Name: SOLUTIONS

GCSE (1 - 9) Recurring Decimals to Fractions	Solutions:

These questions represent all of the times that this topic has appeared in unlocked Pearson Edexcel GCSE maths papers as of July 2023. More questions can be found at examq.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2017, Paper 1H, Q15
2	Edexcel, GCSE, Autumn 2018, Paper 1H, Q16
3	Edexcel, GCSE, Autumn 2019, Paper 1H, Q15
4	Edexcel, GCSE, Autumn 2020, Paper 3H, Q15
5	Edexcel, GCSE, Summer 2017, Paper 2H, Q16

Recurring Decimals to Fractions (Questions from Edexcel GCSE Past Papers)

1

$x = 0.4\dot{3}\dot{6}$

Prove algebraically that x can be written as $\frac{24}{55}$

$x = 0.436\dot{3}\dot{6}$

$10x = 4.\dot{3}\dot{6}$

$1000x = 436.\dot{3}\dot{6}$

$1000x = 436.363636\ldots$

$-10x = \quad 4.363636\ldots$

$990x = 432$

$x = \frac{432}{990} = \frac{216}{495} = \frac{24}{55}$

(Total for Question 15 is 3 marks)

[Edexcel, GCSE, Autumn 2017, Paper 1H, Q15]

2

Prove algebraically that $0.2\dot{5}\dot{6}$ can be written as $\frac{127}{495}$

$x = 0.256\dot{5}\dot{6}$

$10x = 2.\dot{5}\dot{6}$

$1000x = 256.\dot{5}\dot{6}$

$1000x = 256.565656\ldots$

$-10x = \quad 2.565656\ldots$

$990x = 254$

$x = \frac{254}{990} = \frac{127}{495}$

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Autumn 2018, Paper 1H, Q16]

3

Express $0.4\dot{1}\dot{8}$ as a fraction.
You must show all your working.

$x = 0.4\dot{1}\dot{8}$

$10x = 4.\dot{1}\dot{8}$

$1000x = 418.\dot{1}\dot{8}$

$1000x = 418.181818...$

$-10x = 4.181818...$

$990x = 414$

$x = \frac{414}{990} = \frac{23}{55}$

$\frac{23}{55}$

(Total for Question 15 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 1H, Q15]

4

Prove algebraically that $0.7\dot{3}$ can be written as $\frac{11}{15}$

$x = 0.7\dot{3}$

$10x = 7.\dot{3}$

$100x = 73.\dot{3}$

$100x = 73.333...$

$10x = 7.333...$

$90x = 66$

$x = \frac{66}{90} = \frac{33}{45} = \frac{11}{15}$

(Total for Question 15 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3H, Q15]

5

Using algebra, prove that $0.1\dot{3}\dot{6} \times 0.\dot{2}$ is equal in value to $\frac{1}{33}$

$x = 0.1\dot{3}\dot{6}$

$10x = 1.\dot{3}\dot{6}$

$1000x = 136.\dot{3}\dot{6}$

$1000x = 136.363636\ldots$

$-\ 10x = 1.363636\ldots$

$990x = 135$

$x = \frac{135}{990} = \frac{3}{22}$

$y = 0.\dot{2}$

$10y = 2.\dot{2}$

$10y = 2.222\ldots$

$-\ y = 0.222\ldots$

$9y = 2$

$y = \frac{2}{9}$

$\frac{3}{22} \times \frac{2}{9} = \frac{6}{198} = \frac{1}{33}$

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 2H, Q16]