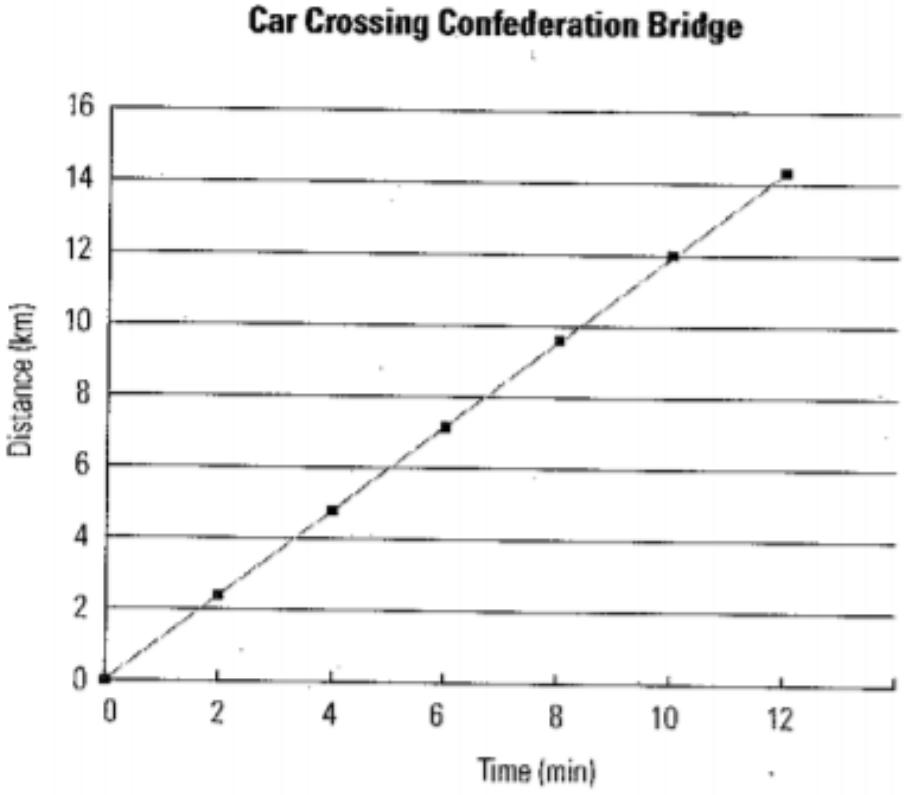
pg 365 #1,2,3,5,6

1. A graph is sometimes more useful than an equation because it is a visual representation of the speed. It allows you to see the relationships between the two variables easily.

2. The slope of a distance-time graph represents the speed of an object.

3. (a) A steep slope indicates that the car has a high speed.
(b) A shallow or less steep slope indicates that the car has a lower speed.
(c) A zero slope indicates that the car is not moving.
(d) A short straight line on the graph indicates that the car maintained a uniform speed for a short period of time.
(e) A long straight line on the graph indicates that the car maintained a uniform speed for a long period of time.

5. (a)



(b) According to the graph, the distance travelled at the end of 5.0 min is 6.0 km.

(c) According to the graph, the time required to cross over the 12.9-km bridge is 10.8 min.

(d) The speed was constant, because the car travelled equal distances in equal time intervals.

(e)

$$\text{rise} = \Delta d = (14.4 - 0)\ \text{km} = 14.4\ \text{km}$$
$$\text{run} = \Delta t = (12.0 - 0)\ \text{min} = 12.0\ \text{km}$$
$$\text{slope} = \frac{\text{rise}}{\text{run}}$$
$$v = \frac{\Delta d}{\Delta t}$$
$$= \frac{14.4\ \text{km}}{12.0\ \text{min}}$$
$$= 1.20\ \frac{\text{km}}{\text{min}}$$

The slope of the graph is 1.20 km/min. This slope represents the average speed for the car crossing Confederation Bridge.

(f) $v_{av} = 1.20\ \frac{\text{km}}{\cancel{\text{min}}} \times \frac{60\ \cancel{\text{min}}}{1\ \text{h}} = 72.0\ \frac{\text{km}}{\cancel{\text{h}}}$

The average speed of the car is 72.0 km/h.

