

## 3.2 Ordering decimals

To order decimal numbers, compare the whole-number part first. When the numbers that you are ordering have the same whole-number part, compare the tenths, then the hundredths, and so on.

The number of digits after the decimal point is the number of decimal places (d.p.) in the number.

Look at the three decimal numbers on the right.

8.56, 7.4, 8.518

8.56, 7.4, 8.518

- 1 Highlight the whole numbers.

You can see that 7.4 is the smallest number, so 7.4 goes first.

7.4, 8.56, 8.518

- 2 The other two both have 8 units, so highlight the tenths.

7.4, 8.56, 8.518

- 3 They both have the same number of tenths, so highlight the hundredths.

7.4, 8.518, 8.56

You can see that 8.518 is smaller than 8.56, so in order of size the numbers are:

When you order decimal measurements, you must make sure they are all in the same units. You need to remember these conversion factors.

Length	Mass	Capacity
10 mm = 1 cm	1000 g = 1 kg	1000 ml = 1 l
100 cm = 1 m	1000 kg = 1 t	
1000 m = 1 km		

When you compare decimal numbers you can use these symbols.

= means 'is equal to'

≠ means 'is not equal to'

> means 'is bigger than'

< means 'is smaller than'

### Worked example 3.2

- a Write these decimal numbers in order of size. 5.682, 5.61, 0.95, 5.68.  
 b Write the correct symbol, = or ≠, between these measures. 7.5 m  75 cm  
 c Write the correct symbol, > or <, between these measures. 4.5 kg  450 g

- a 0.95, 5.61, 5.68, 5.682 The smallest number is 0.95 as it has the smallest whole-number part. The other three numbers have the same whole-number part and the same tenths, so compare the hundredths. 1 is smaller than 8 so 5.61 comes next. Finally, compare the thousandths: 5.68 is the same as 5.680 and 0 is smaller than 2, so 5.68 is smaller than 5.682.
- b 7.5 m ≠ 75 cm There are 100 cm in 1 metre. 7.5 m × 100 = 750 cm, so '≠' goes between the two measures.
- c 4.5 kg > 450 g There are 1000 g in 1 kg. 4.5 kg × 1000 = 4500 g, so '>' goes between the two measures.


### Exercise 3.2

- 1 Write these decimal numbers in order of size, starting with the smallest.
- a 5.49, 2.06, 7.99, 5.91      b 3.09, 2.87, 3.11, 2.55      c 12.1, 11.88, 12.01, 11.82  
 d 9.09, 8.9, 9.53, 9.4      e 23.661, 23.592, 23.659, 23.665      f 0.107, 0.084, 0.102, 0.009  
 g 6.725, 6.178, 6.71, 6.17      h 11.302, 11.032, 11.02, 11.1

- 2 Write these measures in order of size, starting with the smallest.
- a** 2.3 kg, 780 g, 2.18 kg, 1950 g      **b** 5.4 cm, 12 mm, 0.8 cm, 9 mm  
**c** 12 m, 650 cm, 0.5 m, 53 cm      **d** 0.55 l, 95 ml, 0.9 l, 450 ml  
**e** 6.55 km, 780 m, 6.4 km, 1450 m      **f** 0.08 t, 920 kg, 0.15 t, 50 kg  
**g** 95 000 cm, 920 m, 9800 mm, 0.85 km, 0.009 km

- 3 Write the correct sign, < or >, between each pair.
- a** 4.23  $\square$  4.54      **b** 6.71  $\square$  6.03      **c** 0.27  $\square$  0.03  
**d** 27.9  $\square$  27.85      **e** 8.55  $\square$  8.508      **f** 5.055  $\square$  5.505  
**g** 4.5 l  $\square$  2700 ml      **h** 0.45 t  $\square$  547 kg      **i** 3.5 cm  $\square$  345 mm  
**j** 0.06 kg  $\square$  550 g      **k** 7800 m  $\square$  0.8 km      **l** 0.065 m  $\square$  6.7 cm

- 4 Write the correct sign, = or  $\neq$ , between each pair.
- a** 6.7 l  $\square$  670 ml      **b** 4.05 t  $\square$  4500 kg      **c** 0.85 km  $\square$  850 m  
**d** 0.985 m  $\square$  985 cm      **e** 14.5 cm  $\square$  145 mm      **f** 2300 g  $\square$  0.23 kg  
**g** 0.072 l  $\square$  720 ml      **h** 0.52 m  $\square$  520 mm      **i** 0.85 kg  $\square$  850 g

-  5 Shen and Mia swim every day. They keep a record of the distances they swim each day for 10 days.

These are the distances that Shen swims each day.

250 m   1.25 km   0.5 km   2500 m   2 km   1.75 km   750 m   1500 m   25 km   0.75 km

- a** Shen has written down one distance incorrectly. Which one? Explain your answer.

These are the distances that Mia swims each day.

1.2 km   240 m   0.4 km   1.64 km   820 m   640 m   0.2 km   1.42 km   960 m   0.88 km

- b** Mia says that the longest distance she swam is more than eight times the shortest distance she swam. Is Mia correct? Explain your answer.

Shen and Mia swim in different swimming pools. One of the swimming pools is 25 m long. The other swimming pool is 20 m long. Shen and Mia always swim a whole number of lengths.

- c** Who do you think swims in the 25 m swimming pool? Explain how you made your decision.

-  6 Each of the cards describes a sequence of decimal numbers.

**A** First term: 0.5    Term-to-term rule: 'add 0.5'

**B** First term: 0.15    Term-to-term rule: 'multiply by 2'

**C** First term: -1.7    Term-to-term rule: 'add 1'

**D** First term: 33.6    Term-to-term rule: 'divide by 2'

**E** First term: 1.25    Term-to-term rule: 'add 0.25'

**F** First term: 10.45    Term-to-term rule: 'subtract 2'

- a** Work out the fifth term of each sequence.  
**b** Write the numbers from part **a** in order of size starting with the smallest.