

On the Test

Significant Figures

Unit Conversions

Speed, Distance, Time

Acceleration

$$s = \frac{d}{t}$$
$$a = \frac{s_2 - s_1}{t}$$

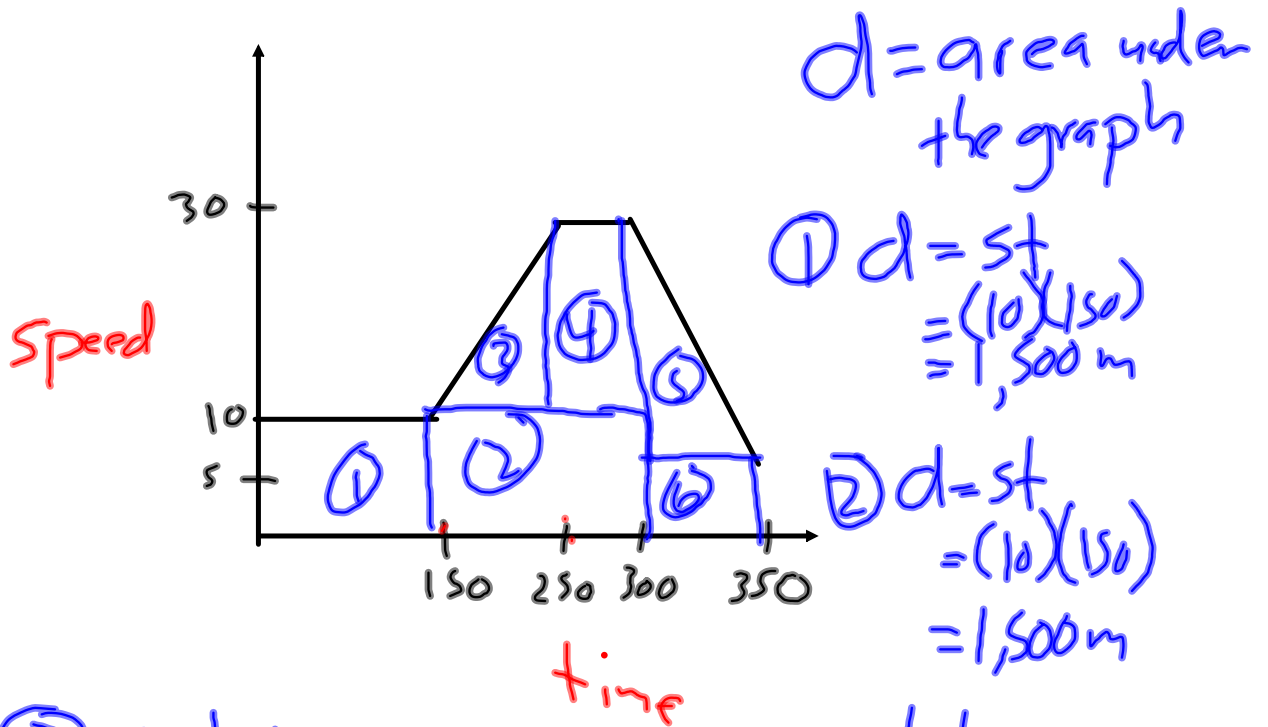
Distance-Time Graphs and Speed-Time Graphs

