

Exercise walk-through

E1.5

Ordering

IGCSE Mathematics

You must be able to

- write a mixed list of numbers in order of size
- convert fractions and percentages to decimals in order to compare them
- use the symbols $=$, $\neq$, $>$, $<$, $\geq$ and $\leq$ correctly

1

The method

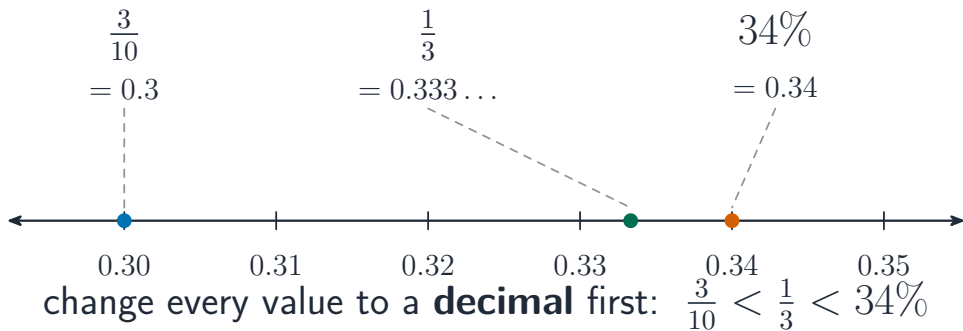
Method — Turn everything into decimals, then read the line

- **One form only:** change every value to a decimal before comparing. $\frac{5}{8} = 0.625$, $37\% = 0.37$.
- **Negatives:** the bigger the digit after the minus sign, the **smaller** the number. $-8 < -3$.
- **Worked:** order -3 , 0.5 , $-\frac{1}{2}$, 2 , -2.5 smallest first $\rightarrow -3, -2.5, -0.5, 0.5, 2$.
- **Symbols:** $>$ means “is greater than”, $\geq$ means “is greater than **or equal to**”.

Answer shapes (marked by **method marks** — M1 for a correct method, A1 for the correct answer): the decimal conversions earn the method mark, the final order earns the answer mark.

Method — Turn everything into decimals, then read the line

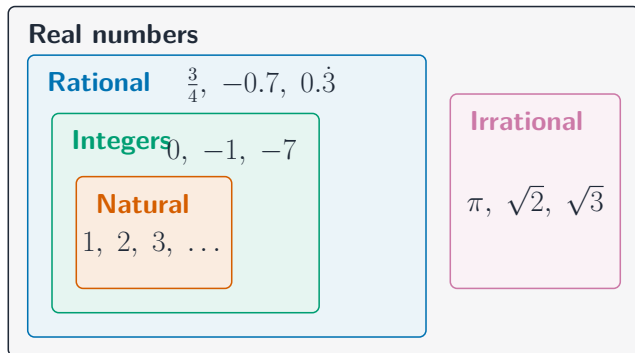
Answer shapes (marked by method marks — M1 for a correct method, A1 for the correct answer): the decimal...



Numbers placed on a number line, negatives to the left of zero

Method — Turn everything into decimals, then read the line

Answer shapes (marked by method marks — M1 for a correct method, A1 for the correct answer): the decimal...



The number sets: natural, integer, rational and real

2

Practice

Practice 2.1 ■ 2 marks

Write these numbers in order of size, starting with the smallest: 0.6 , $\frac{2}{3}$, 0.62 , $\frac{5}{8}$.

Solution 2.1

Method: Turn everything into decimals, then read the line — p.4

Worked steps

- change each to a decimal: $\frac{2}{3} = 0.667$, $\frac{5}{8} = 0.625$ **M1**

0.6, 0.62, $\frac{5}{8}$, $\frac{2}{3}$

A1

Practice 2.2 ■ 1 mark

Insert $<$ or $>$ between -7 and -9 .

Solution 2.2

Worked steps

- -7 lies to the right of -9 on the number line

$$-7 > -9$$

B1

Practice 2.3 ■ 1 mark

Insert $<$ or $>$ between $\frac{3}{8}$ and 0.4.

Solution 2.3

Worked steps

■ $\frac{3}{8} = 0.375$ and $0.375 < 0.4$

$$\frac{3}{8} < 0.4$$

B1

Practice 2.4 ■ 2 marks

Write down all the integers n for which $-3 \leq n < 2$.

Solution 2.4

Worked steps

■ $\leq$ includes -3 , but $<$ excludes 2 M1

$-3, -2, -1, 0, 1$

A1

3

Exam-style

Exam-style 3.1 ■ 2 marks

Write these in order of size, starting with the smallest.

$$0.38 \quad \frac{3}{8} \quad 37\% \quad \frac{2}{5}$$

Solution 3.1

Method: Turn everything into decimals, then read the line — p.4

Worked steps

■ decimals: $\frac{3}{8} = 0.375$, $37\% = 0.37$, $\frac{2}{5} = 0.4$ **M1**

37%, $\frac{3}{8}$, **0.38**, $\frac{2}{5}$

A1

Exam-style 3.2 ■ 3 marks

The midnight temperatures in five cities were -3°C , 5°C , -8°C , 0°C and -0.5°C .

Exam-style 3.2 (a) ■ 2 marks

Write the temperatures in order, coldest first.

Solution 3.2 (a)

Method: Turn everything into decimals, then read the line — p.4

Worked steps

- the more negative the temperature, the colder it is M1

-8 , -3 , -0.5 , 0 , 5

A1

Exam-style 3.2 (b) ■ 1 mark

Insert the correct symbol, $<$ or $>$, between -8 and -3 .

Solution 3.2 (b)

Worked steps

- -8 lies further left than -3

$$-8 < -3$$

B1