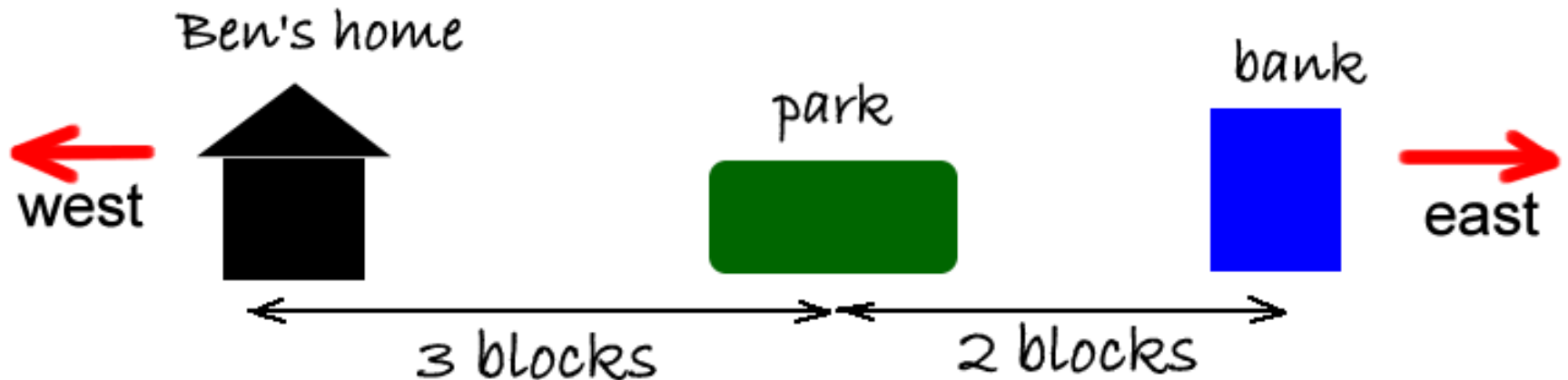# Physics of Everyday Phenomena

W. Thomas Griffith

Juliet W. Brosing

Chapter 2

Question 2.1

Ben leaves his home and walks to the bank, then back home in a total of 30 minutes. What is his average speed?

Ben's home

park

bank

west

east

3 blocks

2 blocks

A. 1/3 block/min   C. 1/6 block/min

B. 0 blocks/min   D. 10 blocks/min

Question 2.2

What is the difference between velocity and speed?

A) There is no difference, they are both vectors.

B) Speed is a scalar and velocity is a vector.

C) Speed is a vector and velocity is a scalar.

D) There is no difference, they are both scalars.

Question 2.3

If the average velocity is non-zero over a time interval, does this mean that the instantaneous velocity is never zero over that same time interval?

A. Yes

B. No

Question 2.4

Can a car be accelerating when its speed is constant?

A) Yes. Velocity has both a magnitude (speed) and a direction. If the direction is changing there is an acceleration.

B) No. If speed is constant there is no change so therefore no acceleration.

C) No. Acceleration is the rate of change of velocity. If the speed is constant the velocity is not changing.

D) Yes. Acceleration and speed are not related, so a constant speed has no effect on acceleration.

Question 2.5

If the velocity of an object is non-zero, can the acceleration of the object be zero?

A. Yes

B. No

Question 2.6
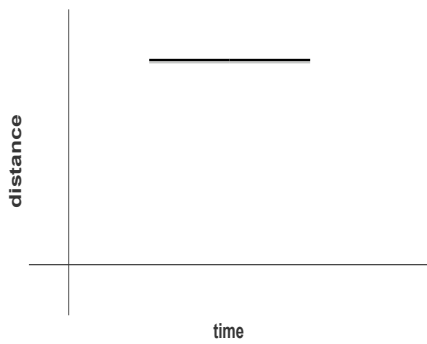
In which of the following cases is the acceleration zero?

