

Maths Level 1

Chapter 4

Working with measures

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Maths Level 1

Carol Roberts

Draft for pilot centres

Chapter 1: Working with Whole Numbers

Chapter 2: Working with Fractions, Decimals & Percentages

Chapter 3: Working with Ratio, Proportion and Formulae

Chapter 4: Working with Measures

Chapter 5: Working with Shape & Space

Chapter 6: Working with Handling Data

Chapter 7: Working with Probability

Chapter 8: Test preparation & progress track

How to use the Functional mathematics materials

The skills pages enable learners to develop the skills that are outlined in the QCA Functional Skills Standards for mathematics. Within each section, the units provide both a summary of key learning points in the *Learn the skill* text, and the opportunity for learners to develop skills using the *Try the skill* activities. The *Remember what you have learned* units at the end of each section enable learners to consolidate their grasp of the skills covered within the section.

All Functional Skills standards are covered in a clear and direct way using engaging accompanying texts, while at the same time familiarising learners with the kinds of approaches and questions that reflect the Edexcel Functional Skills SAMs (see <http://developments.edexcel.org.uk/fs/> under 'assessment').

The *Teacher's Notes* suggest one-to-one, small-group and whole-group activities to facilitate learning of the skills, with the aim of engaging all the learners in the learning process through discussion and social interaction.

Common misconceptions for each unit are addressed, with suggestions for how these can be overcome.

One important aspect of Functional mathematics teaching is to ensure that learners develop the necessary process skills of *representing, analysing and interpreting*. At Level 1, learners should select the methods and

procedures and adopt an organised approach to the task. The teacher may provide guidance, but learners should make their own decisions about finding the solutions to the task.

The inclusion of *Apply the skills* in the *Teacher's Notes* for each section, aims to provide real-life scenarios to encourage application of the skills that have been practised. To make the most of them, talk through how the tasks require the use of the skills developed within the section. The tasks can be undertaken as small-group activities so that the findings from each group can be compared and discussed in a whole-group activity. The scenarios can be extended and developed according to the abilities and needs of the learners. As part of the discussion, learners should identify other real-life situations where the skills may be useful.

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G Working with measures

You should already know how to:

- ✓ add and subtract decimals
- ✓ read, measure and record time
- ✓ read, measure and compare lengths, weights and capacities, using appropriate metric units
- ✓ read scales to the nearest division.

By the end of this section you will know how to:

- ▶ calculate with money
- ▶ solve problems involving time, including reading timetables
- ▶ measure temperature
- ▶ convert and calculate with metric units of length, weight and capacity
- ▶ use mileage charts.

1 Calculating with money



Learn the skill

Adding and subtracting with money

Example 1: Lekitta buys a bag of crisps costing 57p, a chewy sweet for 5p and a large bar of chocolate for £1.33. How much change does she get from five pounds?

You need to find the total amount she spent first *by adding*.

$$\begin{array}{r} \text{£}0.57 \\ \text{£}0.05 \\ \underline{\text{£}1.33 +} \\ \text{£}1.93 \end{array}$$

adding using traditional method

Now work out how much change she gets by subtracting this amount from five pounds.

Counting up from £1.93 to £2.00 gives £0.07.

Counting up from £2.00 to £5.00 gives £3.00.

$$\text{£}0.07 + \text{£}3.00 = \text{£}3.07$$

Answer: £3.07

Tip

Convert the amounts given in pence into pounds first.

Remember

5p is written as £0.05 in pounds, not £0.5 or £0.50.

Remember

This example uses the 'Counting up' method. You can use any method to add or subtract that suits you.

Multiplying with money

Example 2: Alice earns £5.30 an hour. How much does she earn in five hours?

You need to multiply £5.30 by 5.

$$\begin{array}{r} \text{£5.30} \\ \times 5 \\ \hline \text{£26.50} \end{array}$$

multiplying using traditional method

Tip

When you multiply an amount of money by a whole number, keep the decimal point in the same position in the answer.

Answer: £26.50

Dividing with money

Example 3: Four friends split the cost of a meal equally. If the bill for the meal comes to £49.52, how much do they each pay?

$$\begin{array}{r} 12.38 \\ 4 \sqrt{49.152} \\ \hline \end{array}$$

Answer: £12.38



Try the skill

1. Work out the answers to:
a £32.04 + 79p **b** £20 – £3.40
c £2.05 × 8 **d** £45.06 ÷ 3
2. The sign shows today's bargains at a local supermarket. A customer buys one roast chicken and two meat pies.
a How much does the customer pay?

b The same customer pays with a ten-pound note. How much change should he receive?

