

A Recurring Decimals into Fractions (Non-Calc)

- 8 Write $0.\dot{3}7$ as a fraction.

$$100x = 37.373737\dots$$

$$x = 0.373737\dots$$

$$99x = 37$$

$\div 99$

$\div 99$

$$x = \frac{37}{99}$$

$$\frac{37}{99} \quad [1]$$

- 9 Write the recurring decimal $0.2\dot{7}$ as a fraction.

$$100x = 27.272727\dots$$

$$x = 0.272727\dots$$

$$99x = 27$$

$\div 99$

$\div 99$

$$x = \frac{27}{99} = \frac{3}{11}$$

$$\frac{3}{11} \quad [1]$$

- 11 Write $0.\dot{0}4$ as a fraction in its simplest form.

$$100x = 4.040404\dots$$

$$x = 0.040404\dots$$

$$99x = 4$$

$\div 99$

$\div 99$

$$x = \frac{4}{99}$$

$$\frac{4}{99} \quad [1]$$

- 13 Write the recurring decimal $0.2\dot{6}$ as a fraction.
You must show all your working.

$$10x = 2.6666\dots$$

$$\underline{x = 0.2666\dots}$$

$$\begin{array}{r} 9x = 2.4 \\ \div 9 \end{array}$$

$$x = \frac{2.4}{9}$$

$$\frac{2.4}{9} \xrightarrow{\times 10} \frac{24}{90} \xrightarrow{\div 6} \frac{4}{15}$$

$$\frac{4}{15}$$

[2]

- 13 Write the recurring decimal $0.1\dot{7}$ as a fraction in its simplest form.
You must show all your working.

$$10x = 1.7777\dots$$

$$\underline{x = 0.1777\dots}$$

$$\begin{array}{r} 9x = 1.6 \\ \div 9 \end{array}$$

$$x = \frac{1.6}{9}$$

$$\frac{1.6}{9} \xrightarrow{\times 10} \frac{16}{90} \xrightarrow{\div 2} \frac{8}{45}$$

$$\frac{8}{45}$$

[3]

- 12 Write $0.4\dot{2}$ as a fraction in its simplest form.
You must show all your working.

$$10x = 4.2222\dots$$

$$\underline{x = 0.4222\dots}$$

$$\begin{array}{r} 9x = 3.8 \\ \div 9 \end{array}$$

$$\frac{3.8}{9} \xrightarrow{\times 10} \frac{38}{90} \xrightarrow{\div 2} \frac{19}{45}$$

$$\frac{19}{45}$$

[3]

- 13 Convert $0.\overline{24}$ to a fraction.
You must show all your working and give your answer in its simplest form.

$$10x = 2.\overline{4444} \dots$$

$$x = 0.\overline{2444} \dots$$

$$9x = 2.2$$

$$x = \frac{2.2}{9} \xrightarrow[\times 10]{\div 9} \frac{22}{90} \xrightarrow[\div 2]{\div 2} \frac{11}{45}$$

$$\frac{11}{45} \dots \dots \dots [2]$$

- 14 Write $0.2\overline{5}$ as a fraction.

$$10x = 2.\overline{5555} \dots$$

$$x = 0.2\overline{555} \dots$$

$$9x = 2.3$$

$$x = \frac{2.3}{9} \xrightarrow[\times 10]{\div 9} \frac{23}{90}$$

$$\frac{23}{90} \dots \dots \dots [2]$$

- 16 Write $0.6\overline{21}$ as a fraction in its simplest form.
You must show all your working.

$$100x = 62.\overline{121212} \dots$$

$$x = 0.6\overline{21212} \dots$$

$$99x = 61.5$$

$$x = \frac{61.5}{99} \xrightarrow[\times 2]{\div 99} \frac{123}{198} \xrightarrow[\div 3]{\div 3} \frac{41}{66}$$

$$\frac{41}{66} \dots \dots \dots [3]$$

- 14 Write $0.5\overline{81}$ as a fraction.

You must show all your working and give your answer in its simplest form.

$$100x = 58.\overline{18181818}\dots$$

$$x = 0.\overline{58181818}\dots$$

$$99x = 57.6$$

$$x = \frac{57.6}{99} \xrightarrow[\times 10]{\div 99} \frac{576}{990} \xrightarrow[\div 9]{\div 9} \frac{64}{110} \xrightarrow[\div 2]{\div 2} \frac{32}{55} \xrightarrow[\div 2]{\div 2} \frac{32}{55} \dots [3]$$

- 18 Write $0.4\overline{19}$ as a fraction in its simplest form.

You must show all your working.

$$100x = 41.\overline{91919191}\dots$$

$$x = 0.\overline{41919191}\dots$$

$$99x = 41.5$$

$$x = \frac{41.5}{99} \xrightarrow[\times 2]{\div 99} \frac{83}{198} \dots [3]$$

- 16 Write $0.3\overline{28}$ as a fraction in its simplest form.

$$100x = 32.\overline{82828282}\dots$$

$$x = 0.\overline{32828282}\dots$$

$$99x = 32.5$$

$$x = \frac{32.5}{99} \xrightarrow[\times 2]{\div 99} \frac{65}{198} \dots [3]$$

17 Work out.

$$\frac{5}{9} + 0.2\bar{8}$$

Give your answer as a fraction in its simplest form.

$$10x = 2.88888\dots$$

$$x = 0.28888\dots$$

$$9x = 2.6$$

$$x = \frac{2.6}{9} \xrightarrow{\times 10} \frac{26}{90} \xrightarrow{\div 2} \frac{13}{45}$$

$$\rightarrow \frac{5}{9} \times \frac{5}{5} + \frac{13}{45}$$

$$= \frac{25}{45} + \frac{13}{45} = \frac{38}{45}$$

$$\frac{38}{45}$$

[4]