tree, which object would appear to be moving?

Extra Content:



- A. the tree.
- B. the airplane.
- C. the boy
- D. the building

**Question 4 (1 point)**

The steepness of a line on a graph is called the

- A. rise.
- B. run.
- C. slope.
- D. vertical axis.

**Question 5 (1 point)**

An object that is accelerating may be

- A. slowing down.
- B. gaining speed.
- C. changing direction.
- D. all of the above.

**Question 6 (1 point)**

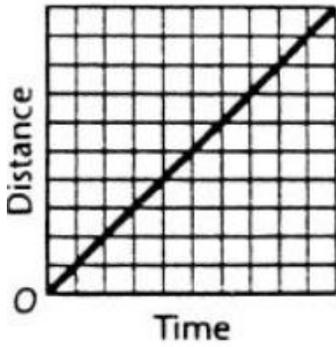
If you know the distance ( $d$ ) an object has move from a reference point and the time ( $t$ ) it took to move that distance, you can calculate the object's average speed or rate ( $r$ ) using which of the following formulas?

- A.  $r = d/t$
- B.  $d = t/r$
- C.  $t = d/r$
- D.  $r = t/d$

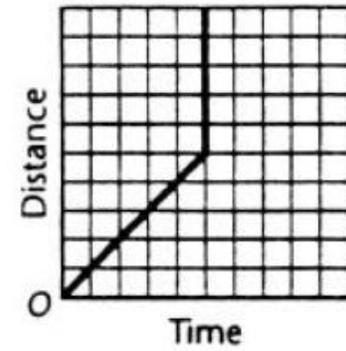
**Question 7 (1 point)**

Mr. Roberts drives his car away from his house at a **constant speed/rate**. Which of the following graphs **best** shows the relationship between the distance traveled and the time spent driving?

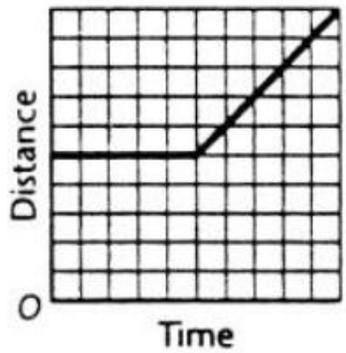
\_\_\_ A.



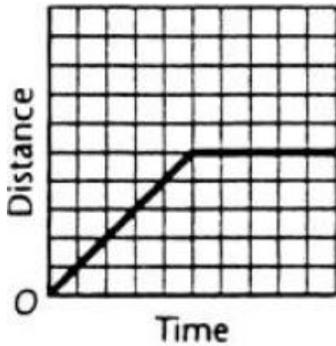
\_\_\_ B.



\_\_\_ C.



\_\_\_ D.



**Question 8 (1 point)**

The slope of a line on a distance-time graph is

- A. distance.
- B. time.
- C. rate or speed.
- D. displacement.

**Question 9 (1 point)**

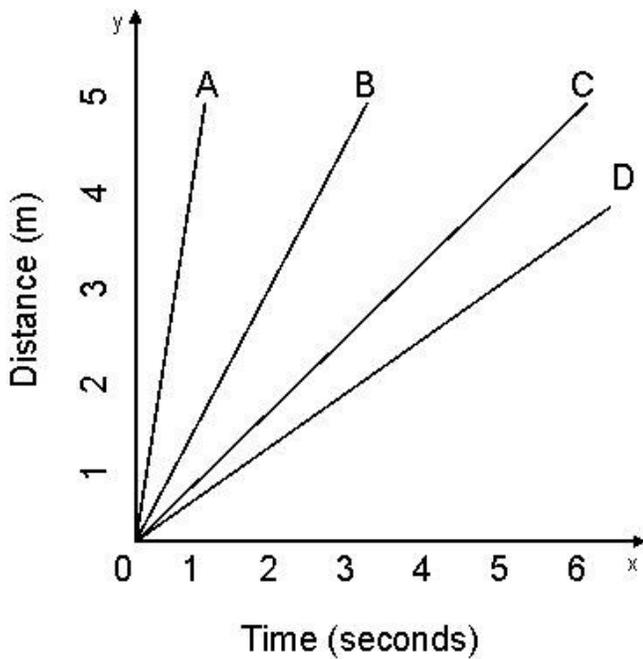
On a graph showing distance versus time, a horizontal line represents an object that is

- A. moving at a constant speed.
- B. increasing its speed.
- C. decreasing its speed.
- D. not moving at all.

