10. Sally travels by car from one city to another. She drives for 30.0 min at 80.0 km/h, 12.0 min at 105 km/h, and 45.0 min at 40.0 km/h, and she spends 15.0 min eating lunch and buying gas.

a. Determine the average speed for the trip.

b. Determine the total distance traveled.

11. Runner A is initially 6.0 km west of a flagpole and is running with a constant velocity of 9.0 km/h due east. Runner B is initially 5.0 km east of the flagpole and is running with a constant velocity of 8.0 km/h due west. What will be the distance of the two runners from the flagpole when their paths cross? (It is not necessary to convert your answer from kilometers to meters for this problem. You may leave it in kilometers.)

ACCELERATION

Review Questions

12. What would be the acceleration of a turtle that is moving with a constant velocity of 0.25 m/s to the right?

13. Sketch the velocity-time graphs for the following motions.

a. a city bus that is moving with a constant velocity

b. a wheelbarrow that is speeding up at a uniform rate of acceleration while moving in the positive direction

c. a tiger that is speeding up at a uniform rate of acceleration while moving in the negative direction

d. an iguana that is slowing down at a uniform rate of acceleration while moving in the positive direction

e. a camel that is slowing down at a uniform rate of acceleration while moving in the negative direction

Conceptual Questions

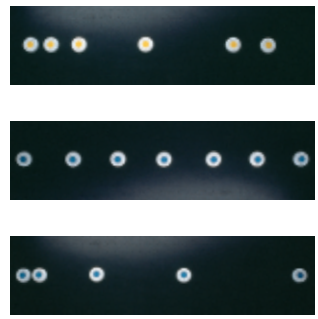
14. If a car is traveling eastward, can its acceleration be westward? Explain your answer, and use an example in your explanation.

15. The strobe photographs below show a disk moving from left to right under different conditions. The time interval between images is constant. Assuming that the direction to the right is positive, identify the following types of motion in each photograph. (Some may have more than one type of motion.)

a. the acceleration is positive

b. the acceleration is negative

c. the velocity is constant

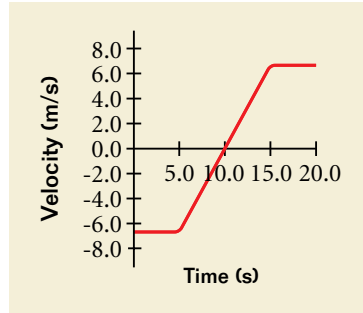


Practice Problems

For problems 16–17, see Sample Problem B.

16. A car traveling in a straight line has a velocity of +5.0 m/s. After an acceleration of 0.75 m/s^2, the car's velocity is +8.0 m/s. In what time interval did the acceleration occur?

17. The velocity-time graph for an object moving along a straight path is shown below. Find the average accelerations during the time intervals 0.0 s to 5.0 s, 5.0 s to 15.0 s, and 0.0 s to 20.0 s.



For problems 18–19, see Sample Problem C.

18. A bus slows down uniformly from 75.0 km/h (21 m/s) to 0 km/h in 21 s. How far does it travel before stopping?