3. It costs £3.75 for adults to swim at a local pool. How much will it cost five adults to swim?
4. Six friends go out for a meal and the bill comes to £112.32. If they split the bill equally, how much does each one pay?

Today's special offer

Cornish pasties	69p
Meat pies	75p
Roast chickens	£3.75

Multiplying and dividing amounts by multiples of ten



To multiply a decimal amount by 10 or 100, move all the digits one or two places to the left.



To divide a decimal amount by 10 or 100, move all the digits one or two places to the right.

Example 4: Work out **a** $\text{£}2.45 \times 10$ **b** $\text{£}65.00 \div 100$

a $\text{£}2.45 \times 10 =$

T	U	.	t	h
2	4	.	5	0
2	4	.	5	0

Answer: £24.50

b $\text{£}65.00 \div 100 =$

T	U	.	t	h
6	5	.	2	
6	5	.	2	
0	.	6	5	

Answer: £0.65

Tip

Multiplying a number by 10 or 100 makes it 10 or 100 times bigger. This is why all the digits move to the left: the place value of each digit increases.

You can break a problem into separate calculations to make it easier.

Example 5: Calculate £12.50 \times 30.

As $30 = 3 \times 10$, so $\text{£}12.50 \times 30 = \text{£}12.50 \times 3 \times 10$.

First, multiply £12.50 by 3: $\text{£}12.50 \times 3 = \text{£}37.50$

Then, multiply the result by 10: $\text{£}37.50 \times 10 = \text{£}375.00$

Answer: £375.00

 Try the skill

1. Ring the correct answer.
a £1.32 × 10 **A** £13.20 **B** £132.00
b £0.06 × 100 **A** £0.60 **B** £6.00
c 100 × 5.4 pence **A** £5.40 **B** £54.00
2. A farm worker is paid £6.90 an hour. How much is she paid for working ten hours?

3. Electricity costs 12.42 pence per unit. How much does it cost, in pounds, for 100 units of electricity?

4. Ring the correct answer.
a £50.20 ÷ 10 **A** £5.02 **B** £5.20
b £0.16 ÷ 100 **A** £0.16 **B** £0.016
5. Malachi has ten weeks to save up for a trip costing £159. If he wants to save the same amount each week, how much should he save each week?
6. Use any method to work these out, but do not use a calculator.
a £5.40 × 40 **b** £2.15 × 30

7. An office worker earns £8.70 per hour and works for 40 hours. How much does he earn?

2 Time



Learn the skill

Using times and dates

You need to know the units for time and the connections between them.

seconds	minutes	hours	days
60 seconds = 1 minute	60 minutes = 1 hour	24 hours = 1 day	7 days = 1 week 365 days = 1 year between 28 and 31 days = 1 month <i>it varies!</i>
weeks	months	years	
52 weeks = 1 year 4 and a bit weeks = 1 month <i>it varies!</i>	12 months = 1 year	100 years = 1 century	

Example 1: A man is sentenced to 28 days in prison. How many weeks is this?

You need to divide 28 by 7.

$$28 \div 7 = 4$$

Answer: 4 weeks

Example 2: How many weeks are there in six months?

The most common error here is to assume a month is the same as 4 weeks.

There are 12 months in 1 year, so 6 months is the same as $\frac{1}{2}$ a year.

1 year = 52 weeks, so $\frac{1}{2}$ a year = 26 weeks.

Answer: 26 weeks.

Remember

A month is not the same as 4 weeks! This rhyme might help you remember.

'30 days in September
April, June and November;
The rest have 31, except
February, which has 28 days clear

And 29 in each leap year.'

Tip

Americans tend to write the year first, the month second and the day last: e.g.

2008-02-14

Be very careful when the day is a number less than 12!

Common date formats

There are many ways in which to write the date.

For example, the long way of writing the date of St. Valentines date is **14th February 2008**. A shorter way to write this date could be either of the following:

14/02/2008 or 14/02/08 ie day/month/year

Example 3: A patient sees a doctor on 1st April 2008. She needs a follow-up appointment exactly 3 weeks later. On what date is the follow-up appointment?

Using the calendar, you can see that 01/04/08 is on a Tuesday. Following this column down to cover three weeks gives us a new appointment date of 22/04/08.

