In Motion Review #1

(Definitions, Graphing Motion)

Part A – Multiple Choice

1. A car travels drives 5 km East, 5 km North, 5 km East, and 5 km South to school. The total distance traveled is

   A. 0 km.
   B. 10 km East.
   C. 20 km East.
   D. 20 km.

2. A girl walks 8 blocks East then turns around and walks 10 blocks West. What is her displacement?

   A. 18 blocks East
   B. 18 blocks West
   C. 2 blocks East
   D. 2 blocks West

3. A cyclist travels 7 km in 30 minutes. What is his average speed?

   A. 14 km/h
   B. 0.23 km/h
   C. 210 km/h
   D. 3.5 km/h

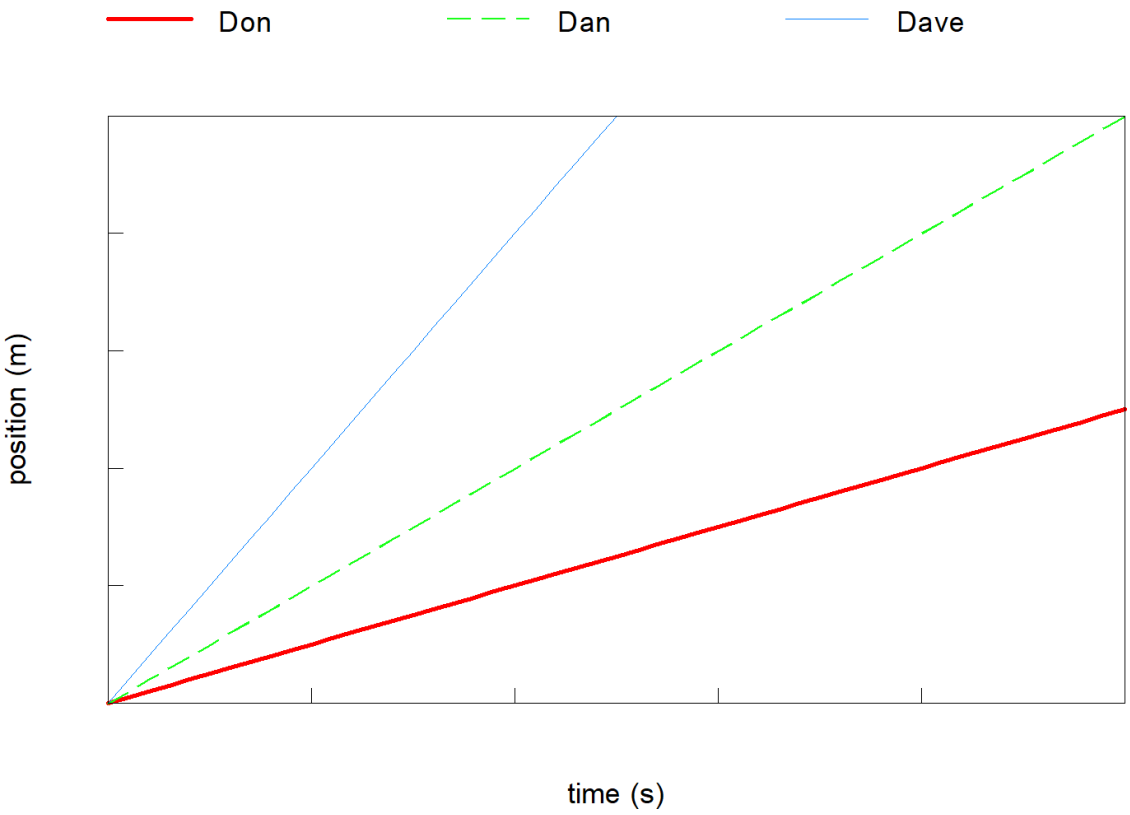
4. A speed of 80 km/h is equivalent to

   A. 288 m/s.
   B. 22.22 m/s.
   C. 22 222 m/s.
   D. 28.8 m/s.

5. Which of the following statements is correct?

A. Speed is the distance traveled divided by the time.
B. Velocity is the distance traveled divided by the time.
C. Speed is the distance traveled in a specified direction.
D. Velocity is the displacement in a specified direction.

