

## Chapter 3 practice

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

- 1) A mosquito flying at 3 m/s that encounters a breeze blowing at 3 m/s in the same direction has a speed of \_\_\_\_\_  
A) 0 m/s.                      B) 3 m/s.                      C) 4 m/s.                      **D) 6 m/s.**
- 2) A mosquito flying at 3 m/s that encounters a breeze blowing at 3 m/s in the opposite direction has a speed of \_\_\_\_\_  
**A) 0 m/s.**                      B) 3 m/s.                      C) 4 m/s.                      D) 6 m/s.
- 3) Katelyn runs along the aisle of a train that moves at 8 m/s. Her speed relative to the floor is 3 m/s. Her speed relative to an observer at rest on the ground is \_\_\_\_\_  
A) 5 m/s.  
B) 11 m/s.  
**C) either depending on her running direction**  
D) none of the above
- 4) When you walk at an average speed of 4 m/s, in 5 s you'll cover a distance of \_\_\_\_\_  
A) 2 m.                      B) 10 m.                      C) 15 m.                      **D) 20 m.**
- 5) A vehicle undergoes acceleration when it \_\_\_\_\_  
A) gains speed.                      B) loses speed.  
C) changes its direction.                      **D) all of the above**
- 6) While a car travels around a circular track at a constant speed, its \_\_\_\_\_  
A) acceleration is zero.                      B) velocity is zero.  
C) inertia is zero.                      **D) none of the above**
- 7) If a car increases its velocity from zero to 60 m/s in 10 seconds, its acceleration is \_\_\_\_\_  
A) 3 m/s<sup>2</sup>.                      **B) 6 m/s<sup>2</sup>.**                      C) 60 m/s<sup>2</sup>.                      D) 600 m/s<sup>2</sup>.
- 8) An object covers a distance of 8 meters in the first second of travel, another 8 meters during the next second, and 8 meters again during the third second. Its **acceleration** is \_\_\_\_\_  
**A) 0 m/s<sup>2</sup>.**                      B) 5 m/s<sup>2</sup>.                      C) 8 m/s<sup>2</sup>.                      D) 24 m/s<sup>2</sup>.
- 9) If an object moves with constant acceleration, its velocity must \_\_\_\_\_  
A) be constant also.  
**B) change by the same amount each second.**  
C) change by varying amounts depending on its speed.  
D) always decrease.
- 10) A ball tossed vertically upward rises, reaches its highest point, and then falls back to its starting point. During this time the acceleration of the ball is always \_\_\_\_\_  
A) in the direction of motion.  
B) opposite its velocity.  
C) directed upward.  
**D) directed downward.**  
E) none of the above

- 11) A car's speed 3 seconds after accelerating from rest at  $2 \text{ m/s}^2$  is 11) \_\_\_\_\_  
A)  $2 \text{ m/s}$ . B)  $3 \text{ m/s}$ . C)  $4 \text{ m/s}$ . D)  $6 \text{ m/s}$ .
- 12) The time it takes a car to attain a speed of  $30 \text{ m/s}$  when accelerating from rest at  $2 \text{ m/s}^2$  is 12) \_\_\_\_\_  
A)  $2 \text{ s}$ .  
B)  $15 \text{ s}$ .  
C)  $30 \text{ s}$ .  
D)  $60 \text{ s}$ .  
E) none of the above
- 13) The accelerations possible for a ball on an inclined plane 13) \_\_\_\_\_  
A) range from zero to  $g$ .  
B) range from  $g$  to infinity.  
C) have no limit.
- 14) While an iron block near the Earth's surface is in free fall, it undergoes an increase in 14) \_\_\_\_\_  
A) speed. B) acceleration.  
C) both of these D) neither of these
- 15) An apple falls from a tree and hits the ground 5 meters below with a speed of about 15) \_\_\_\_\_  
A)  $5 \text{ m/s}$ .  
B)  $10 \text{ m/s}$ .  
C)  $15 \text{ m/s}$ .  
D)  $20 \text{ m/s}$ .  
E) not enough information
- 16) An object at rest near the surface of a distant planet starts to fall freely. If the acceleration there is twice that of the Earth, its speed one second later would be 16) \_\_\_\_\_  
A)  $10 \text{ m/s}$ . B)  $20 \text{ m/s}$ . C)  $30 \text{ m/s}$ . D)  $40 \text{ m/s}$ .
- 17) A ball is thrown upwards and returns to the same location. Compared with its initial speed its speed when it returns is about 17) \_\_\_\_\_  
A) half as much. B) the same.  
C) twice as much. D) four times as much.
- 18) At one instant an object in free fall is moving downward at  $50 \text{ m/s}$ . One second later its speed is 18) \_\_\_\_\_  
A)  $25 \text{ m/s}$ . B)  $50 \text{ m/s}$ . C)  $55 \text{ m/s}$ . D)  $60 \text{ m/s}$ . E)  $100 \text{ m/s}$ .
- 19) If you throw a ball straight downward (in the absence of air resistance), after leaving your hand its acceleration is 19) \_\_\_\_\_  
A) less than  $10 \text{ m/s}^2$ . B)  $10 \text{ m/s}^2$ . C) greater than  $10 \text{ m/s}^2$ .
- 20) Neglecting air resistance, how fast must you toss a ball straight up in order for it to take 6 seconds to return to its initial level? 20) \_\_\_\_\_  
A)  $5 \text{ m/s}$   
B)  $10 \text{ m/s}$   
C)  $20 \text{ m/s}$   
D)  $30 \text{ m/s}$   
E) more than  $30 \text{ m/s}$

- 21) Neglecting air resistance, a ball projected straight upward so it remains in the air for 10 seconds needs an initial speed of 21) \_\_\_\_\_  
A) 50 m/s. B) 60 m/s. C) 80 m/s. D) 100 m/s. E) 110 m/s.
- 22) A pot that falls from a ledge and hits the ground 45 m below hits the ground at 22) \_\_\_\_\_  
A) 30 m/s. B) 60 m/s.  
C) 120 m/s. D) more than 120 m/s.
- 23) Which of the following is **not** a vector quantity? 23) \_\_\_\_\_  
A) velocity  
B) speed  
C) acceleration  
D) all are vector quantities  
E) none are vector quantities.
- 24) A humming bird flying at 4 km/h that gets caught in a 3-km/h crosswind has a resultant speed of about 24) \_\_\_\_\_  
A) 3 km/h. B) 4 km/h.  
C) 5 km/h. D) more than 5 km/h.
- 25) An 80-km/h airplane caught in a 60-km/h crosswind has a resultant speed of 25) \_\_\_\_\_  
A) 60 km/h. B) 80 km/h. C) 100 km/h. D) 141 km/h.

## Answer Key

Testname: CHAPTER 3 PRACTICE

- 1) D
- 2) A
- 3) C
- 4) D
- 5) D
- 6) D
- 7) B
- 8) A
- 9) B
- 10) D
- 11) D
- 12) B
- 13) A
- 14) A
- 15) B
- 16) B
- 17) B
- 18) D
- 19) B
- 20) D
- 21) A
- 22) A
- 23) B
- 24) C
- 25) C