A. a car increases its speed from 0 mph to 30 mph

B. a car decreases its speed from 15 mph to 5 mph

C. a car goes around a curve at a speed of 30 mph
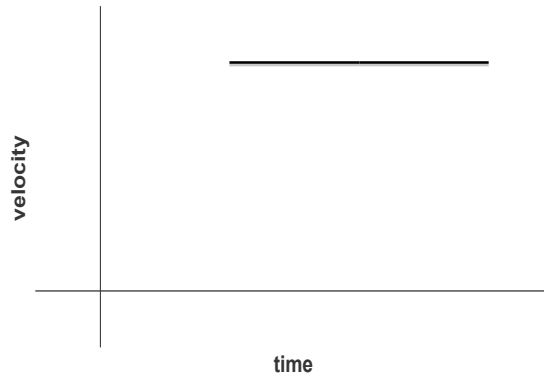
D. a car backs out of a drive at 10 mph

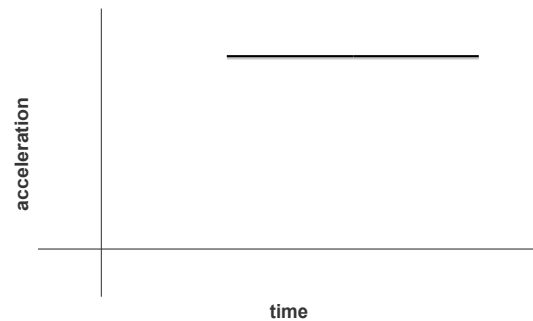# Question 2.7

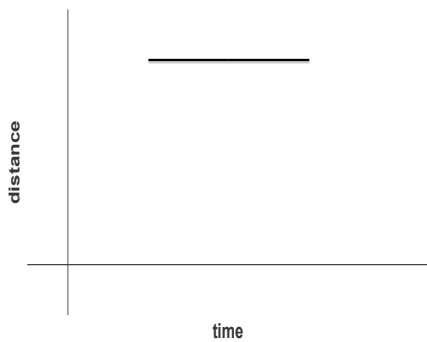Which graph shows an object standing still?

Graph A

Graph B

Graph C

distance

time

velocity

time

acceleration

time
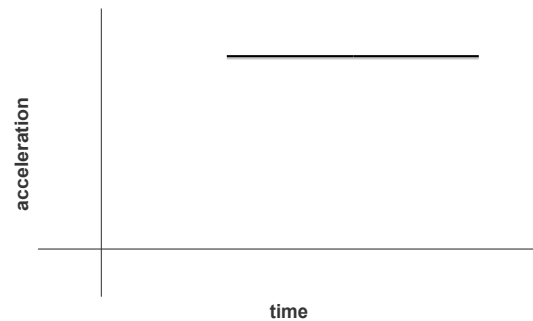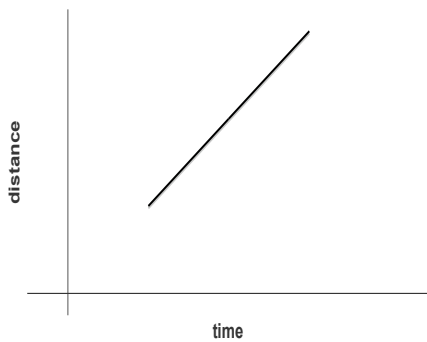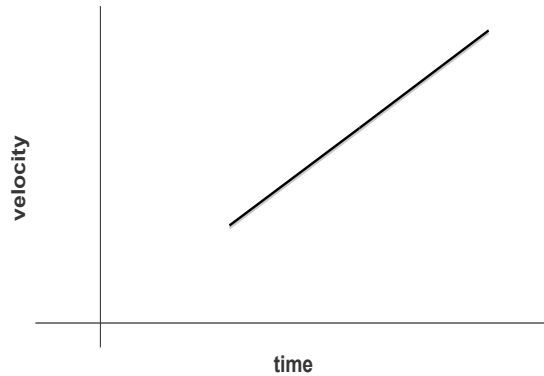
Question 2.8

Which graph shows an object moving with a constant non-zero velocity?