6. a) Jerry has the greater speed

b) $v_{Jerry} = \frac{180m - 60m}{15s - 5s}$

$= \frac{120m}{10s} = 12m/s$

$v_{Tom} = \frac{90m - 30m}{15s - 5s}$

$= \frac{60m}{10s} = 6m/s$

yes this matches my answer in (a)

c) if a rider stopped the graph would become a horizontal line

S10 Unit Review Physics Answers

Pg 376-377

7. a) $d = 100$
$t = 10.8$
$v = ?$

$v = \frac{d}{t} = \frac{100m}{10.8s} = 9.26 = 9 m/s$

b) $d = 200$
$v = 9.17$
$t = ?$

$t = \frac{d}{v} = \frac{200m}{9.17 m/s} = 21.8 s = 20 s$

8. $2998.7 km = d$
$41.58 h = t$

$v = \frac{d}{t} = \frac{2998.7 km}{41.58 h} = 72.12 km/h$

9. a) 88 km/h → m/s ÷3.6 = 24.4 m/s

b) $t = 0.25$ $d = vt$
$v = 24.4$ m/s $d = (24.4 \text{ m/s})(0.25)$
$d = ?$ $d = 4.88$ m

10. a) $d = 35$ km $v = \frac{d}{t} = \frac{35 \text{ km}}{169 \text{ min}} = 0.207$ km/min
$t = 169$ min
$v = ?$

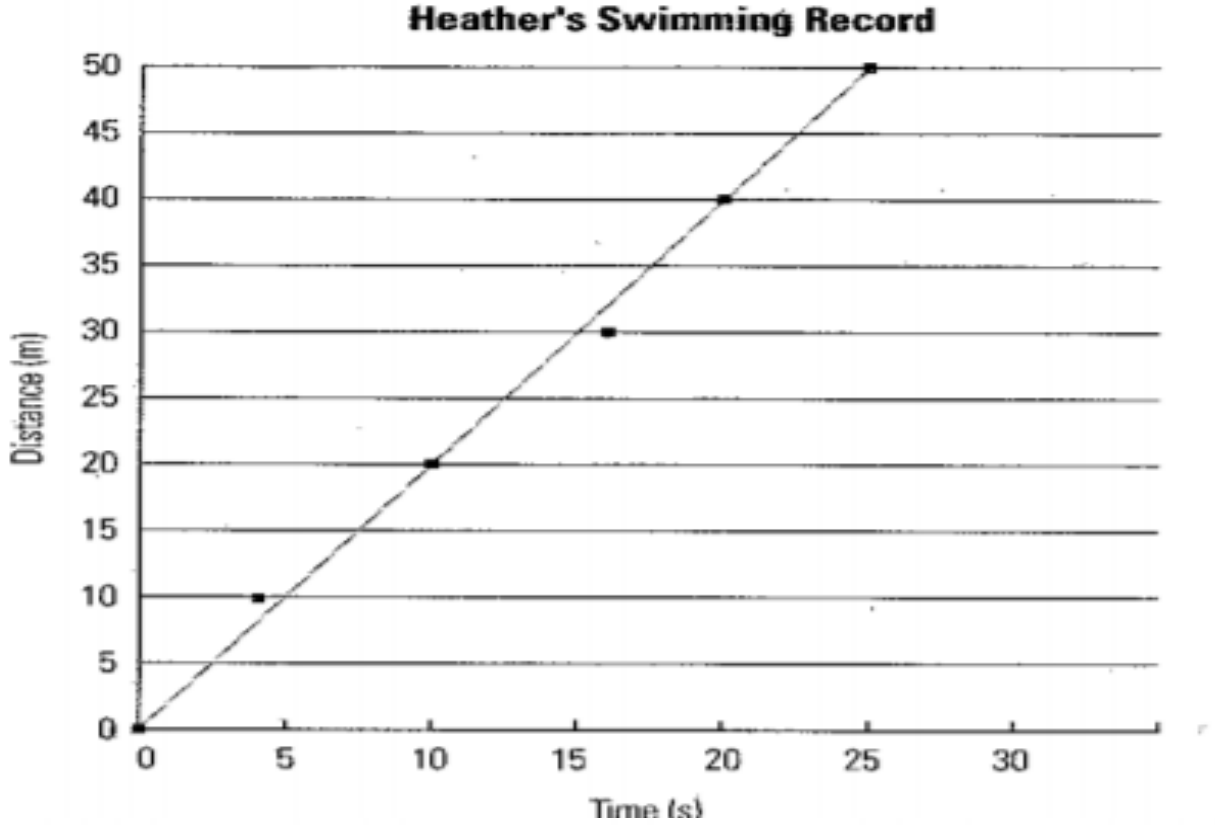
b) $v = 19$ km/h $t = \frac{d}{v} = \frac{35 \text{ km}}{19 \text{ km/h}} = 1.8$ h
$t = ?$
$d = 35$ km

11. a) Bill $v = \frac{y_2 - y_1}{x_2 - x_1}$
$v = \frac{60 - 0 \text{ m}}{30 - 0 \text{ s}}$
$v = 2$ m/s

b) Mark $v = \frac{y_2 - y_1}{x_2 - x_1}$ or $\frac{d_2 - d_1}{t_2 - t_1}$
$= \frac{80 - 0}{30 - 10}$
$= \frac{80}{20}$
$v = 4$ m/s

12. Analysis and Evaluation

(a) Using the evidence in Table 2, the following graph is obtained.



