Worksheet

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(1) Distance travelled in one complete notation speed of the neptune in its onbit = $\frac{\text{distance}}{\text{time}}$

speed = $\frac{2\pi n}{t} = \frac{4.5\times10^9 km}{165 yr} = \frac{4.5\times10^9\times10^3 m}{165\times365\times24\times60\times60} = \frac{4.5\times10^{12}}{5.2\times10^9}$

$= 0.86\times10^3 m/s$ $0.86\times\frac{18}{5} = \frac{\cancel{86}^{43}}{\cancel{100}_{50}}\times\frac{\cancel{18}^{9}}{5} = \frac{387\times8}{125\times8} = \frac{3096}{1000}$

$= 3.096 km/hr$

(2) (a) Distance moved by the cyclist

$= \cancel{2}\cdot\frac{1}{\cancel{2}}\times\cancel{314 = 154m}$ 157m

(b) $2\pi n = 314m$

$= 2\times3.14\times n = 314m$

$= \cancel{2}\times\frac{314}{\cancel{100}_{50}}\times n = 314$

$n = \frac{\cancel{314}\times50}{\cancel{314}}$

$n = 50m$ $2\pi = d$

$2(50) = 100m$

(c) The average velocity of the cyclist

= Time = $\frac{\text{Distance}}{\text{Speed}}$

= $\frac{157}{15.7}$ = 10s

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

Circular Motion

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