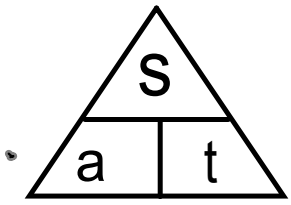
Sample Problem #1:

You speed up a car from rest (0km/hr) to 60.00 km/hr in a time of 0.20 min. What is the acceleration of the car?

not moving

$a = \frac{v}{t}$ or $\frac{s}{t}$



$s = 60.00\ km/hr$

$t = 0.20\ min$

$0.20\ min \times \frac{1\ hr}{60\ min} = \frac{0.20}{60}\ hr = 0.00333$

$t = 0.00333\ hrs$

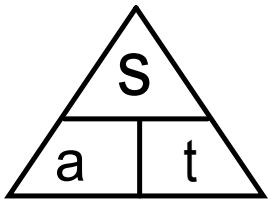
$a = \frac{s}{t}$ $\quad m/s^2$

$= \frac{60.00\ km/hr}{0.00333\ hr} = 18000\ km/hr^2$

$$a = \frac{V_2 - V_1}{t_2 - t_1} = \frac{60.00 - 0}{0.00333_{hr} - 0}$$

Sample Problem #2

A roller coaster accelerates at 8.0 m/s^2 for 4.0 s. What is the change in the speed of the roller coaster?



$a = 8.0\ m/s^2$

$t = 4.0\ s$

$S = ?$

$S = at$

$S = \left(\frac{8.0\ m}{s^2}\right)(4.0\ s)$

$S = 32\ m/s$

Other "looks" of the acceleration formula:

$v = (a)(t)$ $\quad t = \frac{v}{a}$ $\quad v_2 = v_1 + (a)(t)$

$s = at$ $\quad t = \frac{s}{a}$

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

Sample Problem:

Sylvia's acceleration is 2.5m/s^2 for 1.5s. What is her change in speed?

$a = 2.5\,m/s^2$

$t = 1.5\,s$

$s = ?$

$s = at$

$= (2.5\,m/s^2)(1.5\,s)$

$= 3.75\,m/s$

$= 3.8\,m/s$

$v = 3.8$m/s

Sample Problem:

A skatboarder rolls down a hill and changes his speed from rest to 1.9m/s. If the acceleration was 0.40m/s^2, for how long was the skateboarder on the hill?

4.8s

$s_1 = 0\ m/s$

$s_2 = 1.9\ m/s$

$a = 0.40\ m/s^2$

time = ?

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

$= \frac{1.9\ m/s}{0.40\ m/s^2}$

$= 4.8\ s$

$$t = \frac{v}{a}$$

$$\frac{\frac{m}{s}}{\frac{m}{s^2}} = \frac{m}{s} \times \frac{s^2}{m} = s$$

Sample Problem:

A bus with an initial speed of 12m/s accelerated at 0.62 m/s^2 for 15s. What is the final speed of the bus?

$s_1 = 12\ m/s$

$a = 0.62\ m/s^2$

$t = 15\ s$

$s_2 = s_1 + at$

$= 12\ m/s + (0.62\ m/s^2)(15\ s)$

$= 12\ m/s + 9.3\ m/s$

$= 21\ m/s$

21 m/s

Complete Questions
pg 388 #1-4, 7-9
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