

Proportions

$$1) \begin{array}{l} 7:3 \\ 259:x \end{array} \rightarrow \begin{array}{c} 7 \quad 259 \\ \hline 3 \quad x \end{array}$$

$$7x = 777$$

$$x = 111$$

\therefore the 2nd gear has 111 teeth

$$8) 13:9 \rightarrow 13+9=22 \text{ total votes}$$

$$6446 \div 22 = 293$$

$$13 \cdot 293 = 3809$$

13 \therefore the winner received 3809 votes

$$13) \begin{array}{c} 27.8 \text{ km} \\ \hline 1 \text{ min} \end{array} = \begin{array}{c} 40032 \text{ km} \\ \hline x \end{array}$$

$$27.8x = 40032$$

$$x = 1440 \text{ mins} = 24 \text{ hours}$$

\therefore it takes 24 hours for the earth to rotate 40032 km which mean each day, it rotates 40032 km.

Proportions

$$(4) \quad \begin{aligned} 35 \div 1000 &= 0.035 \text{ km} \\ 2 \div 3600 &= 0.000\overline{5} \text{ hours} \end{aligned}$$

$$\frac{0.035}{0.000\overline{5}} = \frac{x}{1}$$

$$0.035 = 0.000\overline{5}x$$

$$63 = x$$

$$x = 63$$

$$\therefore 63 \text{ km/hr}$$

$$(6) \quad 13 - 6 = 7$$

$$21 \div 7 = 3$$

$$\frac{7}{21} = \frac{2}{x}$$

$$7x = 42$$

$$x = 6$$

$$\therefore 6 \text{ red marbles}$$