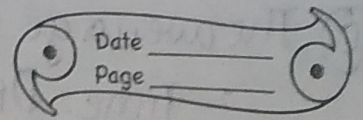


# Worksheet



① Distance travelled in one complete rotation speed of the neptune in its orbit =  $\frac{\text{distance}}{\text{time}}$

$$\text{speed} = \frac{2\pi r}{t} = \frac{4.5 \times 10^9 \text{ km}}{165 \text{ yr}} = \frac{4.5 \times 10^9 \times 10^3 \text{ m}}{165 \times 365 \times 24 \times 60 \times 60} = \frac{4.5 \times 10^{12}}{5.2 \times 10^9}$$

$$= 0.86 \times 10^3 \text{ m/s} \quad 0.86 \times \frac{18}{5} = \frac{86}{100} \times \frac{18}{5} = \frac{387 \times 8}{125 \times 1000} = \frac{3096}{5000} = 3.096 \text{ km/hr}$$

② a) Distance moved by the cyclist

$$= 2 \times \frac{1}{2} \times 314 = 157 \text{ m}$$

b)  $2\pi r = 314 \text{ m}$

$$= 2 \times 3.14 \times r = 314 \text{ m}$$

$$= \frac{2 \times 314}{100} \times r = 314$$

$$r = \frac{314 \times 50}{314}$$

$$r = 50 \text{ m} \quad 2r = d$$

$$2(50) = 100 \text{ m}$$

(c) The average velocity of the cyclist is

$$\begin{aligned} \text{Time} &= \frac{\text{Distance}}{\text{Speed}} \\ &= \frac{157}{15.7} = 10 \text{ s} \end{aligned}$$

$$\text{Average velocity} = \frac{\text{Total Displacement}}{\text{Total time}} = \frac{100}{10} = 10 \text{ m/s}$$

### Circular Motion

The motion in which the body travels in ~~straight~~ circular path in constant speed but with variable velocity is called circular motion.