RECURRING DECIMALS

[ESTIMATED TIME: 25 minutes]

37

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 $0.\dot{4}\dot{1}\dot{7} = \frac{139}{333}$

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 $\frac{2}{11}$

8. **[4 marks]**

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

Show that:

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

(2)

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

(2)

9. **[3 marks]**

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

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

10. **[2 marks]**

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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.....

.....

11. **[5 marks]**

(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 $1 \leqslant y \leqslant 9$

(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.

.....

(3)