Cambridge
Direct
Mathematics

# Measures, Shape, Space and Handling Data

**6**

Abbreviations and symbols

IP Interactive picture

CM Copymaster

A is practice work

B develops ideas

C is extension work

★ if needed, helps with work in A

A red margin indicates that activities are teacher-led.

A green margin indicates that activities are independent.

# Contents

## Handling data (HD)

## M1.1 Rounding distances and lengths

> **Key idea** | In certain situations an approximate measure, to the nearest whole unit or tenth of a unit is needed.

**A1** Write the distance to each place to the nearest kilometre.

**a** Greenford 7.1 km **b** Newton 10.8 km **c** Avondale 22.5 km

**A2** Spectators at a football match compare the distances they have travelled.

Round to the nearest kilometre.

**a** 126.78 km **b** 142.35 km **c** 78.49 km **d** 0.83 km **e** 28.29 km

**A3** Jane measured the thickness of some library books.

Roughly how many centimetres are they to the nearest whole centimetre?

**a** 47 mm **b** 25 mm **c** 12 mm **d** 36 mm **e** 109 mm

**A4** Do CM 1.

**B1** Cyclists travelled these distances in training.

Approximately how far did they cycle to the nearest kilometre?

**a** 7628 m **b** 13 509 m **c** 9398 m **d** 14 901 m **e** 7489 m

**B2** Anil measured some objects in his classroom.

About how many metres are they to the nearest tenth of a metre?

1 cm = 0.01 m

**a** 113 cm **b** 45 cm **c** 67 cm **d** 26 cm **e** 98 cm

**C1** An experiment to grow plants produced the following results.

Round the heights of each plant to the nearest tenth of a metre.

**a** 280 mm **b** 576 mm **c** 231 mm **d** 84 mm **e** 347 mm

## M1.2 Converting kilometres to smaller units

| Key idea | 1 m is one thousandth of 1 km. |
|---|---|

**A1** A chart gives the height above sea level of several towns.

Write these heights in metres.

a  0.003 km  b  0.007 km  c  0.016 km

d  0.080 km  e  0.668 km  f  0.900 km

**A2** You need 5 objects smaller than your hand to measure.

Record your measurements in centimetres and then convert them to metres.

**B1** Which of the two measurements is higher above sea level?

a  3.59 km or 450 m  b  2978 m or 4.66 km

c  0.04 km or 20 m  d  70 m or 0.01 km

**B2**
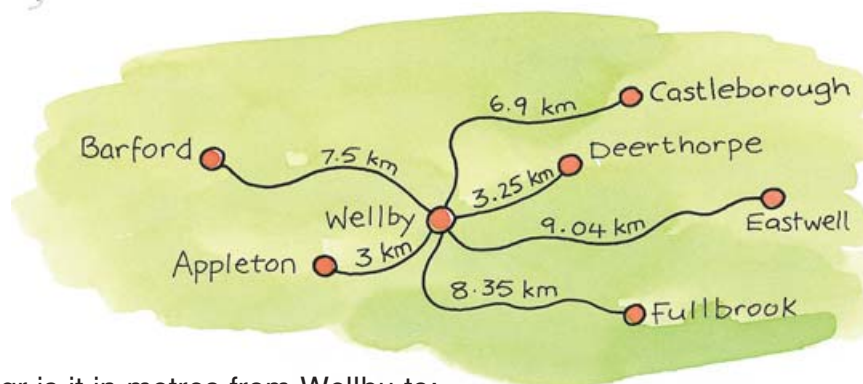


How far is it in metres from Wellby to:

a  Appleton?  b  Barford?  c  Castleborough?

d  Deerthorpe?  e  Eastwell?  f  Fullbrook?

Convert all lengths to metres.

**B3** Arrange these lengths in order from smallest to largest.

0.041 m    0.003 km    0.1 cm    5.082 m    128 mm    491 cm

**C1** You need 5 objects less than 100 mm long and a ruler marked only in millimetres.

Measure your objects in millimetres then convert to metres.

# M1.3 Metric and imperial units

> **Key idea** | A mile is about 1600 m. 8 km is about 5 miles.
> A metre is longer than a yard. A metre is about 3 feet 3 inches.

You need your graph and a partner.

British drivers travelling in Europe need to convert distances given in kilometres into miles. Use your graph to convert the distances in the following problems.

**1** Convert these distances into kilometres.

   **a** 10 miles    **b** 25 miles    **c** 50 miles    **d** 75 miles

**2** Use your graph to find which is further:

   **a** 5 miles or 6 km    **b** 28 km or 15 miles

   **c** 56 km or 36 miles    **d** 81 km or 49 miles

**3** Complete these, choosing from the list below.

   **a** 12 inches =    **b** 2 feet =    **c** $\frac{1}{2}$ foot =

   **d** 1 yard =    **e** 1 metre =    **f** 2 metres =

   6 inches    3 feet    1 foot    24 inches    $6\frac{1}{2}$ feet    3 feet 3 inches

**4** **a** List 3 classroom objects that you would measure in inches and 3 objects that you would measure in feet.

   **b** What imperial unit would you use to measure the height of a door?

**5** Put these distances in order, from shortest to longest:

10 miles      45 km      15 miles      20 km      25 miles      15 km

**6**

**a** John travelled 11 miles. How many kilometres did he go?

**b** Calais is 38 km away. How far is this in miles?

**c** It is 95 km to Paris. Morag has travelled 56 miles. How much further has she to go?

**d** Lenny drives 21 miles from his campsite to Beauville. Then he drives 18 miles to the beach and goes straight home to the campsite from there. If his total journey was about 75 km that day, what is the distance in kilometres from the campsite to the beach?

