2.) Circumference $= 2\pi r = 314\ m$

→ On using the above we get

$R = 50\ m$

Given that $V = 15.7\ m/s$

(a) Distance moved equals to πr

$= 3.14 \times 50 = 157\ m$

(b) Displacement = Diameter $= 2r = 100\ m$

(c) Time taken $= \frac{157}{15.7} = 10\ s$

→ We use the equation

Average velocity $= \frac{\text{Displacement}}{\text{time}}$

$= \frac{100}{10} = 10 m/s$

(d) Average acceleration = ~~change~~ $\frac{\text{change in velocity}}{\text{time}} = \frac{V_2 - V_1}{t}$

$\Rightarrow$ Average acceleration $= \frac{15.7 - (-15.7)}{10}$

$\Rightarrow$ Average A $= 3.14 m/s^2$

3) When the object moves in a circular path at a constant speed the motion of the object is called as circular motion.

(i) Distance covered by the satellite is 24 hours

$S = 27 s$

$= 2 \times 3.14 \times 42250 = 265464.58 km$

Therefore speed of Satellite

~~V = distance travelled / time taken~~

$V_s = \frac{\text{distance travelled}}{\text{time taken}}$.

$= \frac{265464.58}{24 \times 60 \times 60} = 3.07 \text{ Kms}^{-1}$

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1) Circumference $= 2\pi r$

$= 2 \times \frac{22}{7} \times 4.5 \times 10^9$

$= \frac{44}{7} \times 4.5 \times 10^9$

$= 6.28 \times 4.5 \times 10^9$

$= 28.26 \times 10^9$

Time $= 165$ yrs $= 8760 \times 165$

1 years $= 365 \times 2$

$$= \frac{1445400 \text{ hrs}}{5}$$

$$= \frac{28.28 \times 10^9}{1445400}$$

$$\simeq 1.95 \times 10^{14}$$