Quiz 6a

Note Title 27/09/2012

The Space shuttle could blast off and reach an altitude of 2.0 km in 15.0 s. Assuming that the acceleration was uniform:

a. What is the acceleration of the shuttle?

b. What was its velocity at this point?

$V = ?$

$V_0 = 0\ m/s$

$a = ?$

$d = 2.0\ km = 2000\ m$ ✓

$t = 15.0\ s$

a.) $d = \cancel{v_0}^{0} t + \frac{1}{2} a t^2$ ✓

$2d = \frac{1}{2} a t^2 \cdot 2$

$\frac{2d}{t^2} = \frac{a t^2}{t^2}$

$a = \frac{2d}{t^2} = \frac{2(2000\ m)}{(15.0\ s)^2} = 17.78\ m/s^2$

$= \boxed{18\ m/s^2}$ ✓

b.) $V = V_0 + at$ ✓

$= 0 + (17.78\ m/s^2)(15.0\ s) = \boxed{270\ m/s}$ ✓

always carry extra sig figs through your calculations