Recurring Decimals $\longrightarrow$ Fractions

Ex1 $\quad 0.\dot{7}\dot{8} = 0.787878\ldots\ldots$

Let $x = 0.787878\ldots\ldots$ ①

$100x = 78.7878\ldots\ldots$ ②

② − ① $\quad 99x = 78$

$$x = \frac{78}{99} = \frac{26}{33}$$

Ex2 $\quad 0.23\dot{4}5\dot{6} = 0.23456456456\ldots\ldots$

Let $x = 0.23456456\ldots\ldots$

$100x = 23.456456456\ldots\ldots$ ①

$100{,}000x = 23456.456456\ldots\ldots$ ②

② − ① $\quad 99900x = 23{,}433$

$$x = \frac{23{,}433}{99{,}900} = \frac{7811}{33300}$$

Ex3 $\quad 0.2\dot{4}\dot{7} = 0.2474747\ldots\ldots$

Let $x = 0.2474747\ldots\ldots$

$10x = 2.474747\ldots\ldots$ ①

$1000x = 247.474747\ldots\ldots$ ②

② − ① $\quad 990x = 245$

$$x = \frac{245}{990} = \frac{49}{198}$$

Exercise

1) $0.\dot{4} = \frac{4}{9}$

2) $0.\dot{3}\dot{7} = \frac{37}{99}$

3) $0.1\dot{2}\dot{3} = \frac{61}{495}$

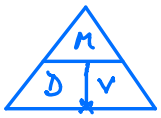
4) $0.61\dot{3} = \frac{46}{75}$

Compound Measures

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

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

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



$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Volume} = \frac{\text{Mass}}{\text{Density}}$$

$$\text{Mass} = \text{Volume} \times \text{Density}$$

Ex 1

G → S	130 miles	at 65 mph	2 hours
S → N	140 miles	70 mph	for 2 hours
N → E	100 miles		in 1 hr 40 min

Find average speed from G to E

We require $\frac{\text{total distance}}{\text{total time}} = \frac{370 \text{ miles}}{5\frac{40}{60} \text{ hours}} = 65\frac{5}{17}$

$= 65.3$ mph

Ex 2

15 g of A which density 8.2 g/cm³

6 cm³ of B which has mass 20 g

10 cm³ of C which has density 7.3 g/cm³

All mixed - find density of the compound

$= \frac{\text{total mass}}{\text{total vol}}$

	A	B	C	
Density	8.2		7.3	
Mass	15	20	73	108
Vol	$1\frac{34}{41}$	6	10	$17\frac{34}{41}$

Density $= \frac{108}{17\frac{34}{41}} = 6\frac{42}{731} = 6.06$ g/cm³