1. $d = 1500\,m$

① $t = 550\,s$

$S = ?$

$S = \frac{d}{t}$ ①

$= \frac{1500\,m}{550\,s}$

$= 2.7\,m/s$ ①

2. $d = 15.4\ km$

$s = 100.\ km/hr$

$t = ?$

$$t = \frac{d}{s}$$

$$= \frac{15.4\ km}{100.\ km/hr}$$

$$= 0.154\ hr$$

$9.24\ min$

3. $s = 2.45\ m/s$

$t = 34.5\ min$

$d = ?$

$d = st$

$= (2.45\ m/s)(2070\ s)$

$= 5070\ m$

$t = 34.5\ min \times \frac{60\ s}{1\ min} = 2070\ s$

A dolphin is cruising along and then accelerates at $0.50 m/s^2$ to reach a final speed of 9.7m/s afer 15s. What was the initial speed of the dolphin?

$a = 0.50 m/s^2$

$S_2 = 9.7 m/s$

$t = 15 s$

$S_1 = ?$

$S_2 = S_1 + at$

$-at \quad -at$

$S_2 - at = S_1$

$(9.7 m/s) - (0.50 m/s^2)(15 s) = S_1$

$2.2 m/s = S_1$

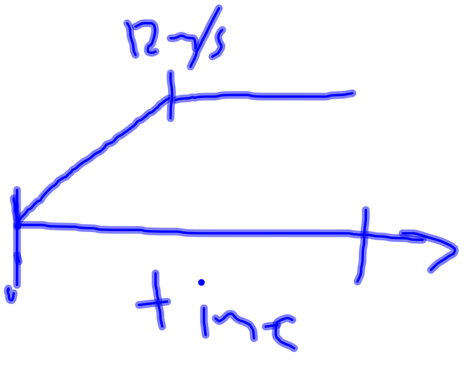
Donovan Bailey won an Olympic gold medal in the 100m in 1996. His winning time was 9.84s. In the first part of the race, his average acceleration was 1.86m/s2 until he reached his maximum speed at 6.5s, which he maintained until the end of the race. What was maximum speed? What was his average speed for the whole race?

$d = 100\,m$

$t_{total} = 9.84\,s$

$a = 1.86\,m/s^2$

$t_{max} = 6.5\,s$




$$S_2 = S_1 + at$$

$$= 0 + (1.86\,m/s^2)(6.5\,s)$$

$$= 12\,m/s \leftarrow \text{max speed}$$

$$S = \frac{d}{t}$$

$$= \frac{100\,m}{9.84\,s}$$

$$= 10\,m/s$$

## Review: We looked at distance time graphs in the last chapter.

What does the line on a distance-time graph represent?

speed

How would you describe the motion of this object?

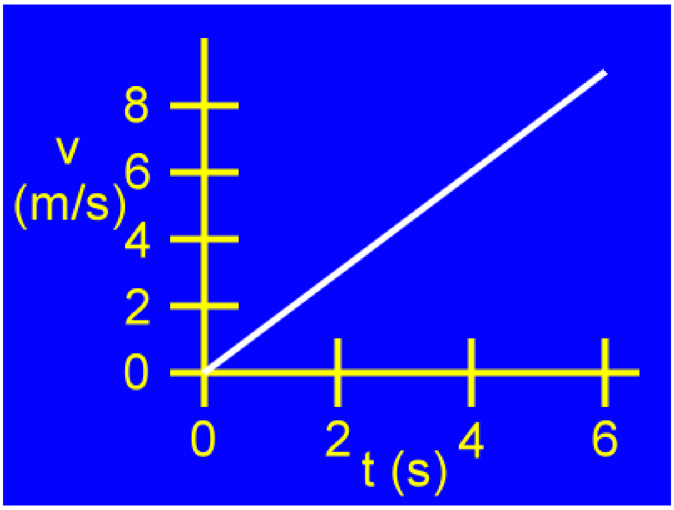
constant speed

$s = \frac{d}{t}$

$slope = \frac{rise}{run} = \frac{d}{t}$

# Speed vs. Time Graphs

Similar to *distance (d) vs time (t)* graphs, there are *speed (v) vs. time (t)* graphs used to represent the speed of an object. Plotting data on these graphs is very similar to plotting data on a position (d) vs time (t) graph.




However the line/slope on a (v) vs (t) graph represents **acceleration.**

Attachments

Answers Extra Practice Acceleration WS.notebook