6. The following position-time graph shows the distance travelled by three runners in a race.

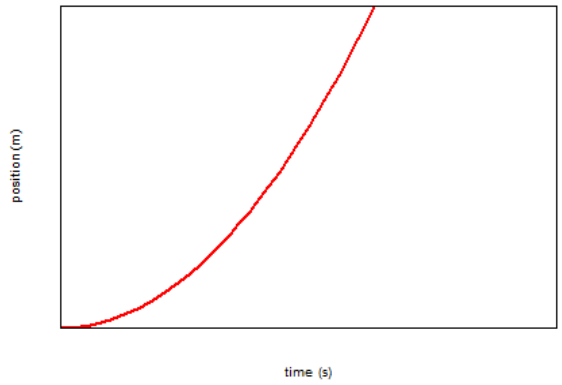


Who won the race?

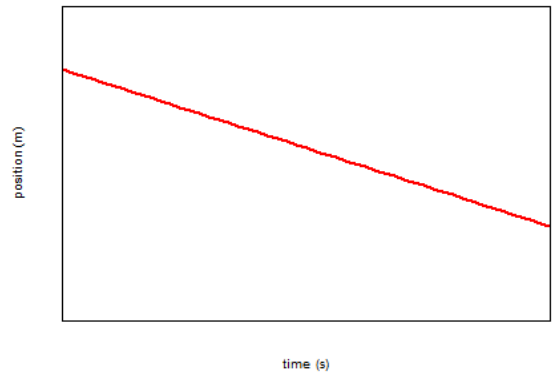
A. Don
B. Dan
C. Dave
D. It was a tie; everyone finished at the same time.

7. Which of the following position-time graphs shows an object that is moving with accelerated motion?

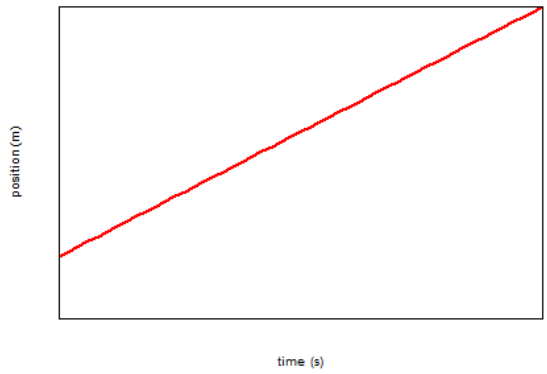
A.



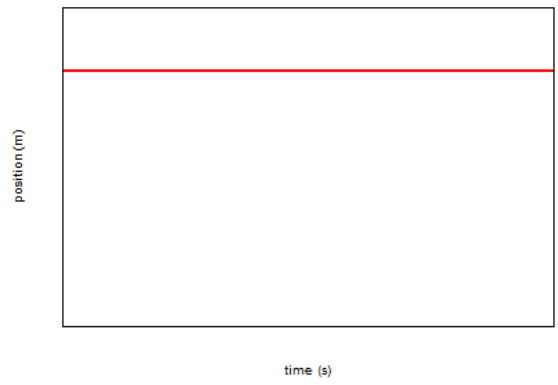
B.



C.



D.



Part B – Constructed Response

1. A car travels 20 km North turns around, travels 40 km South and then travels 10 km North. Calculate the displacement of the car.

