

Adding and Subtracting Decimals

We use the column method to add or subtract decimals - make sure that the **decimal points line up** with each other

Adding decimals

 **Example** Work out $12.5 + 6.23$

$$\begin{array}{r} 12.50 \\ + 6.23 \\ \hline 18.73 \end{array}$$

You may find it useful to fill any "empty" spaces on the ends of numbers with zeros.

Decimal points lined up.

Subtracting decimals

 **Example** Work out $5.63 - 2.47$

$$\begin{array}{r} 5.63 \\ - 2.47 \\ \hline 3.16 \end{array}$$

Decimal points lined up.

Multiplying Decimals

When multiplying decimals, there are a couple of different methods you can use. They both work by carrying out an integer multiplication, then scaling the answer.

Using scaled calculations

 **Example** Work out 0.08×0.3

$$\begin{array}{r} 0.08 \times 0.3 \\ \times 100 \quad \times 10 \\ \hline 8 \times 3 = 24 \end{array}$$

1 Multiply by powers of 10 to change to an integer calculation and work out the answer.

$$24 \div 100 \div 10 = 24 \div 1000 = 0.024$$

2 Reverse the scaling using division by powers of 10

Counting decimal places

 **Example** Work out 0.002×3.1

$$\begin{array}{|c|} \hline 3 \text{ decimal places} \\ \hline \end{array} 0.002 \times 3.1 \begin{array}{|c|} \hline 1 \text{ decimal place} \\ \hline \end{array} \quad \begin{array}{|c|} \hline 4 \text{ decimal places in total in the question.} \\ \hline \end{array}$$

1 Multiply the non-zero digits: $2 \times 31 = 62$

2 Match the number of decimal places.

So we have the digits **62** with 4 decimal places: 0.0062

Dividing Decimals

When dividing decimals, there are a couple of different methods you can use, depending on whether you're dividing by an integer or a decimal

Dividing a decimal by an integer

 **Example** Work out $7.11 \div 3$

When the divisor (number you're dividing by) is an integer, you can use **short division**.

1 Set out the division: $3 \overline{) 7.11}$

2 Complete as usual: 2.37
 $3 \overline{) 7.11} 2$

Line up the decimal points.

Dividing by a decimal

 **Example** Work out $8.4 \div 0.04$

1 Write the division as a fraction: $\frac{8.4}{0.04}$

2 Find an equivalent fraction with an integer denominator. $\frac{8.4}{0.04} = \frac{840}{4}$

3 Calculate the answer to the integer division: $840 \div 4 = 210$