KEY

Practice

- Set up all your ratios so that we can see the units cancelling top and bottom!

1. If I can run at $8km/hr$ how fast am I going in m/s?

$$\frac{8\,km}{1\,hr}\cdot\frac{1000\,m}{1\,km}\cdot\frac{1\,hr}{60\,min}\cdot\frac{1\,min}{60\,secs}=\frac{8000}{60\cdot60}=\boxed{2.2\,m/s}$$

2. You watch an ant move $8cm$ in $3seconds$, how fast is it travelling in km/hr?

$$\frac{8\,cm}{3\,secs}\cdot\frac{1\,m}{100\,cm}\cdot\frac{1\,km}{1000\,m}\cdot\frac{60\,secs}{1\,min}\cdot\frac{60\,mins}{1\,hrs}$$

$$\frac{8\cdot60\cdot60}{3\cdot100\cdot1000}=\frac{28\,800}{300\,000}=\boxed{0.096\,km/hr}$$

3. If a tank fills at $600mL/second$ how fast does it fill in $L/minute$?

$$\frac{600\,mL}{1\,sec}\cdot\frac{1\,L}{1000\,mL}\cdot\frac{60\,sec}{1\,min}=\frac{36000}{1000}=\boxed{36\,L/min}$$

4. If you are strong enough to push an object, with constant acceleration at 2 $meters/sec$, how far in $kilometers$ can you push it in 2 $weeks$?

$$\frac{2\,meters}{1\,sec}\cdot\frac{1\,km}{1000\,m}\cdot\frac{60\,secs}{1\,min}\cdot\frac{60\,min}{1\,hr}\cdot\frac{24\,hr}{1\,day}\cdot\frac{7\,day}{1\,week}$$

$$\frac{2\cdot60\cdot60\cdot24\cdot7}{1000}=\frac{1209\,600\,km}{1000\,week}=1209.6\,km/week$$

$$\boxed{\text{so } 2419.2\,km/2weeks}$$