(b) A best-fit line is drawn, the rise and run of the line are measured, and the slope is calculated.

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

$$v_{av} = \frac{\Delta d}{\Delta t}$$

$$= \frac{(50 - 0)\ \text{m}}{(25 - 0)\ \text{s}}$$

$$= 2.0\ \frac{\text{m}}{\text{s}}$$

Heather's average swimming speed is 2.0 m/s.

(c) The design involves five observers with stopwatches. A more efficient design would use only one observer with a stopwatch at the 50-m mark.

1. The speedometer of a car reads instant speed. Because it is the speed at that instant you are driving not an average of your overall speed.

2. $d = 139\,m$, $v = 13.0\,m/s$, $t = ?$

$$t = \frac{d}{v} = \frac{139\,m}{13.0\,m/s} = 10.7\,s$$

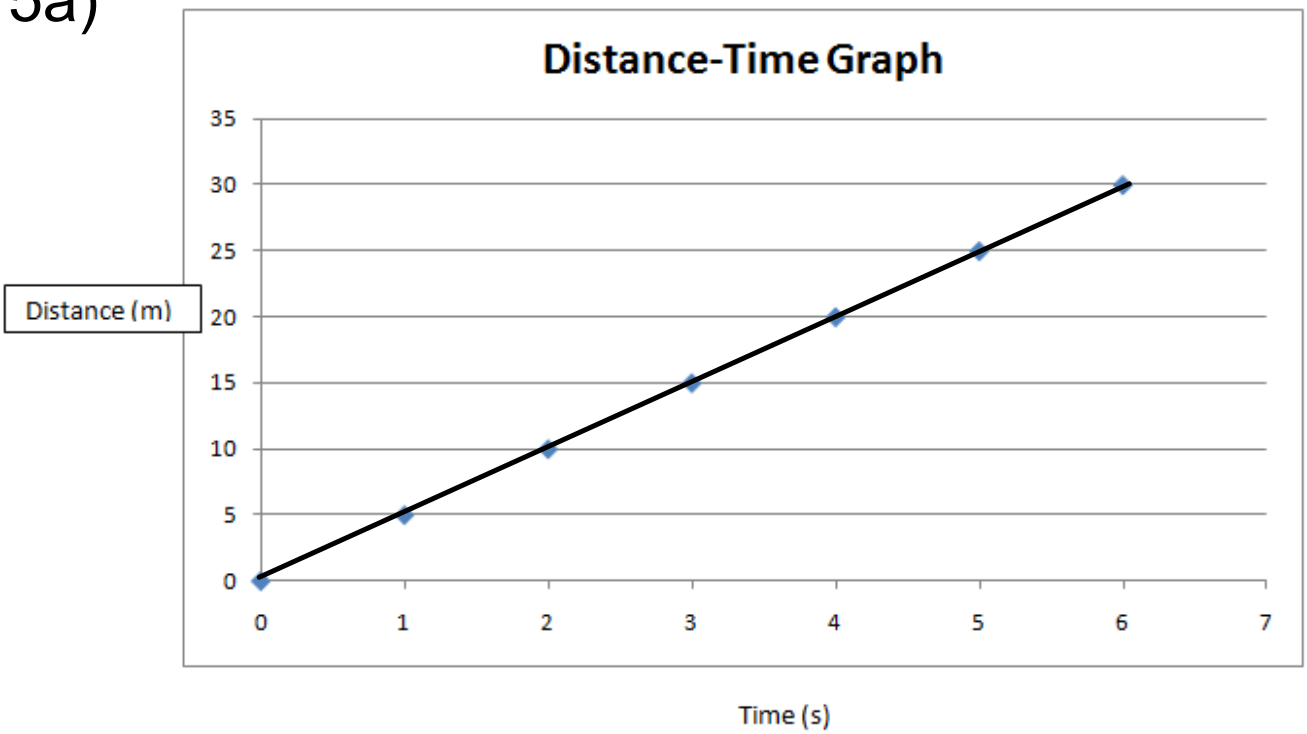
3. $v = 45\,miles/h$, $d = 1,800\,miles$

$$t = \frac{d}{v} = \frac{1,800}{45} = 40\,hrs$$

4. $v = 50,000\,km/h$, $t = 4\,hr$, $d = ?$

$$d = vt$$
$$d = (50,000)(4)$$
$$d = 200,000\,km$$

5a)



5. b) $v = \frac{d_2 - d_1}{t_2 - t_1}$ or $\frac{y_2 - y_1}{x_2 - x_1}$

$\frac{30 - 0m}{6 - 0s} = \frac{30m}{6s} = 5\ m/s$

6

Time (h)	Distance (km)
0	0
1	100
2	200
3	300
4	300
5	300

a. At 2 hours what was the cars distance?
The car's distance at 2 hours was 200km

b. What was the total distance travelled by the car?
The total distance travelled by the car was 300km