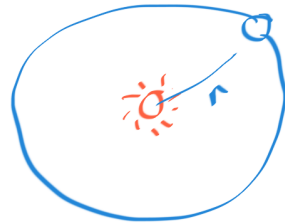


1) Speed of earth? $\text{Speed} = \frac{\text{distance travelled}}{\text{time to orbit sun}}$



$$\text{distance} = 2 \cdot \pi \cdot \text{radius}$$

$$\approx 2 \cdot 3 \cdot 100,000,000 \text{ miles} = 6 \times 10^8 \text{ miles}$$

$$\text{time} \approx 3 \times 10^7 \text{ seconds}$$

$$\text{Speed} \approx \frac{6 \times 10^8 \text{ miles}}{3 \times 10^7 \text{ sec}} \approx 20 \frac{\text{miles}}{\text{second}}$$