Recurring Decimals to Fractions Worksheet

Converting Recurring Decimals & Multiplying Fractions

Reference: Edexcel GCSE 1MA1 / Higher Tier / Paper 1 / Q13

I Do

$x = 0.\dot{2}$ and $y = 0.6\dot{8}\dot{1}$

Work out the value of xy.
Give your answer as a fraction in its simplest form.

(Total for Question 1 is 4 marks)

We Do

$x = 0.\dot{4}$ and $y = 0.3\dot{1}\dot{8}$

Work out the value of xy.
Give your answer as a fraction in its simplest form.

(Total for Question 2 is 4 marks)

You Do

$x = 0.\dot{5}$ and $y = 0.2\dot{5}\dot{4}$

Work out the value of xy.
Give your answer as a fraction in its simplest form.

(Total for Question 3 is 4 marks)

Challenge

$x = 0.1\dot{6}$ and $y = 0.\dot{3}\dot{6}$

Work out the value of $\frac{x}{y}$.

Give your answer as a fraction in its simplest form.

(Total for Question 4 is 4 marks)

Answers & Worked Solutions

• **I Do:**

1. Convert $x = 0.\dot{2}$ ***to a fraction:***

$10x = 2.222\cdots \implies 9x = 2 \implies x = \frac{2}{9}$

2. Convert $y = 0.6\dot{8}\dot{1}$ ***to a fraction:***

$1000y = 681.8181\ldots$ ***and*** $10y = 6.8181\ldots$

$1000y - 10y = 681 - 6 \implies 990y = 675 \implies y = \frac{675}{990} = \frac{15}{22}$

3. Calculate xy***:***

$xy = \frac{2}{9} \times \frac{15}{22} = \frac{30}{198} = \frac{5}{33}$

Answer: $\frac{5}{33}$

• **We Do:**

1. Convert $x = 0.\dot{4}$ ***to a fraction:*** $x = \frac{4}{9}$

2. Convert $y = 0.3\dot{1}\dot{8}$ ***to a fraction:***

$1000y - 10y = 318 - 3 \implies 990y = 315 \implies y = \frac{315}{990} = \frac{7}{22}$

3. Calculate xy***:***

$xy = \frac{4}{9} \times \frac{7}{22} = \frac{28}{198} = \frac{14}{99}$

Answer: $\frac{14}{99}$

• **You Do:**

1. Convert $x = 0.\dot{5}$ ***to a fraction:*** $x = \frac{5}{9}$

2. Convert $y = 0.2\dot{5}\dot{4}$ ***to a fraction:***

$1000y - 10y = 254 - 2 \implies 990y = 252 \implies y = \frac{252}{990} = \frac{14}{55}$

3. Calculate xy***:***

$xy = \frac{5}{9} \times \frac{14}{55} = \frac{14}{99}$

Answer: $\frac{14}{99}$

• **Challenge:**

1. Convert $x = 0.1\dot{6}$ ***to a fraction:***

$100x - 10x = 16.666\cdots - 1.666\cdots \implies 90x = 15 \implies x = \frac{15}{90} = \frac{1}{6}$

2. Convert $y = 0.\dot{3}\dot{6}$ ***to a fraction:***

$100y - y = 36 \implies 99y = 36 \implies y = \frac{36}{99} = \frac{4}{11}$

3. Calculate $\frac{x}{y}$***:***

$\frac{x}{y} = \frac{1/6}{4/11} = \frac{1}{6} \times \frac{11}{4} = \frac{11}{24}$

Answer: $\frac{11}{24}$