**Question 10 (1 point)**

On the Distance/Time graph below, which line represents the **FASTEST** speed or rate?

Extra Content:



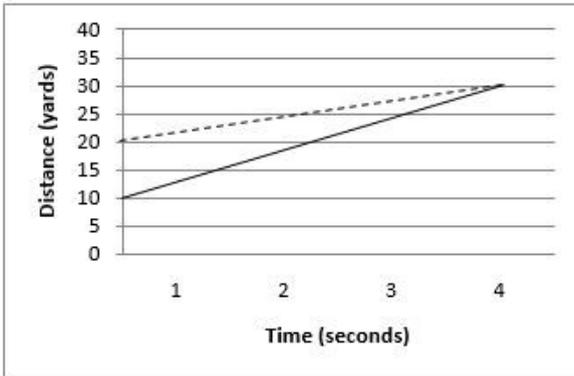
- A. A
- B. B
- C. C
- D. D

**Question 11 (1 point)**

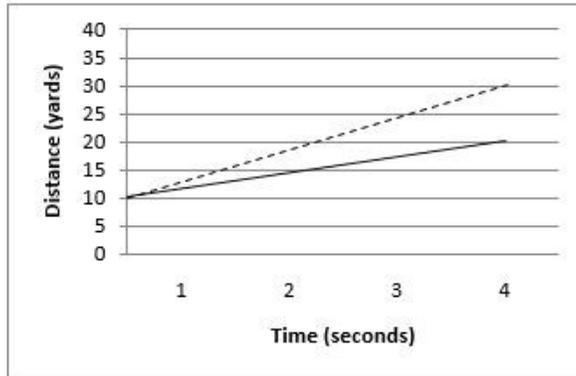
Examine the graphs below:

Runner 1 = ----- Runner 2 = \_\_\_\_\_

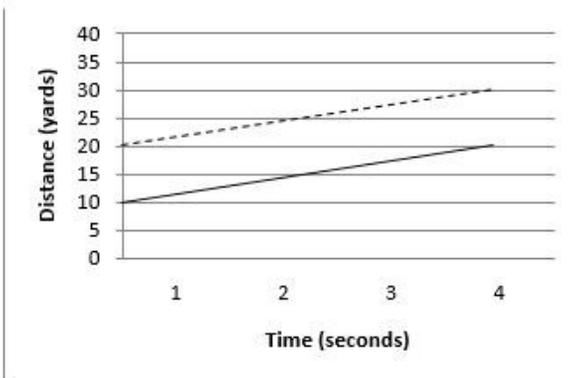
Graph A



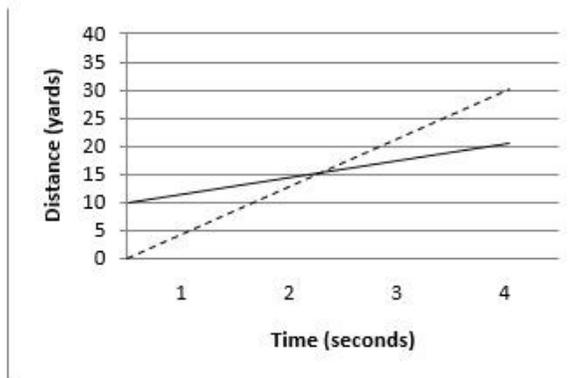
Graph B



Graph C



Graph D



In which of the graphs are both runners moving at the same speed?

- A. Graph A
- B. Graph B
- C. Graph C
- D. Graph D

**Question 12 (1 point)**

Examine the distance/time graphs below:

