

Recurring decimals where 2 or more numbers repeat

Maths

Mrs Dennett



Recurring decimals where 2 or more numbers repeat

1. Solve these equations.

Write your answers as fractions.

a) $100x = 1.5$ c) $99x = 45$

b) $9x = 33$ d) $999x = 137$

2. Complete the workings to write $0.\dot{7}\dot{6}$ as a fraction.

$$\text{Let } x = 0.\dot{7}\dot{6}$$

$$\underline{\hspace{2cm}} x = 76.\dot{7}\dot{6}$$

$$99x = \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}}$$

3. Write these decimals as fractions in their simplest form.

a) $0.\dot{2}\dot{4}$

e) $100.\dot{0}\dot{8}$

b) $0.\dot{2}\dot{5}$

f) $0.\dot{7}\dot{0}\dot{7}$

c) $62.\dot{1}\dot{2}$

g) $1.\dot{3}5\dot{8}$

d) $3.\dot{1}\dot{2}$

h) $50.\dot{5}2\dot{4}$



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4. Write these numbers in ascending order.

$$0.\dot{3}8 \quad \frac{1}{3} \quad \frac{4}{11} \quad \frac{30}{99}$$

5.

$$x = \frac{7}{11}$$

Write x as a decimal.

6. Here are some number cards.

$$0.\dot{9}$$

$$0.\dot{9}\dot{9}$$

$$0.\dot{9}\dot{9}\dot{9}$$

a) What do you notice about these decimals?

b) Convert $0.\dot{9}$ into a fraction.

Are you surprised by this answer?



Answers



Recurring decimals where 2 or more numbers repeat

1. Solve these equations.

a) $100x = 1.5$ c) $99x = 45$ $x = \frac{5}{11}$
 $x = \frac{3}{200}$ or 0.015

b) $9x = 33$ d) $999x = 137$ $x = \frac{137}{999}$
 $x = \frac{11}{3}$

2. Complete the workings to find $0.\dot{7}\dot{6}$ as a fraction.

Let $x = 0.\dot{7}\dot{6}$
So $\underline{100}x = 76.\dot{7}\dot{6}$
So $99x = \underline{\quad} \underline{76}$
So $x = \underline{\quad} \underline{\frac{76}{99}}$

3. Write these decimals as fractions in their simplest form.

a) $0.\dot{2}\dot{4}$ $\frac{8}{33}$ e) $100.\dot{0}\dot{8}$ $\frac{9908}{99}$

b) $0.\dot{2}\dot{5}$ $\frac{25}{99}$ f) $0.\dot{7}0\dot{7}$ $\frac{707}{999}$

c) $62.\dot{1}\dot{2}$ $\frac{2050}{33}$ g) $1.\dot{3}5\dot{8}$ $\frac{1357}{999}$

d) $3.\dot{1}\dot{2}$ $\frac{103}{33}$ h) $50.\dot{5}2\dot{4}$ $\frac{50474}{999}$



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4. Write these numbers in ascending order.

$$0.\dot{3}8 \quad \frac{1}{3} \quad \frac{4}{11} \quad \frac{30}{99}$$

$$\frac{30}{99} \quad \frac{1}{3} \quad \frac{4}{11} \quad 0.\dot{3}8$$

5.

$$x = \frac{7}{11}$$

Write x as a decimal.

$$0.\dot{6}3$$

6. a) What do you notice about these decimals? **They are equivalent**

$$0.\dot{9} \quad 0.9\dot{9} \quad 0.99\dot{9}$$

b) Change $0.\dot{9}$ into a fraction.

$$\text{Let } x = 0.\dot{9}$$

$$\text{So } 10x = 9.\dot{9}$$

$$\text{So } 9x = 9$$

$$\text{So } x = 1$$

c) Are you surprised by this answer?

This result tells us that $0.\dot{9}$ is equivalent to 1!