Graph A

Graph B

Graph C

distance

velocity

acceleration

time

time

time
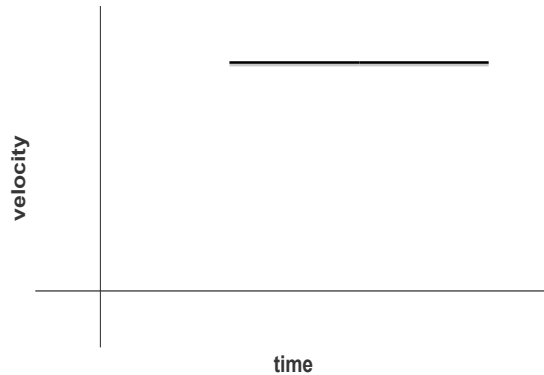
Question 2.9

Which graph shows an object moving with a constant non-zero velocity?

Graph A

Graph B

Graph C

distance

time

velocity

time

acceleration

time
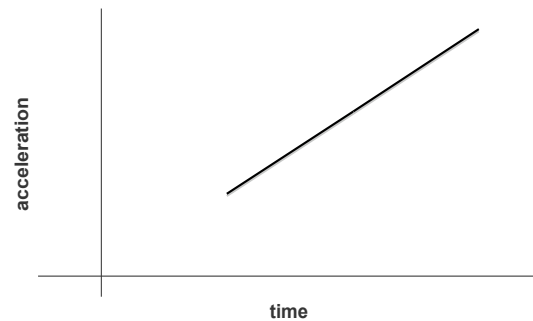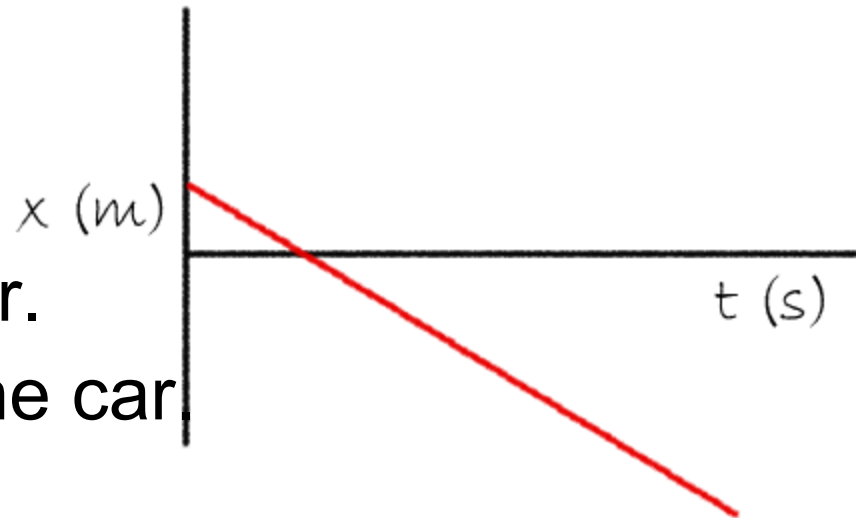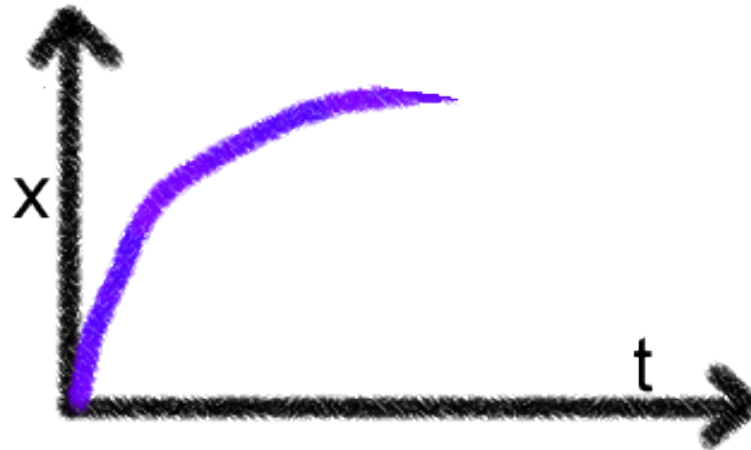
Question 2.10

A car is traveling on an interstate where north is taken to be the positive direction. A graph of the distance it has moved as a function of time is shown.   What is the physical significance of the slope?