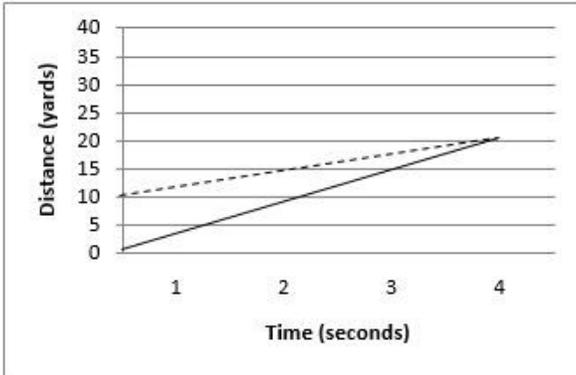
Runner 1=

Runner 2 =

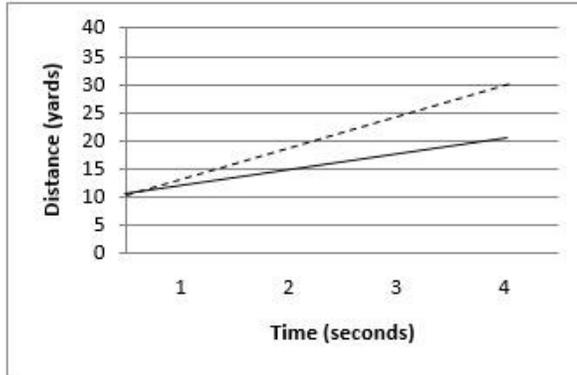
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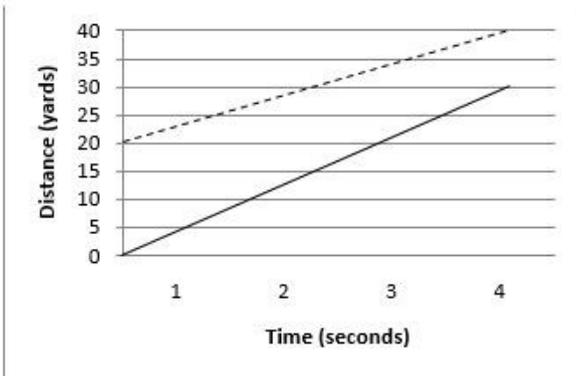
**Graph A**



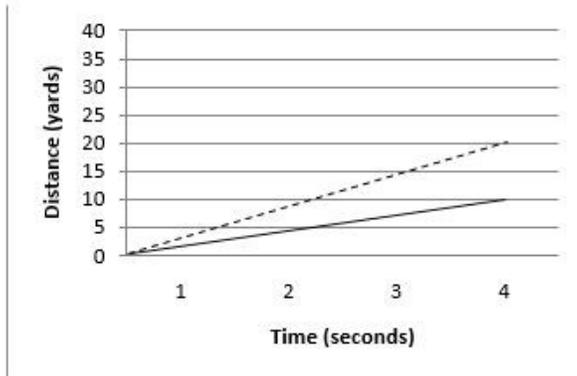
**Graph B**



**Graph C**



**Graph D**



Which of the graphs show that one of the runners started 10 yards further ahead of the other?

- A. Graph A
- B. Graph B
- C. Graph C
- D. Graph D

**Question 13 (1 point)**

The rate at which velocity changes is called

- A. instantaneous speed.
- B. direction.
- C. acceleration.
- D. motion.

**Question 14 (1 point)**

When an object's position relative to another object is changing,

Extra Content:

SC.6.P.13.1

- A. it is in motion.
- B. it is speeding.
- C. it has a high velocity.
- D. it is accelerating.

**Question 15 (1 point)**

What is the speed of a bobsled whose distance-time graph indicates that it traveled 100 m in 25 s?

- A. 4 m/s
- B. 2500 m/s
- C. 0.25 mph
- D. 100 m/s

**Question 16 (1 point)**

If a bicyclist travels 30 kilometers in two hours, her average speed is

- A. 30 km/h.
- B. 60 km/h.
- C. 15 km/h.
- D. 2 km/h.

**Question 17 (1 point)**

Speed (rate) is the ratio of the distance an object moves from a reference point to

- A. the mass of the object.
- B. the direction the object moves.
- C. the amount of time needed to travel the distance.
- D. the object's velocity.

**Question 18 (1 point)**

Which of the following is the SI unit of acceleration?

- A. m/s
- B.  $m/s^2$
- C.  $m^2/s$
- D.  $s^2/m$

**Question 19 (1 point)**

What is the speed of a bobsled whose distance-time graph indicates that it traveled 100 m in 25 s?

- A. 4 m/s
- B. 2,500 m/s
- C. 250 m/s
- D. 40 m/s

**Question 20 (1 point)**

In speed-versus-time graph, a straight line shows that acceleration is

- A. decreasing.
- B. increasing.
- C. changing.
- D. constant.