2. A bicycle travels 210 m West in 30 s. Calculate the velocity of the bicycle.

3. A boy walks for 120 s at a speed of 1.5 m/s. How far does he go?

4. A girl runs a 200 m race at a speed of 2.0 m/s. How long does it take her?

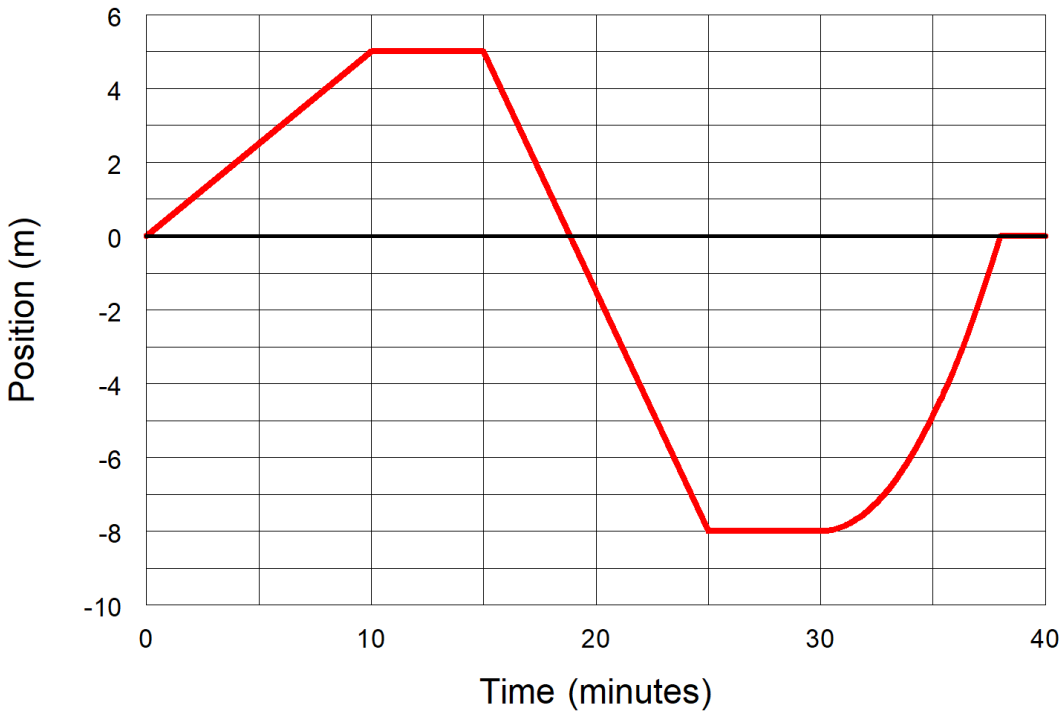
5. A drag racer accelerates from rest (0 m/s) to 35 m/s in 5 s. Calculate the acceleration.

6. A car slows down at a rate of 1.2 m/s^2 from a speed of 25 m/s. How long does it take the car to stop?

7. A rocket, starting from rest, accelerates at a rate of 8.0 m/s^2. How fast is going after 10 s?

8. A train accelerating at a rate of -2.0 m/s^2 comes to a stop in 60 s. How fast was it originally traveling?

9. The following position-time graph represents the position of a boy walking along the sidewalk. Positive position is North.



Describe the motion (speed and direction) during the following time intervals.

