Acceleration Questions

Examples: Find the acceleration of a car moving at 105 km/h that comes to a stop in 6.0 s.

$$a = \frac{v_2 - v_1}{t} = \frac{0 - 29.2}{6.0} = -4.9 \text{ m/s}^2$$

Example: Find the time required for a plane to change its velocity from 250 km/h [S] to 250 km/h [N] while accelerating uniformly at 8.0 m/s^2 [N]

$a = 8.0 \text{ m/s}^2 [N]$

$V_1 = 250 \text{ km/h} [S] = 69.4 \text{ m/s} [S]$

$V_2 = 250 \text{ km/h} [N] = 69.4 \text{ m/s} [N]$

$t = ?$

$[N] = -[S]$

$[S] = -[N]$

$$\bar{a} = \frac{\bar{v}_2 - \bar{v}_1}{t}$$

$$8.0^{[N]} = \frac{69.4[N] - 69.4[S]}{t}$$

$$8.0 = \frac{69.4 + 69.4}{t}$$

$$t = \frac{138.8}{8.0} = 17.35 \text{ s}$$