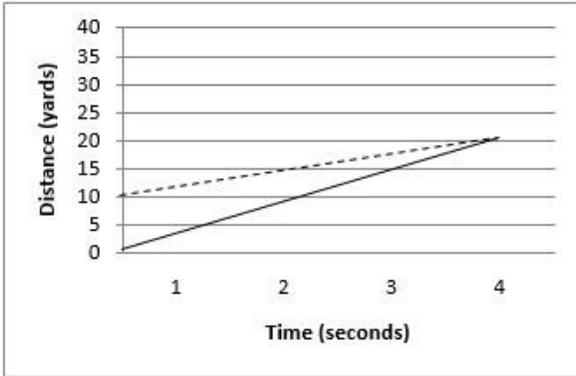
**Question 21 (1 point)**

Examine the graphs below:

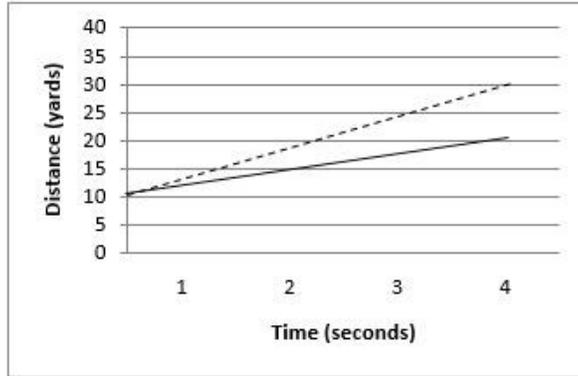
Runner 1= \_\_\_\_\_

Runner 2 = \_\_\_\_\_

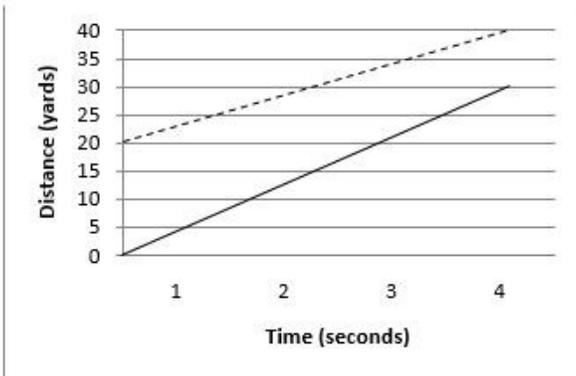
**Graph A**



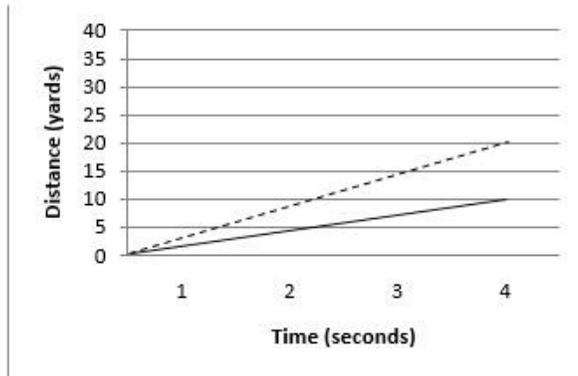
**Graph B**



**Graph C**



**Graph D**



What is the speed of Runner 1 in Graph D?

- A. 4 yds/sec
- B. 5 yds/sec
- C. 20 yds/sec
- D. 2.5 yds/sec

**Question 22 (1 point)**

A passenger in the rear seat of a car moving at a steady speed/rate is NOT moving relative to

- A. the front seat of the car.
- B. a pedestrian on the corner ahead.
- C. the road.
- D. a cloud in the sky.

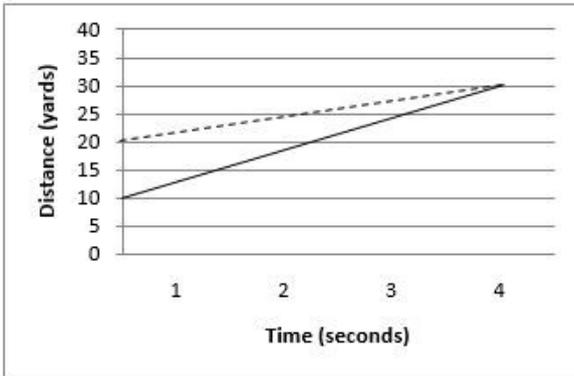
**Question 23 (1 point)**

Examine the graphs below:

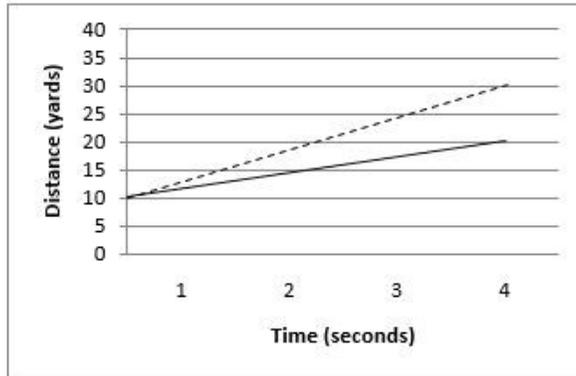
Runner 1 = -----

Runner 2 = \_\_\_\_\_

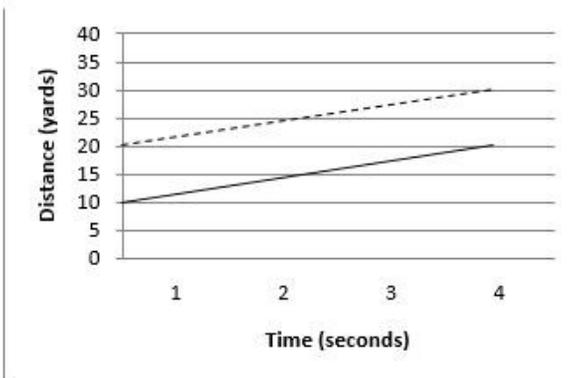
Graph A



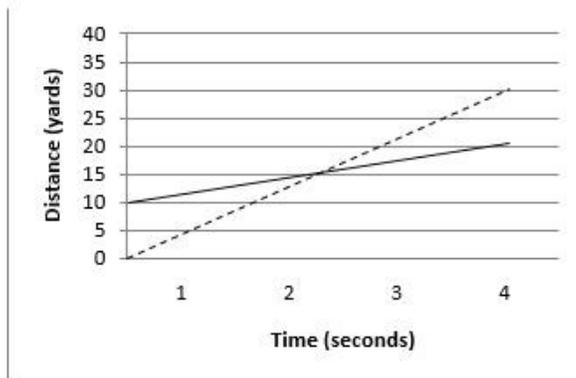
Graph B



Graph C



Graph D



What was the speed for Runner 2 in graph B.

- A. 2.5 yds/sec
- B. 5 yds/sec
- C. 4 yds/sec
- D. 7.5 yds/sec

**Question 24 (1 point)**

Which of these is an example of negative acceleration?

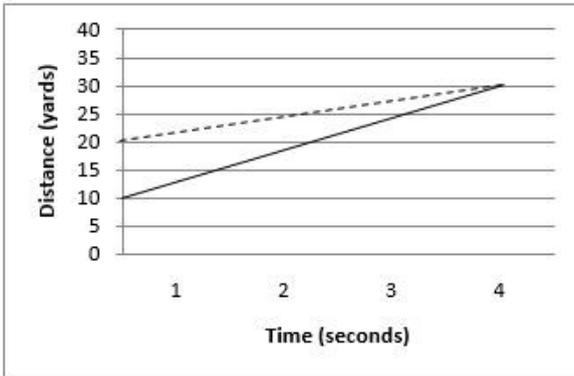
- A. a bird taking off for flight
- B. a roller coaster moving down a steep hill
- C. a car approaching a red light
- D. an airplane following a straight flight path

**Question 25 (1 point)**

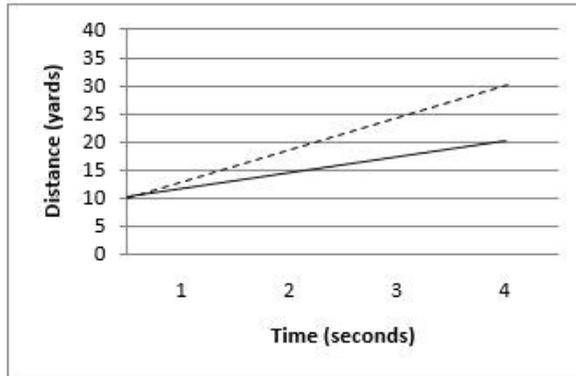
Examine the graphs below:

