



3. Express the recurring decimal  $0.2\dot{1}\dot{3}$  as a fraction.

$$\begin{aligned}0.2\dot{1}\dot{3} &= x \\2.\dot{1}\dot{3} &= 10x \\213.\dot{1}\dot{3} &= 1000x \\211 &= 990x \\x &= \frac{211}{990}\end{aligned}$$

$$\begin{array}{r}211 \\ \hline \dots 990 \dots\end{array}$$

(Total 3 marks)

4. Prove that  $0.4\dot{7}\dot{3}$  can be written as the fraction  $\frac{469}{990}$

$$\begin{aligned}0.4\dot{7}\dot{3} &= x \\4.\dot{7}\dot{3} &= 10x \\473.\dot{7}\dot{3} &= 1000x \\469 &= 990x \\x &= \frac{469}{990}\end{aligned}$$

(Total 2 marks)

5. Prove that the recurring decimal  $0.\dot{1}\dot{7} = \frac{17}{99}$

$$\begin{aligned}0.\dot{1}\dot{7} &= x \\17.\dot{1}\dot{7} &= 100x \\17 &= 99x \\x &= \frac{17}{99}\end{aligned}$$

(Total 2 marks)

6. (a) Express  $0.\dot{2}\dot{7}$  as a fraction in its simplest form.

$$\begin{aligned}0.\dot{2}\dot{7} &= x \\27.\dot{2}\dot{7} &= 100x \\27 &= 99x \\x &= \frac{27}{99} \\&= \frac{3}{11}\end{aligned}$$

$$\frac{3}{11}$$

(3)

$x$  is an integer such that  $1 \leq x \leq 9$

(b) Prove that  $0.\dot{0}\dot{x} = \frac{x}{99}$

$$\begin{aligned}0.\dot{0}\dot{x} &= y \\0x.\dot{0}\dot{x} &= 100y \\x &= 99y \\y &= \frac{x}{99}\end{aligned}$$

(2)

(Total 5 marks)

7. Change the recurring decimal  $0.\dot{2}\dot{3}$  to a fraction.

$$\begin{aligned}0.\dot{2}\dot{3} &= x \\23.\dot{2}\dot{3} &= 100x \\23 &= 99x \\x &= \frac{23}{99}\end{aligned}$$

$$\frac{23}{99} \dots\dots\dots$$

(Total 2 marks)

8. (i) Convert the recurring decimal  $0.\overline{36}$  to a fraction.

$$\begin{aligned}
 0.\overline{36} &= x \\
 36.\overline{36} &= 100x \\
 36 &= 99x \\
 x &= \frac{36}{99} \\
 &= \frac{4}{9} \qquad \dots\dots\dots \frac{4}{9} \dots\dots\dots
 \end{aligned}$$

- (ii) Convert the recurring decimal  $2.\overline{136}$  to a mixed number. Give your answer in its simplest form.

$$\boxed{2 + x}$$

$$\begin{aligned}
 0.\overline{136} &= x \\
 1.\overline{36} &= 10x \\
 136.\overline{36} &= 1000x \\
 135 &= 990x \\
 x &= \frac{135}{990} \\
 &= \frac{3}{22} \qquad \dots\dots\dots 2\frac{3}{22} \dots\dots\dots
 \end{aligned}$$

(Total 5 marks)

9. Convert the recurring decimal  $2.\overline{145}$  to a fraction.

$$\begin{aligned}
 2.\overline{145} &= x \\
 21.\overline{45} &= 10x \\
 2145.\overline{45} &= 1000x \\
 2124 &= 990x \\
 x &= \frac{2124}{990} = \frac{118}{55}
 \end{aligned}$$

(Total 3 marks)

10. Express the recurring decimal  $0.1\overline{26}$  as a fraction.

$$\begin{aligned}0.1\overline{26} &= x \\1.\overline{26} &= 10x \\126.\overline{26} &= 1000x \\125 &= 990x \\x &= \frac{125}{990} \\&= \frac{25}{198}\end{aligned}$$

$$\frac{25}{198}$$

(Total 3 marks)

11. Express  $0.3\overline{28}$  as a fraction in its simplest form.

$$\begin{aligned}0.3\overline{28} &= x \\3.\overline{28} &= 10x \\328.\overline{28} &= 1000x \\325 &= 990x \\x &= \frac{325}{990} \\&= \frac{65}{198}\end{aligned}$$

$$\frac{65}{198}$$

(Total 3 marks)

12. The recurring decimal  $0.\dot{7}\dot{2}$  can be written as the fraction  $\frac{8}{11}$

Write the recurring decimal  $0.5\dot{7}\dot{2}$  as a fraction.

$$0.\dot{7}\dot{2} = \frac{8}{11}$$

$$0.0\dot{7}\dot{2} = \frac{8}{110}$$

$$0.5 + 0.0\dot{7}\dot{2} = \frac{55}{110} + \frac{8}{110}$$

$$\begin{array}{r} 63 \\ \hline \dots\dots\dots 110 \dots\dots\dots \end{array}$$

(Total 2 marks)

13. Express the recurring decimal  $2.0\dot{6}$  as a fraction.  
Write your answer in its simplest form.

$$2.0\dot{6} = x$$

$$20.\dot{6} = 10x$$

$$206.\dot{6} = 100x$$

$$186 = 90x$$

$$x = \frac{186}{90}$$

$$= \frac{93}{45}$$

$$= \frac{31}{15}$$

$$\begin{array}{r} 31 \\ \hline \dots\dots\dots 15 \dots\dots\dots \end{array}$$

(Total 3 marks)