A) The distance the car has moved.

B) The velocity of the car.

C) The acceleration of the car.

$x\ (m)$

$t\ (s)$

Question 2.11

The graph for position vs. time is given for a car. What can you say about the velocity of the car over time?

A. it speeds up all the time

B. it slows down all the time

C. it moves at constant velocity

D. sometimes it speeds up and sometimes it slows

E. not really sure

Question 2.12

The graph represents the velocity of a car over time. Where the car ends up, relative to its starting point, can be found by
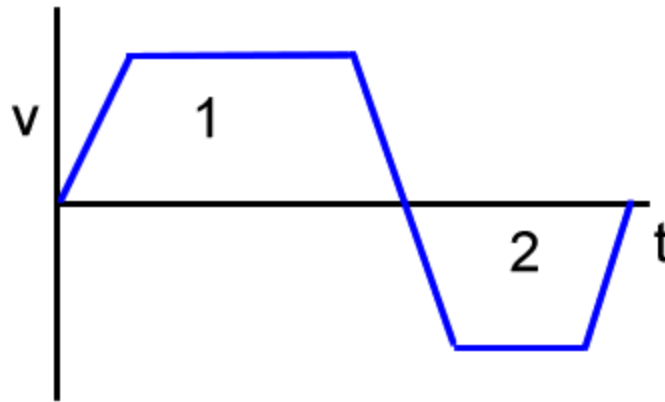
A. adding the slopes of each section of the graph.

B. adding area 1 to area 2.

C. subtracting area 2 from area 1.

D. subtracting area 1 from area 2.

Question 2.13

The graph of position vs. time is given for a train. What can you say about the train's motion from time t_1 to time t_2 ?
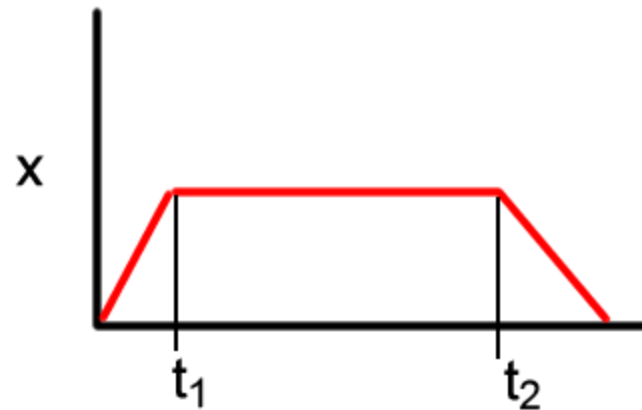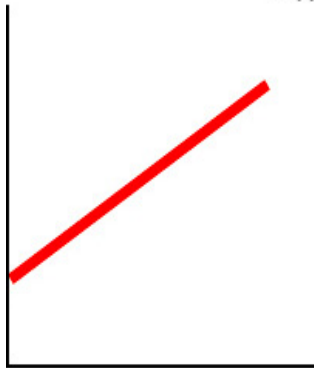

A. it is moving with constant velocity

B. it is not moving

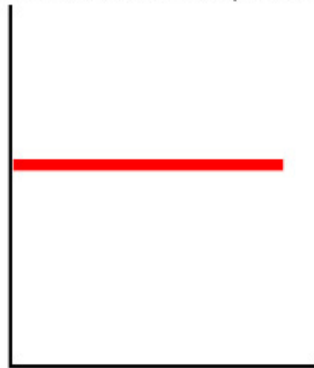C. it is moving with a constant negative velocity