Answer: 22nd April 2008.

Calendar April 2008						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Try the skill

1. How many weeks is the same as 63 days?
2. How many weeks are there in $2\frac{1}{2}$ years?
3. Write down 25th March 2008 in a shorter date format.
4. Theodore Roosevelt was born in 1858. How many centuries ago is this (taking this year as 2008)?
5. Tim has 60 days to pay his parking fine. How many weeks and days is this?
6. One recycled glass bottle saves enough energy to power a washing machine for 10 minutes. How many recycled glass bottles will it take to power a washing machine for an hour?
7. Here is the calendar for June 2008. A patient has made medical appointments on the first Friday and the last Friday of this month. On what dates are his two appointments? Write your answers using short date format.

Calendar June 2008						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

8. Today's date is 05/08/08. You have arranged to meet your friend two weeks on Saturday. What is the date two weeks on Saturday?

Calendar August 2008						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31



Learn the skill

Working in 12-hour and 24-hour time

These are both ways of showing twenty past three in the afternoon:



This is 12-hour time or clock time

15:20



This is 24-hour time

To convert from 12-hour time to 24-hour time:

- ▶ leave morning (am) times the same
- ▶ add 12 to afternoon (pm) times.

$$3\text{pm} \rightarrow = 3 + 12 = 15:00$$

$$7\text{pm} \rightarrow = 7 + 12 = 19:00$$

Tip

In the 24-hour clock the day runs from midnight to midnight and is divided into 24 hours, numbered from 0 to 23.

$$17:25 = 5:25\text{pm} (17 - 12 = 5)$$

Tip

To convert from 24-hour clock, subtract 12 from times after 13:00:

$$20:00 \rightarrow - 12 = 8\text{pm}$$

$$17:00 \rightarrow - 12 = 5\text{pm}$$

Timetables can be used to plan journeys. You can use the timetable to work out what time you need to leave.

Example 1: Here is a timetable for trains travelling between Manchester Piccadilly and London Euston stations.

- What time does the 10:32 train from Stockport arrive at London Euston, in standard clock time?
- A man is planning to catch a train from Macclesfield to London Euston. He needs to arrive in London at 2:30pm. He wants to leave Macclesfield as late as possible. Which train should he catch?

	Manchester Piccadilly	1023	1123	1223	1323
Stockport	→	1032	1132	1232	1332
Macclesfield	→	1052	1152	1252	1352
Stoke-on-Trent		1112	1212	1312	1412
Milton Keynes		1220		1423	
Watford Junction			1340		1539
London Euston		1303	1403	1503	1603

- First find the 10:32 train from Stockport. Then read down until you find the time that lines up with London Euston: 13:03. Convert this to clock time: 1:03pm.

Answer: 1:03pm

- Convert to 24-hour time: 2:30pm is 14:30. He must arrive on the train that arrives at 14:03. Read up the column to find the time this train leaves Macclesfield: 11:52.

Answer: 11:52

Note

There are no colons in the timetable. Sometimes 13:23 is written as 1323 to save space. This is acceptable, but 13.23 is definitely incorrect (the decimal point confuses time with decimals).

Tip

Some boxes in the timetable are blank because the train is not scheduled to stop there.



Try the skill

1. The train timetable shows train times for the journey between London Liverpool Street and Silver Street.
- a At what time does the 06:52 from Cambridge Heath arrive at Seven Sisters?
-
- b What is the latest train you can catch from Hackney Downs in order to arrive at Silver Street by 8:00am?
-
- c What is the latest train you can catch from London Liverpool Street in order to arrive at Seven Sisters by quarter past seven in the morning?
-

London Liverpool Street	0615	0628	0641	0654	0707
Cambridge Heath	0626	0639	0652	0705	0718
Hackney Downs	0632	0645	0658	0711	0724
Stoke Newington	0643	0656	0709	0722	0735
Seven Sisters	0657	0710	0723	0736	0749
Silver Street	0719	0732	0745	0758	0811

2. This timetable shows times of trains between Bournemouth and Edinburgh.
- a A woman wants to take a train from Bournemouth to Edinburgh. She leaves Bournemouth at ten to eight in the morning. What time will she arrive in Edinburgh?
-
- b A man needs to arrive in Glasgow by three o'clock in the afternoon. What time should he catch a train in Birmingham to do this?
-

Bournemouth	0550	0620	0750	0915
Birmingham	1018	1112	1218	1343
Glasgow	1443	1513	1643	1818
Edinburgh	1517	1643	1831	1948

3 Calculating with time



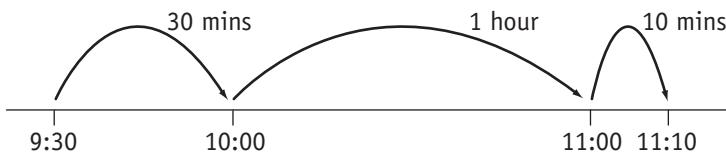
Learn the skill

Adding and subtracting with time

You need to be able to work out how long something takes.
A timeline can help.

