

Higher Check In - 2.02 Decimal fractions

Do not use a calculator.

- Express 1.04 as a fraction in its lowest terms.
- Calculate $\frac{1}{0.\dot{3} + 0.\dot{1} + 0.\dot{8} + 0.\dot{6}}$.
- Convert $5\frac{7}{12}$ to a recurring decimal.
- A school canteen plans to make 8 trifles which each require 0.45 litres of cream. Cream is bought in 0.275 litre cartons. How many cartons of cream are required?
- Express the recurring decimal fraction $0.\dot{1}\dot{5}$ as a fraction in its lowest terms.
- Given that $123 \times 45 = 5535$, write down 1.23×4.5 . Explain your reasoning.
- Oliver thinks that 0.12 is greater than 0.8 because 12 is greater than 8. Explain why he is wrong.
- Use fractions to explain why dividing by 0.1 is equivalent to multiplying by 10.
- The exchange rate from pounds to euros is $\text{£}1 = \text{€}1.25$. The exchange rate from euros to US dollars is $\text{€}1 = \text{\$}1.2$. What is the equivalent exchange rate from pounds to US dollars?
- Christine is thinking about whether to rent a petrol car or a diesel car for a day trip. She is planning to make a 250 km journey. Using the rental car data below, state which car she should rent and how much she would save.

	Fuel consumption (litres per 100 km)	Fuel cost (£ per litre)
Petrol	4.2	0.999
Diesel	3.7	1.009

Extension

Investigate the equivalent fractions of the recurring decimals $0.\dot{1}$, $0.\dot{1}\dot{0}$, $0.\dot{1}\dot{0}\dot{0}$
What is the equivalent fraction of $0.\dot{1}\dot{0}\dot{0}\dot{0}\dot{0}$?



GCSE (9-1) MATHEMATICS

Answers

1. $1\frac{1}{25}$

2. $\frac{1}{2}$ or 0.5

3. 5.58 $\dot{3}$

4. $\frac{3.6}{0.275} = \frac{3600}{275}$ which gives $275 \overline{)360^{1}30^{3}0^{0}9^{9}\dots}$ so 14 cartons required.

5. $\frac{5}{33}$

6. $5535 \div 100 \div 10 = 5.535$

7. 0.12 is $\frac{12}{100}$, whereas 0.8 is $\frac{80}{100}$, so $0.12 < 0.80$.

8. $0.1 = \frac{1}{10}$, and dividing by $\frac{1}{10}$ is the same as multiplying by $\frac{10}{1}$.

9. £1 = \$1.5

10. Diesel car, saving £1.16

Extension

$$0.\dot{1} = \frac{1}{9}, \quad 0.\dot{1}\dot{0} = \frac{10}{99}, \quad 0.\dot{1}\dot{0}\dot{0} = \frac{100}{999} \dots$$

$$\text{So } 0.\dot{1}\dot{0}\dot{0}\dot{0}\dot{0} = \frac{100000}{999999}$$

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Express a terminating decimal as a fraction			
AO1	2	Carry out a calculation involving recurring decimals			
AO1	3	Convert a mixed number to a recurring decimal			
AO1	4	Multiply and divide by decimals			
AO1	5	Convert a recurring decimal to an exact fraction			
AO2	6	Multiply decimals without a calculator using place value			
AO2	7	Use equivalence between decimals and fractions			
AO2	8	Use equivalence between decimals and fractions to explain the method for dividing by 0.1			
AO3	9	Divide decimals without a calculator to work out exchange rates			
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