D. it is accelerating

Question 2.14

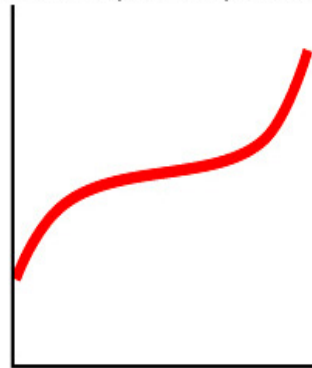In which of these **v** vs. **t** graphs is the acceleration changing?
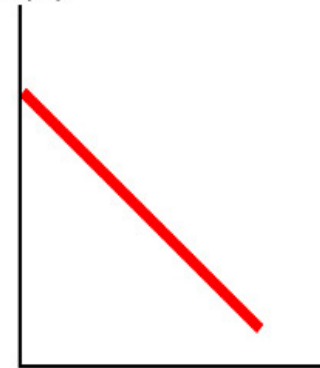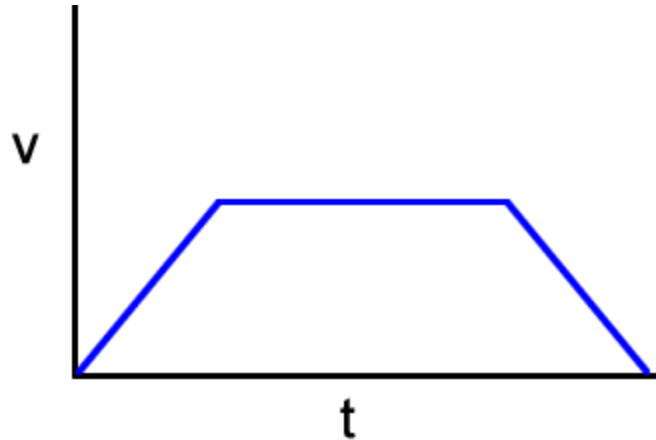
(a)   (b)   (c)   (d)

- A. (a)
- B. (b)
- C. (c)
- D. (d)

# Question 2.15

Which scenario is portrayed by the graph?

A. A car starts from rest and accelerates. It then travels at a constant velocity before slowing to a stop.

B. A car starts from rest and moves forward. It stops for a while before returning to its starting position.

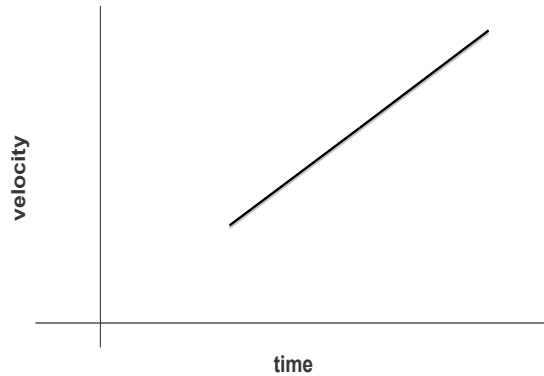C. A car travels at a constant velocity, then accelerates for a while, then returns to its initial constant velocity.

Question 2.16

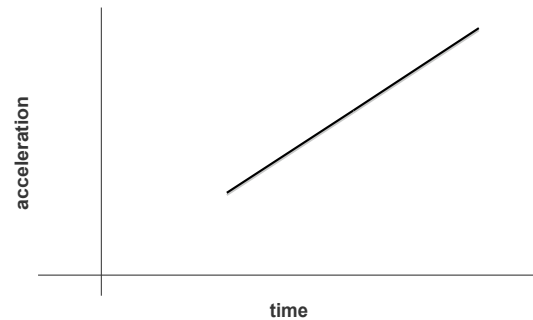Which graph shows an object moving with a constant non-zero acceleration?

Graph A

Graph B

Graph C

distance

time

velocity

time

acceleration

time
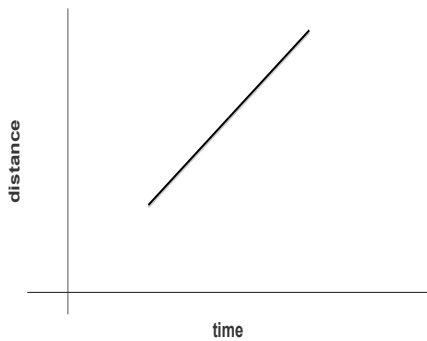
Answer Key to Chapter 2

1) A
2) B
3) B
4) A
5) A
6) D
7) A
8) B

9) A
10) B
11) B
12) C
13) B
14) C
15) A
16) B