Example 1: A driver left central London at 9:30am and arrived in Oxford at 11:10am. How long did his journey take?

Sketch a timeline:



Count on from 9:30 to 10:00: 30 minutes

Between 10:00 and 11:00: 1 hour

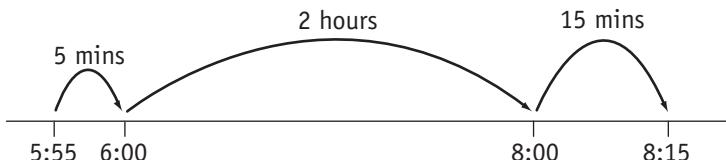
Count on from 11:00 to 11:10: 10 minutes

Add the jumps: 30 minutes + 1 hour + 10 minutes
= 1 hour 40 minutes

Answer: 1 hour 40 minutes

Example 2: A chef knows it will take two hours and twenty minutes to prepare and cook an evening meal. He starts at 5:55pm. When will the meal be ready to serve?

Sketch a timeline:



$$5:55 + 2 \text{ hours} = 7:55$$

$$7:55 + 5 \text{ mins} = 8:00$$

$$8:00 + 15 \text{ mins} = 8:15$$

Answer: 8:15pm



Try the skill

- Work out how much time has passed between each pair of start and stop times.

Start	Stop	
a 9:10am	9:30am	
b 8:15pm	10:25pm	
c 5:05am	11:40pm	
d 10:03am	12:00	

2. Three friends went to a concert. They left home at 5:45pm and arrived at the concert venue at 7:25pm. How long did the journey take them?
-

3. A video of a film starts at ten past seven in the evening and finishes later that evening at five to nine. How long does the film last?
-

4. The table gives start and stop times, using the 24-hour clock. Work out how much time has passed in each case.

	Start	Stop	
a	10:05	12:15	
b	11:20	13:45	
c	08:40	14:10	
d	23:30	02:15	

5. A television programme starts at 19:45 and finishes at 22:10. How long is the programme, in hours and minutes?
-

6. A nurse starts her shift at 18:45 and finishes at 00:00. How long did her shift last?
-

7. A train timetable shows that a train leaving Manchester Piccadilly at 14:40 is due to arrive at London Euston at 17:15. How long will this journey take?
-

8. A family plan to catch a ferry and need to book in at 12:02am. The journey to the ferry port will take 2 hours 45 minutes. What time should they leave home in order to get to the ferry port on time?
-

Remember

19:45 is in 24-hour time.
This is the same as 7:45pm.

Remember

Midnight is the same as 00:00
and noon or midday is 12:00.

How to convert from minutes to hours

Divide the number of minutes by **60** because there are 60 minutes in 1 hour.

Example 1: convert 80 minutes into **a)** hours and minutes **b)** hours

a) $80 \div 60 = 1$ with **20 left over**

Answer: 1 hour 20 minutes

b) $80 \div 60 = 1.333\dots$

Answer: 1.333... hours

How to convert from hours to minutes

Multiply the number of hours by **60** because there are 60 minutes in 1 hour.

Example 2: convert 0.6 hours into minutes

$0.6 \times 60 = 36$

Answer: 36 minutes

Try the skill

1. Convert the following times into hours
 - a** 90 minutes **b** 150 minutes **c** 75 minutes

2. Convert the following times into hours and minutes
 - a** 210 minutes **b** 70 minutes **c** 100 minutes

3. Convert the following times into minutes
 - a** 0.5 hours **b** 0.3 hours **c** 0.8 hours

4. **Challenge question!**

Jonathon drove to a local supermarket at an average speed of 50 kilometres per hour. The supermarket was a distance of 20 kilometres away.

How long did it take him to drive to the supermarket:

- a** in hours?
- b** in minutes?

