

The Belmont Stakes, the third horse race for the Triple Crown, was won on June 10, 1989 by Easy Goer with a time of 2 min 26.0 s.



If the race covers 2414 m, what was Easy Goer's average speed in m/s?

In mph?

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

$$d = 2414 \text{ m}$$

$$t = 2 \text{ min } 26 \text{ s} = 146 \text{ s}$$

$$v = ?$$

$$v = \frac{2414 \text{ m}}{146 \text{ s}} = \boxed{16.5 \text{ m/s}}$$

$$\frac{16.5 \text{ m/s}}{\cancel{s}} \times \left(\frac{1 \text{ mile}}{1,609 \text{ m}} \right) \times \left(\frac{3,600 \cancel{s}}{1 \text{ hr}} \right) =$$

$$\boxed{37.0 \text{ mph}}$$

A photon of light travels at 3×10^8 m/s (the speed limit of the universe). If it takes light about 9 minutes to reach Earth from the sun, what is the Earth-Sun distance?

$$v = 3 \times 10^8 \text{ m/s}$$
$$t = 9 \text{ min} = 540 \text{ s}$$
$$d = ?$$
$$(+)\ v = \frac{d}{t} \quad (+)$$
$$d = v \cdot t$$

$$d = (3 \times 10^8 \text{ m/s}) (540 \text{ s})$$
$$d = 1.62 \times 10^{11} \text{ m}$$

The peregrine falcon is the world's fastest known bird and has been clocked diving downward toward its prey at a constant vertical velocity of 97.2 m/s . If the falcon dives straight down from a height of 102 m , how much time does this give a rabbit below to consider its next move as the falcon begins its descent?



A vehicle travels 80 km/hr for 1.23 hr, then 50 km/hr for the next 0.18 hr. What is the average speed of the vehicle for this trip?

$$v_1 = 80 \text{ km/hr}$$
$$t_1 = 1.23 \text{ hr}$$

$$v_{\text{avg}} = \frac{\text{total dist}}{\text{total time}}$$

$$v_2 = 50 \text{ km/hr}$$
$$t_2 = 0.18 \text{ hr}$$

$$v = \frac{d}{t} \rightarrow d = v(t)$$

$$d = (80 \text{ km/hr})(1.23 \text{ hr})$$
$$= 98.4 \text{ km}$$

$$d = (50 \text{ km/hr})(0.18 \text{ hr})$$

$$d_2 = 9 \text{ km}$$

$$v_{\text{avg}} = \frac{(9 \text{ km} + 98.4 \text{ km})}{(1.23 \text{ hr} + 0.18 \text{ hr})}$$

$$= 76.2 \text{ km/hr}$$