Test Format

9 Multiple Choice (20%)

8 Questions About Graphs (33%) 

8 Calculation Questions (47%)



$$\textcircled{1} d = st = (10)(150) = 1,500 \text{ m}$$

$$\textcircled{2} d = st = (10)(150) = 1,500 \text{ m}$$

$$\textcircled{3} d = \frac{1}{2}st = \frac{1}{2}(20)(100) = 1000 \text{ m}$$

$$\textcircled{4} d = st = (20)(50) = 1000 \text{ m}$$

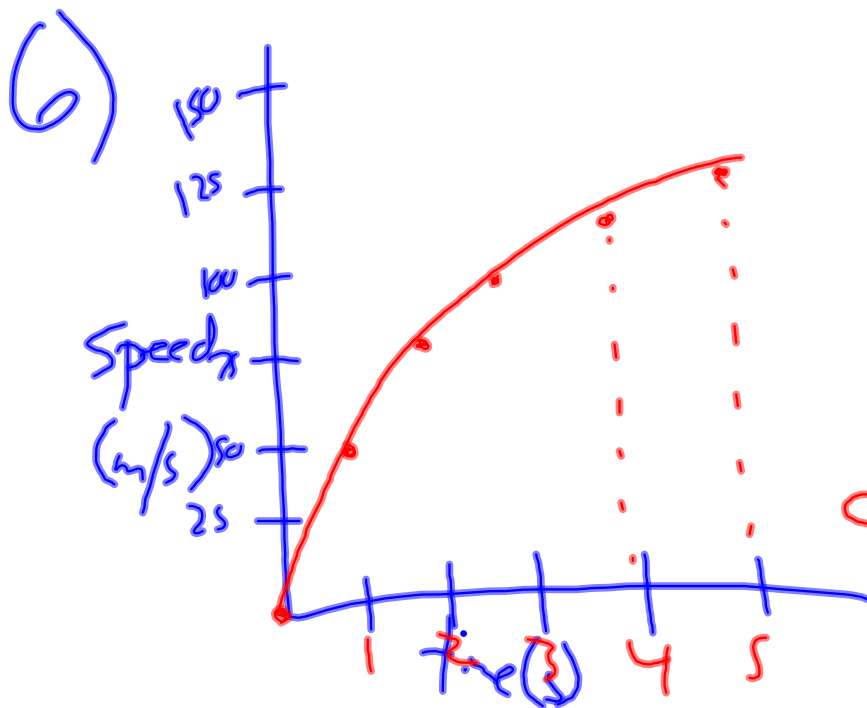
$$\textcircled{5} d = \frac{1}{2}st = \frac{1}{2}(25)(50) = 625 \text{ m}$$

$$\textcircled{6} d = st = (5)(50) = 250 \text{ m}$$

$$d = 1500 + 1500 + 1000 + 1000 + 625 + 250 = 5875$$

Speed and velocity

Distance and displacement



$$b) a = \frac{s_2 - s_1}{t} = \frac{75 - 0}{2} = 37.5 \text{ m/s}^2$$

$$c) a = \frac{125 - 110}{1s} = 15 \text{ m/s}^2$$

Warm-Up

A roller coaster car rapidly picks up speed as it rolls down a slope. As it starts down the slope, its speed is 4 m/s, but 3 seconds later, its speed is 22 m/s. What is its average acceleration?

$$s_1 = 4 \text{ m/s}$$

$$t = 3 \text{ s}$$

$$s_2 = 22 \text{ m/s}$$

$$a = \frac{s_2 - s_1}{t}$$
$$= \frac{22 \text{ m/s} - 4 \text{ m/s}}{3 \text{ s}}$$

$$= \frac{18 \text{ m/s}}{3 \text{ s}}$$

$$= 6 \text{ m/s}^2$$

If a Ferrari, with an initial speed velocity of 10 m/s, accelerates at a rate of 50 m/s² for 3 seconds, what will its final velocity be?

$$s_1 = 10 \text{ m/s}$$

$$a = 50 \text{ m/s}^2$$

$$t = 3 \text{ s}$$

$$s_2 = ?$$

$$a = \frac{s_2 - s_1}{t}$$

$$at = s_2 - s_1$$

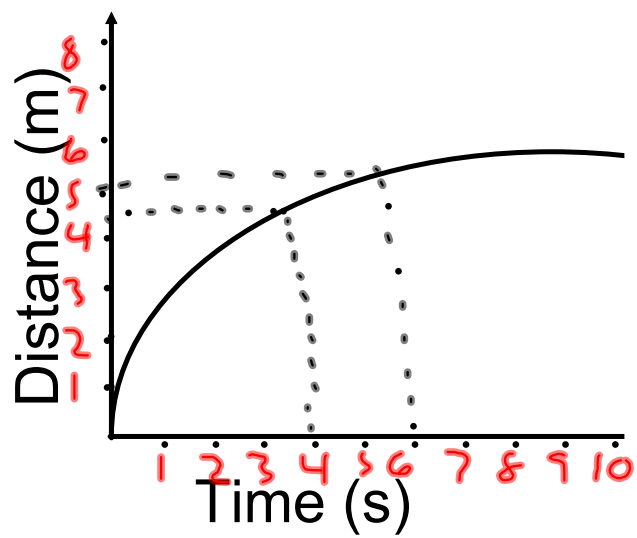
$$at + s_1 = s_2$$

$$(50 \text{ m/s}^2)(3 \text{ s}) + 10 \text{ m/s} = s_2$$

$$150 \text{ m/s} + 10 \text{ m/s} = s_2$$

$$160 \text{ m/s} = s_2$$

$$260 \text{ m/s} = s_2$$



what is the distance after 4 s? 4.5m

What is the average speed after 6 s? $s = \frac{d}{t} = \frac{5.5}{6} = 0.916 \text{ m/s}$