1. . An athlete runs four laps of a 400 m track. What is the athlete’s total displacement? (A) –1600 m (B) –400 m (C) 0 m (D) 400 m (E) 1600 m

2. . Which of the following statements contains a reference to displacement? I. “The town is a five mile drive along the winding country road.” II. “The town sits at an altitude of 940 m.” III. “The town is ten miles north, as the crow flies.” (A) I only (B) III only (C) I and III only (D) II and III only (E) I, II, and III

3. . A car that travels from point A to point B in four hours, and then from point B back to point A in six hours. The road between point A and point B is perfectly straight, and the distance between the two points is 240 km. What is the car’s average velocity? (A) 0 km/h (B) 48 km/h (C) 50 km/h (D) 60 km/h (E) 100 km/h

4. . A car that travels from point A to point B in four hours, and then from point B back to point A in six hours. The road between point A and point B is perfectly straight, and the distance between the two points is 240 km. What is the car’s average speed? (A) 0 km/h (B) 48 km/h (C) 50 km/h (D) 60 km/h (E) 100 km/h

5. . A ball is dropped from the top of a building. Taking air resistance into account, which best describes the speed of the ball while it is moving downward? (A) It will increase until it reaches the speed of light (B) It will increase at a steady rate (C) It will remain constant (D) It will decrease (E) Its rate of acceleration will decrease until the ball moves at a constant speed

6. . A car accelerates steadily so that it goes from a velocity of 20 m/s to a velocity of 40 m/s in 4 seconds. What is its acceleration? (A) 0.2 m/s2 (B) 4 m/s2 (C) 5 m/s2 (D) 10 m/s2 (E) 80 m/s2

7. . Graph of velocity vs. time of a moving particle plotted at right.What is the acceleration and displacement of the particle at point A?  (A) Acceleration decreasing, displacement decreasing (B) Acceleration constant, displacement decreasing (C) Acceleration increasing, displacement decreasing (D) Acceleration decreasing, displacement increasing (E) Acceleration increasing, displacement increasing

8. . Graph of velocity vs. time of a moving particle plotted at right give below.  How do the acceleration and displacement of the particle at point B compare to the acceleration and displacement of the particle at point A? (A) Acceleration is less, displacement is less (B) Acceleration is less, displacement is the same (C) Acceleration is less, displacement is greater (D) Acceleration is greater, displacement is less (E) Acceleration is greater, displacement is greater

9. . A sprinter starts from rest and accelerates at a steady rate for the first 50 m of a 100 m race, and then continues at a constant velocity for the second 50 m of the race. If the sprinter runs the 100 m in a time of 10 s, what is his instantaneous velocity when he crosses the finish line? (A) 5 m/s (B) 10 m/s (C) 12 m/s (D) 15 m/s (E) 20 m/s

10. . A woman runs 40 m to the north in 6.0 s, and then 30 m to the east in 4.0Â s. What is the magnitude of her average velocity? (A) 5.0 m/s (B) 6.0 m/s (C) 6.7 m/s (D) 7.0 m/s (E) 7.5 m/s