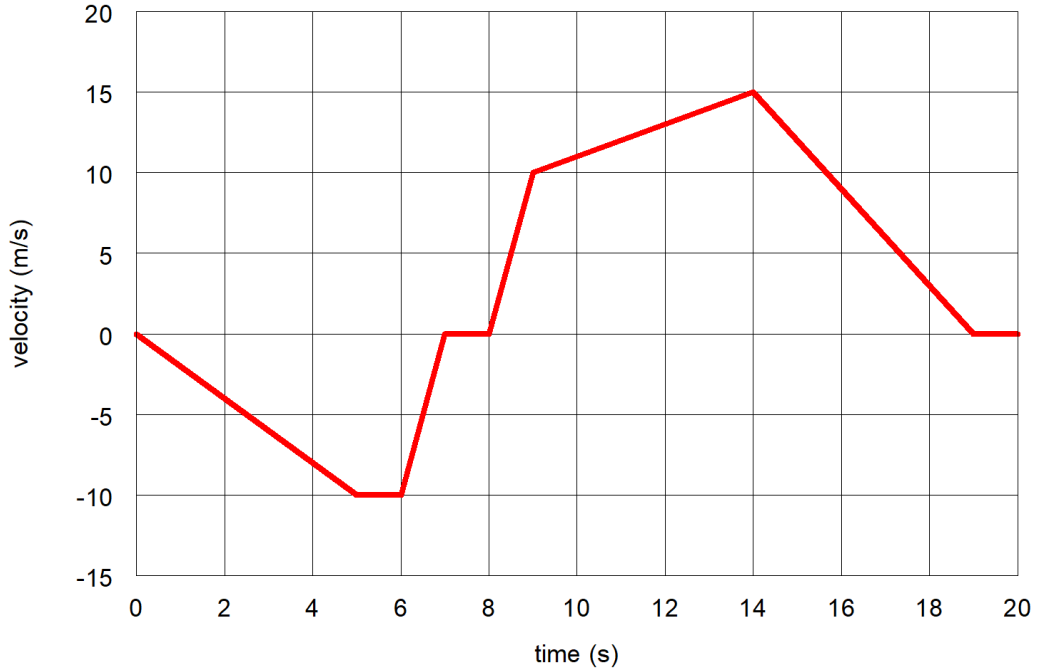
(a) 0 – 10 minutes _____

(b) 10 – 15 minutes _____

(c) 20 – 25 minutes _____

(d) 30 – 35 minutes _____

10. The following velocity-time graph represents the movement of a toy car. The positive direction is east.



Describe the motion (speed and direction) during the following time intervals:

(a) 0-5 s _____

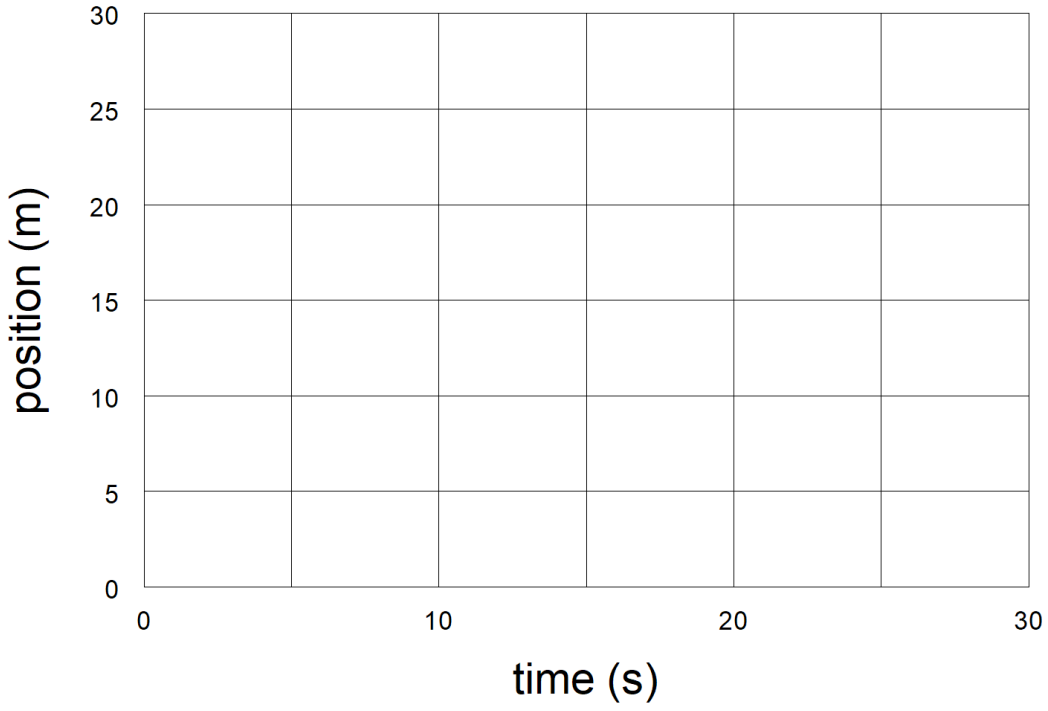
(b) 5-6 s _____

(c) 6-7 s _____

(d) 7-8 s _____

(e) 14-19 s _____

11. A dog, starting at a position of 10 m, walks forwards at a speed of 0.5 m/s for 10 s. The dog stops for 10 s and then runs back with a speed of 1.5 m/s for 10 s. Create a position-time graph to represent the motion of the dog.



12. A car, starting with a speed of 25 m/s, slows down at a rate of 2.0 m/s2 for 10 s. The car maintains this speed for 10 s and then returns to its original speed over the next 10 s. Graph the speed of the car with respect to time.