



Recurring Decimals to Fractions



← REVISE THIS TOPIC

1 Convert $0.\dot{5}$ to a fraction giving your answer in its simplest form. [2 marks]

$$\begin{array}{r}
 10x = 5.5555\dots \\
 x = 0.5555\dots \\
 \hline
 9x = 5 \\
 x = \frac{5}{9}
 \end{array}$$

Answer $\frac{5}{9}$

2 Convert $0.\dot{7}\dot{1}$ to a fraction giving your answer in its simplest form. [2 marks]

$$\begin{array}{r}
 100x = 71.7171\dots \\
 x = 0.7171\dots \\
 \hline
 99x = 71 \\
 x = \frac{71}{99}
 \end{array}$$

Answer $\frac{71}{99}$





3 Convert $0.\dot{4}\dot{5}$ to a fraction giving your answer in its simplest form. [2 marks]

$$100x = 45.454545\dots$$

$$x = 0.454545\dots$$

$$99x = 45$$

$$x = \frac{45}{99}$$

$$\frac{45}{99} = \frac{5}{11}$$

Answer $\frac{5}{11}$

4 Convert $0.2\dot{1}\dot{4}$ to a fraction giving your answer in its simplest form. [3 marks]

$$1000x = 214.214214\dots$$

$$x = 0.214214\dots$$

$$999x = 214$$

$$x = \frac{214}{999}$$

Answer $\frac{214}{999}$

5 Convert $0.3\dot{2}\dot{4}$ to a fraction giving your answer in its simplest form. [3 marks]

$$1000x = 324.324324\dots$$

$$x = 0.324324\dots$$

$$999x = 324$$

$$x = \frac{324}{999}$$

$$\frac{324}{999} = \frac{36}{111} = \frac{12}{37}$$

Answer $\frac{12}{37}$



6 Convert $0.5\dot{3}$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r} 100x = 53.3333 \\ - 10x = 5.3333 \dots \\ \hline x = 0.5333 \dots \end{array}$$
$$90x = 48$$
$$x = \frac{48}{90}$$
$$\frac{48}{90} = \frac{8}{15}$$

Answer $\frac{8}{15}$

7 Convert $0.12\dot{4}$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r} 1000x = 124.4444 \dots \\ - 100x = 12.4444 \dots \\ \hline x = 0.124444 \dots \end{array}$$
$$900x = 112$$
$$x = \frac{112}{900}$$
$$\frac{112}{900} = \frac{28}{225}$$

Answer $\frac{28}{225}$

8 Convert $0.4\dot{2}\dot{3}$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r} 1000x = 423.232323 \dots \\ - 10x = 4.232323 \dots \\ \hline x = 0.4232323 \dots \end{array}$$
$$990x = 419$$
$$x = \frac{419}{990}$$

Answer $\frac{419}{990}$



Turn over ►



9 Convert $0.\overset{\cdot\cdot}{0}3\overset{\cdot\cdot}{8}$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r}
 1000x = 38.383838383\dots \\
 - 10x = 0.383838383\dots \\
 \hline
 x = 0.038383838\dots
 \end{array}$$

$$\begin{array}{l}
 990x = 38 \\
 x = \frac{38}{990}
 \end{array}$$

$$\frac{38}{990} = \frac{19}{495}$$

Answer _____

$$\frac{19}{495}$$

10 Convert $3.\overset{\cdot\cdot}{6}2$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r}
 100x = 362.626262\dots \\
 x = 3.626262\dots
 \end{array}$$

$$\begin{array}{l}
 99x = 359 \\
 x = \frac{359}{99}
 \end{array}$$

Answer _____

$$\frac{359}{99}$$

11 Convert $0.3\overset{\cdot\cdot}{1}6\overset{\cdot\cdot}{1}$ to a fraction giving your answer in its simplest form. [3 marks]

$$\begin{array}{r}
 10000x = 3161.161161161\dots \\
 - 10x = 3.161161161\dots \\
 \hline
 x = 0.3161161161\dots
 \end{array}$$

$$\begin{array}{l}
 9990x = 3158 \\
 x = \frac{3158}{9990}
 \end{array}$$

$$\frac{3158}{9990} = \frac{1579}{4995}$$

Answer _____

$$\frac{1579}{4995}$$





12

Work out $0.\dot{6}8 - 0.2\dot{7}$

[5 marks]

Give your answer as a fraction in its simplest form.

$$100x = 68.88888 \dots$$

$$100y = 27.77777 \dots$$

$$10x = 6.88888 \dots$$

$$10y = 2.77777 \dots$$

$$x = 0.68888 \dots$$

$$y = 0.27777 \dots$$

$$90x = 62$$

$$90y = 25$$

$$x = \frac{62}{90}$$

$$y = \frac{25}{90}$$

$$\frac{62}{90} - \frac{25}{90} = \frac{37}{90}$$

$$\frac{37}{90}$$

Answer

13

Work out $0.5\dot{3} \times 0.1\dot{6}$

[5 marks]

Give your answer as a fraction in its simplest form.

$$100x = 53.33333 \dots$$

$$100y = 16.66666 \dots$$

$$10x = 5.33333 \dots$$

$$10y = 1.66666 \dots$$

$$x = 0.53333 \dots$$

$$y = 0.16666 \dots$$

$$90x = 48$$

$$90y = 15$$

$$x = \frac{48}{90}$$

$$x = \frac{24}{45}$$

$$y = \frac{15}{90}$$

$$y = \frac{1}{6}$$

$$\frac{24}{45} \times \frac{1}{6} = \frac{4}{45}$$

$$\frac{4}{45}$$

Answer



Turn over ►

14

Work out $0.0\dot{8} \div 3.\dot{6}\dot{3}$

[5 marks]

Give your answer as a fraction in its simplest form.

$$100x = 8.88888 \dots$$

$$100y = 363.636363 \dots$$

$$10x = 0.88888 \dots$$

$$10y = 36.363636 \dots$$

$$x = 0.08888 \dots$$

$$- y = 3.636363 \dots$$

$$90x = 8$$

$$99y = 360$$

$$x = \frac{8}{90}$$

$$y = \frac{360}{99}$$

$$\frac{8}{90} \times \frac{99}{360} = \frac{11}{450}$$

$$\frac{11}{450}$$

Answer

15

Work out $(0.29\dot{6})^{\frac{2}{3}}$

[5 marks]

Give your answer as a fraction in its simplest form.

$$1000x = 296.296296 \dots$$

$$x = 0.296296 \dots$$

$$999x = 296$$

$$x = \frac{296}{999}$$

$$x = \frac{8}{27}$$

$$x = \frac{2 \times 2 \times 2 \times \cancel{37}}{3 \times 3 \times 3 \times \cancel{37}}$$

$$\left(\frac{8}{27}\right)^{\frac{2}{3}} = \left(\frac{2}{3}\right)^2$$

$$\frac{4}{9}$$

Answer