Runner 1 = ----- Runner 2 = \_\_\_\_\_

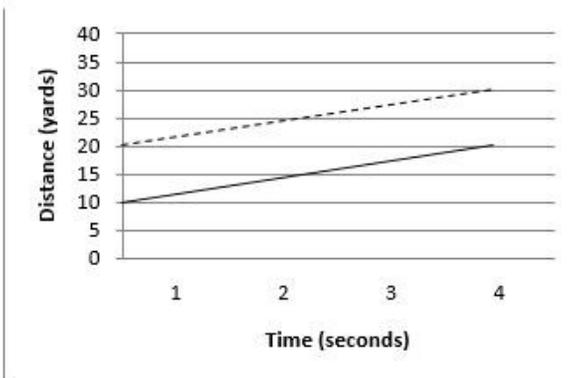
Graph A



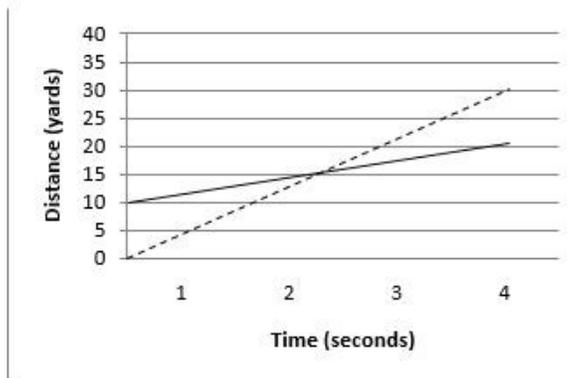
Graph B



Graph C



Graph D



What is the total distance for Runner 2 in Graph A?

- A. 30 yards
- B. 25 yards
- C. 20 yards
- D. 10 yards

**Question 26 (1 point)**

An object changing direction is an example of

- A. acceleration.
- B. speed.
- C. velocity.
- D. constant rate.

**Question 27 (1 point)**

The slope of a line on a distance-time graph is

- A. time.
- B. speed or rate.
- C. velocity.
- D. acceleration.

**Question 28 (1 point)**

If you know the rate ( $r$ ) an object is moving and the time ( $t$ ) it was in motion, you can calculate the distance ( $d$ ) an object has moved from a reference point using which of the following formulas?

- A.  $t = d \cdot t$
- B.  $r = \frac{t}{d}$
- C.  $d = r \cdot t$
- D.  $d = \frac{r}{t}$

**Question 29 (1 point)**

When you know both the speed and direction of an object's motion, you know the

- A. average speed of the object.
- B. instantaneous speed of the object.
- C. distance the object has traveled.
- D. velocity of the object.

**Question 30 (1 point)**

A place or object used for comparison to determine if something is in motion is called

- A. a position.
- B. a constant.
- C. velocity.
- D. a reference point.

**Question 31 (1 point)**

A horizontal line on a distance-time graph means the object is

- A. slowing down.
- B. at constant acceleration.
- C. speeding up.
- D. at rest (not moving).

**Question 32 (1 point)**

The basic SI unit of length or distance is the

- A. meter.
- B. foot.
- C. millimeter.
- D. kilometer.

**Question 33 (1 point)**

A car starts from a stopped position at a red light. At the end of 30 seconds, its speed is 20 meters per second. What is the acceleration of the car?

- A. 1.5 m/s
- B. 0.7 m/s
- C. 0.7 m/s<sup>2</sup>
- D. 1.5 m/s<sup>2</sup>

**Question 34 (1 point)**

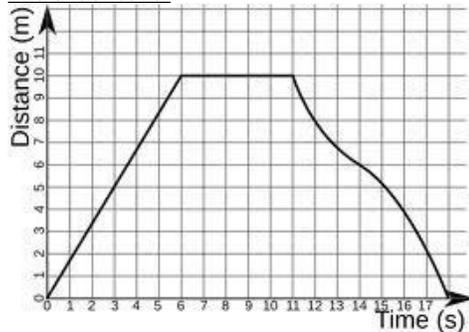
To determine the acceleration of an object moving in a straight line, you must calculate the change in its speed during each unit of

- A. velocity.
- B. time.
- C. motion.
- D. deceleration.

**Question 35 (1 point)**

Andre conducted an experiment to find the speed of his remote controlled car. He used his data to create the graph below. How would you describe the motion of the car during the first 11 seconds?

Extra Content:



- A. The car moved away from the starting point at a changing speed.
- B. The car traveled at a constant rate and then stopped for a few seconds.
- C. The car moved forward and then backward
- D. The car's speed increased the entire time

**Question 36 (1 point)**

If you know the rate ( $r$ ) an object is moving and the distance ( $d$ ) an object has moved from a reference point, you can calculate the time ( $t$ ) the object was in motion using which of the following formulas?

A.  $t = \frac{d}{r}$

B.  $r = \frac{d}{t}$

C.  $d = r * t$

D.  $t = \frac{r}{d}$