

RECURRING DECIMALS

[ESTIMATED TIME: 25 minutes]

GCSE

(+ IGCSE) EXAM QUESTION PRACTICE

1.

[1 mark]

Circle the fractions which can be written as recurring decimals.

$$\frac{2}{3}$$

$$\frac{3}{4}$$

$$\frac{4}{5}$$

$$\frac{5}{6}$$

$$\frac{5}{7}$$

$$\frac{7}{8}$$

$$\frac{5}{12}$$

2.

[1 mark]

Write these numbers in order of size.

Start with the smallest number.

$$0.5\dot{7}\dot{3}$$

$$0.\dot{5}7\dot{3}$$

$$0.573$$

$$0.57\dot{3}$$

3.

[2 marks]

Prove algebraically that the recurring decimal $0.3\dot{4}$ has the value $\frac{31}{90}$

4.**[2 marks]**

Use algebra to show that the recurring decimal $0.3\dot{8} = \frac{7}{18}$

5.**[2 marks]**

Use algebra to show that the recurring decimal $0.\dot{4}1\dot{7} = \frac{139}{333}$

6.**[2 marks]**

Prove algebraically that the recurring decimal $0.3\dot{1}\dot{8}$ can be written as $\frac{7}{22}$

7.**[3 marks]**

Using algebra, prove that $0.3\dot{2}\dot{7} \times 0.\dot{5}$ is equal in value to $\frac{2}{11}$

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

Show that:

(a) $0.\dot{x} = \frac{x}{9}$

(2)

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

(2)

y is a whole number such that $1 \leq y \leq 9$

Show that $0.\dot{3}y = \frac{y}{33}$

Rita says:

“I can tell from the denominators that $\frac{17}{40}$ will convert into a terminating decimal but $\frac{17}{70}$ will be recurring.”

Explain how Rita can tell from the denominators, whether a fraction will convert into a terminating decimal or a recurring decimal.

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(a) Convert the recurring decimal $0.\dot{7}$ to a fraction.

.....
(2)

$0.0\dot{y}$ is a recurring decimal.

y is a whole number such that $1 \leq y \leq 9$

(b) (i) Write the recurring decimal $0.0\dot{y}$ as a fraction.

.....

(ii) $0.1\dot{y}$ is also a recurring decimal.

Using your answer to part (i), or otherwise, convert the recurring decimal $0.1\dot{y}$ to a fraction.

Give your answer as simply as possible.

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(3)