

Foundation Check In - 2.02 Decimal fractions

Do not use a calculator.

Work out the following, showing all your working.

- $2.4 + 1.07 - 3.5$
- $1.8 + 6 \times ^{-}1.8$
- $\frac{1}{5} + 0.15$
Give your answer as a decimal.
- $6.2 \div 0.02$
- Express 0.044 as a fraction in its simplest form.
- Show that $\frac{5}{12} = 0.41666\dots$
- Chris bought 5 pens and paid £2.
He worked out the cost of a pen as $2 \div 5$ and gave the answer as 0.4p each.
Explain what is wrong with his answer.
- On each of 5 days, the midnight temperatures in a town were -1.3°C , 2°C , -2.5°C , 0.8°C and 1.4°C . Show that the average temperature is 0.08°C .
- Jenna buys 3 pens and 2 erasers. She pays with a £5 note and receives 25p change.
Each pen cost 2.5 times as much as an eraser.
Find the cost of a pen and the cost of an eraser.
- Find the area of the triangle with the vertices plotted on a one centimetre coordinate grid at $(-1.2, 0)$, $(3.1, 0)$ and $(2.4, 1.4)$.

Extension (You are allowed to use a calculator)

Use each of the digits 0, 2, and 5 **once only** and no other digits to write two numbers A and B where both A and B are greater than 0. For example $A = [0].05$ and $B = 2$.

(NB: The zero to the left of the decimal point does not count.)

The answer to $A \div B$ must be as small as possible.

Find A and B and show that this gives the smallest possible answer.

Explain the method you used to answer this problem and then apply this method to some other digits.



Answers

1. -0.03

2. -9

3. 0.35

4. 310

5. $\frac{11}{250}$

6. $12 \overline{)5.50208080}$
 $\begin{array}{r} 0.4166... \\ 12 \overline{)5.50208080} \\ \underline{48} \\ 70 \\ \underline{72} \\ 20 \\ \underline{24} \\ 40 \\ \underline{48} \\ 80 \\ \underline{84} \\ 40 \\ \underline{48} \\ 80 \end{array}$

7. The answer is £0.40 or 40p. Chris has stated the units incorrectly.

8. $\frac{-1.3 + 2 + -2.5 + 0.8 + 1.4}{5} = \frac{0.4}{5} = 0.08 \text{ } ^\circ\text{C}$

9. Eraser 50p, pen £1.25

10. $\frac{1}{2} \times (3.1 - -1.2) \times 1.4 = 3.01 \text{ cm}^2$

Extension

$[0].2 \div 50 = 0.004$

$[0].2 \div 5.0 = 0.04$

$2 \div 5.0 = 0.4$

$[0].2 \div [0].05 = 4$

$[0].05 \div 2 = 0.025$

So $A = [0].2$ and $B = 50$ gives the smallest answer to $A \div B$

Method: Make the first number as small as possible and the second number as large as possible. With 4, 5 and 7 the numbers would be $[0].4 \div 75 = 0.0053...$

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Add and subtract decimals			
AO1	2	Use order of operations when calculating with decimals, including negative decimals			
AO1	3	Add a fraction to a decimal			
AO1	4	Divide a decimal by a decimal			
AO1	5	Express a terminating decimal as a fraction			
AO2	6	Use division to convert a simple fraction to a decimal			
AO2	7	Use place value when calculating with monetary decimal values			
AO2	8	Calculate the mean using decimal data values			
AO3	9	Solve a contextual problem involving decimals			
AO3	10	Solve a geometric problem involving decimals			

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