**7** Choose from <, >, = to complete these questions.

**a** 6 feet ☐ 2 m

**b** 3 m ☐ 9 feet 9 inches

**c** 3 yards ☐ 11 feet

**d** 13 feet ☐ 4 metres

**e** 20 m ☐ 20 yards

**f** 1 foot ☐ 20 inches

> Remember:
> 1 foot = 12 inches
> 1 yard = 3 feet

**8** Make up 3 of your own number problems using imperial and metric units.

| Key idea | A mile is about 1600 m. 8 km is about 5 miles.<br>A metre is longer than a yard. A metre is about 3 feet 3 inches. |
| --- | --- |

# M1.4 Reading scales and solving problems

**1** Sarah travelled 34.24 km by car, 2.7 km by bus and 1000 m on foot. How many kilometres did she travel?

**2** I cut 65 cm off 3.5 m of rope. How much is left?

**3** A class measured rainfall using rain gauges they made themselves. Some scales were in inches, others in centimetres. Use the scale to answer these questions.

   **a** On Monday there was 1 inch of rain.

      How many centimetres is this?

   **b** On Tuesday there was $\frac{1}{2}$ inch of rain.

      How many centimetres is this?

   **c** On Wednesday and Thursday it didn't rain, but on Friday there were $1\frac{1}{4}$ inches of rain.

      How many centimetres is this?

   **d** What was the total rainfall for these 5 days in centimetres?

**4** The next week it rained 1.7 cm on Monday. If it rained the same amount every day until Friday, how many inches of rain fell on these 5 days?

**5** If the total rainfall for 10 days was 5 inches, what was the average rainfall each day? Give your answers in centimetres.
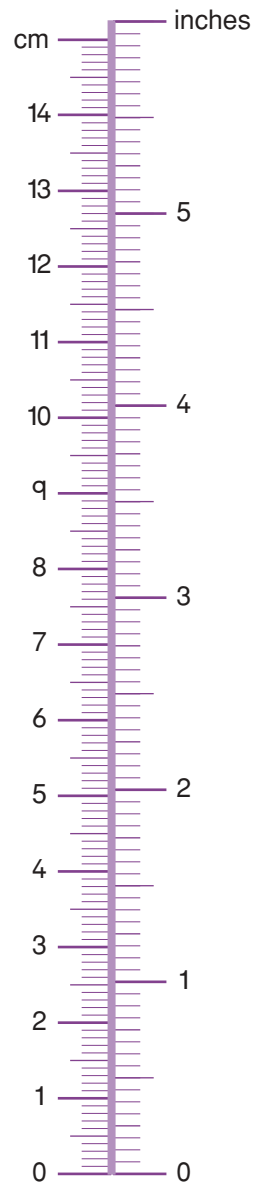
**6** The third week Nadim measured 1.8 cm, 0.4 cm, 5.1 cm, 0.3 cm and 2.6 cm of rain.

**a** What was the total rainfall for the 5 days in centimetres?

**b** How much is this to the nearest $\frac{1}{4}$ inch?

**c** The school weather station recorded exactly $1\frac{1}{2}$ inches of rainfall.

Which child had the most accurate rain gauge?

Josh 3.5 cm    Kay 3.8 cm    Mansi 3.4 cm    Nadim 3.6 cm

**7** In the fourth week, Monday had 1.2 cm of rain, Tuesday $\frac{3}{8}$ inch, Wednesday 2.4 cm, Thursday $\frac{7}{8}$ inch and Friday 2.5 cm.

**a** Which day did it rain the most?

**b** Which day did it rain the least?

**c** What was the total rainfall in centimetres?

**d** What was the total rainfall in inches?

**8** The average rainfall for the fifth week was $\frac{3}{4}$ inch of rain over the 5 days.
Rainfall on Monday was 1.1 cm below average, on Tuesday 0.5 cm above average, on Wednesday 1.6 cm above average and on Thursday 1.0 cm below average.

**a** Give the total rainfall in centimetres for week 5.

**b** Work out the rainfall in inches each day that week including Friday.

**9** A bow is made from 6 inches of ribbon.

How many bows can be made from 3 m of ribbon?

**10** There are 2.54 cm to 1 inch. 1 yard is 36 inches.

About how many centimetres are there in 1 yard?

| **Key idea** | You need to choose the right scale to measure in metric or imperial units. |