

Calculating Acceleration

Guided Practice (no direction changes)

Solving for initial velocity

A plane accelerates to 175 m/s [E] under an acceleration of 15 m/s² [E] in 10 seconds.

Calculate the initial velocity of the plane.

Reread question and list known/wanted quantities

$$v_f = 175 \text{ m/s [E]}$$

$$a = \frac{v_f - v_o}{t}$$

$$a = 15 \text{ m/s}^2 \text{ [E]}$$

$$t = 10 \text{ s}$$

$$v_o = ?$$

$$15 \overset{\times 10}{=} \frac{175 - v_o}{10} \times 10$$

$$150 = 175 - v_o$$

$$150 - 175 = 175 - v_o - 175$$

$$\frac{-25}{-1} = \frac{-v_o}{-1}$$

$$\boxed{25 \text{ m/s} = v_o}$$

Calculating Acceleration

Guided Practice (no direction changes)

Solving for time - weakest student performance on this type

Calculate how long it would take a person to accelerate from rest to 22 m/s [E] averaging an acceleration of 1.8 m/s² [E].

Reread question and list known/wanted quantities

$$v_0 = 0 \text{ m/s [E]}$$

$$v_f = 22 \text{ m/s [E]}$$

$$a = 1.8 \text{ m/s}^2 \text{ [E]}$$

$$t = ?$$

$$a = \frac{v_f - v_0}{t}$$

$$1.8 = \frac{22 - 0}{t}$$

$$\frac{1.8}{1} = \frac{22}{t}$$

$$1.8t = 22$$

$$t = \frac{22}{1.8} = \boxed{12.2 \text{ s}}$$

Problem set Pg 6.

Attachments

moving-man_all.jar