

FOCUS ON CONCEPTS

WileyPLUS

Note to Instructors: The numbering of the questions shown here reflects the fact that they are only a representative subset of the total number that are available online. However, all of the questions are available for assignment via an online homework management program such as WileyPLUS or WebAssign.

Section 2.1 Displacement

1. What is the difference between distance and displacement? (a) Distance is a vector, while displacement is not a vector. (b) Displacement is a vector, while distance is not a vector. (c) There is no difference between the two concepts; they may be used interchangeably.

Section 2.2 Speed and Velocity

3. A jogger runs along a straight and level road for a distance of 8.0 km and then runs back to her starting point. The time for this round-trip is 2.0 h. Which one of the following statements is true? (a) Her average speed is 8.0 km/h, but there is not enough information to determine her average velocity. (b) Her average speed is 8.0 km/h, and her average velocity is 8.0 km/h. (c) Her average speed is 8.0 km/h, and her average velocity is 0 km/h.

Section 2.3 Acceleration

6. The velocity of a train is 80.0 km/h, due west. One and a half hours later its velocity is 65.0 km/h, due west. What is the train's average acceleration? (a) 10.0 km/h², due west (b) 43.3 km/h², due west (c) 10.0 km/h², due east (d) 43.3 km/h², due east (e) 53.3 km/h², due east.

Section 2.4 Equations of Kinematics for Constant Acceleration

10. In which one of the following situations can the equations of kinematics *not* be used? (a) When the velocity changes from moment to moment, (b) when the velocity remains constant, (c) when the acceleration changes from moment to moment, (d) when the acceleration remains constant.

13. In a race two horses, Silver Bullet and Shotgun, start from rest and each maintains a constant acceleration. In the same elapsed time Silver Bullet runs 1.20 times farther than Shotgun. According to the equations of kinematics, which one of the following is true concerning the accelerations of the horses? (a) $a_{\text{Silver Bullet}} = 1.44 a_{\text{Shotgun}}$ (b) $a_{\text{Silver Bullet}} = a_{\text{Shotgun}}$ (c) $a_{\text{Silver Bullet}} = 2.40 a_{\text{Shotgun}}$ (d) $a_{\text{Silver Bullet}} = 1.20 a_{\text{Shotgun}}$ (e) $a_{\text{Silver Bullet}} = 0.72 a_{\text{Shotgun}}$

Section 2.6 Freely Falling Bodies

19. A rocket is sitting on the launch pad. The engines ignite, and the rocket begins to rise

straight upward, picking up speed as it goes. At about 1000 m above the ground the engines shut down, but the rocket continues straight upward, losing speed as it goes. It reaches the top of its flight path and then falls back to earth. Ignoring air resistance, decide which one of the following statements is true. **(a)** All of the rocket's motion, from the moment the engines ignite until just before the rocket lands, is free-fall. **(b)** Only part of the rocket's motion, from just after the engines shut down until just before it lands, is free-fall. **(c)** Only the rocket's motion while the engines are firing is free-fall. **(d)** Only the rocket's motion from the top of its flight path until just before landing is free-fall. **(e)** Only part of the rocket's motion, from just after the engines shut down until it reaches the top of its flight path, is free-fall.

22. The top of a cliff is located a distance H above the ground. At a distance $H/2$ there is a branch that juts out from the side of the cliff, and on this branch a bird's nest is located. Two children throw stones at the nest with the same initial speed, one stone straight downward from the top of the cliff and the other stone straight upward from the ground. In the absence of air resistance, which stone hits the nest in the least amount of time? **(a)** There is insufficient information for an answer. **(b)** Both stones hit the nest in the same amount of time. **(c)** The stone thrown from the ground. **(d)** The stone thrown from the top of the cliff.

Section 2.7 Graphical Analysis of Velocity and Acceleration

24. The graph accompanying this problem shows a three-part motion. For each of the three parts, A, B, and C, identify the direction of the motion. A positive velocity denotes motion to the right. **(a)** A right, B left, C right **(b)** A right, B right, C left **(c)** A right, B left, C left **(d)** A left, B right, C left **(e)** A left, B right, C right