Tip

Time = distance ÷ speed

4 Temperature



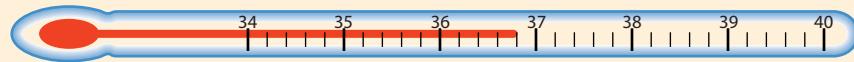
Learn the skill

Temperature is a measure of how hot or cold something is.

It is usually measured in **degrees Celsius**, although **degrees Fahrenheit** are still sometimes used.

To read a temperature scale, first work out what the individual marks on the scale represent.

Example 1:



Betty measures her body temperature. What temperature does the thermometer show?

There are 5 divisions between 36°C and 37°C , so **divide** 1°C by 5.

$1 \div 5 = 0.2$, so each division is worth 0.2°C . The mercury is at 4 divisions above 36°C .

$$36 + 0.2 + 0.2 + 0.2 + 0.2 = 36.8$$

Answer: 36.8°C

36.8°C is the human body's normal temperature.

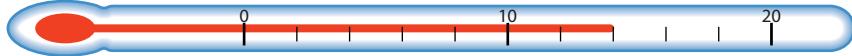
0°C is the temperature of water as it is about to freeze.

100°C is the temperature of boiling water.

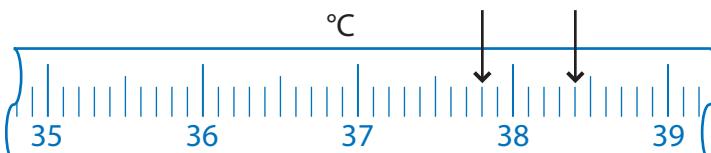


Try the skill

1. What is the temperature marked on this thermometer?



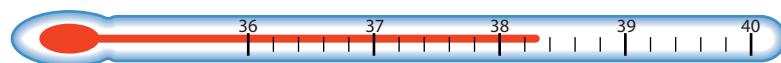
2. What temperatures are the two arrows pointing at?



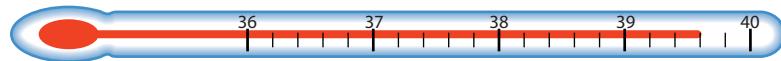
3. Helena and Vikki are both off work with flu.
- If they are feeling hot, estimate what their temperatures might be.

- Their actual temperatures are shown on the thermometers.

Helena



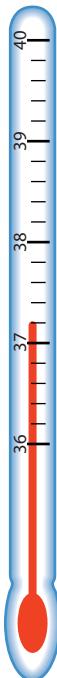
Vikki



What are their temperatures? Helena _____
Vikki _____

How many degrees above normal body temperature are these temperatures?

4. What is the temperature marked on this thermometer?



Remember

Normal body temperature is
36.8 °C

5 Length, weight and capacity



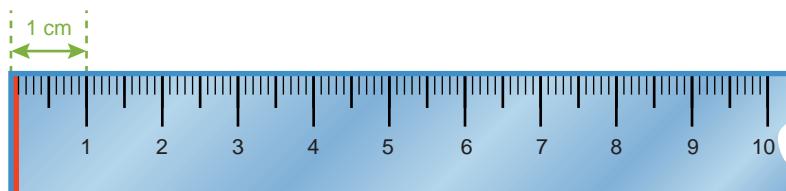
Learn the skill

Understanding metric units of length

Common metric units for length are **millimetres**, **centimetres**, **metres** and **kilometres**.

The millimetre is the smallest unit and the kilometre is the largest unit.

A millimetre is very small; the size of 1 millimetre is shown on the ruler.



$$1 \text{ centimetre} = 10 \text{ millimetres}$$

1 centimetre is also shown on the ruler.

$$1 \text{ metre} = 100 \text{ centimetres}$$

You can estimate the size of a metre by stretching out one arm horizontally. 1 metre is approximately the same as the distance between the end of the fingertips on the outstretched arm and the opposite shoulder.

$$1 \text{ kilometre} = 1000 \text{ metres}$$

Remember

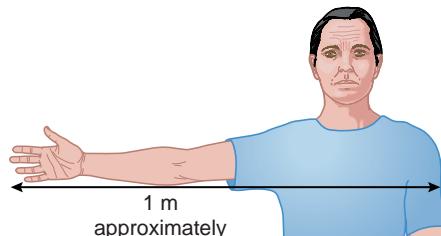
Abbreviations for length metric units are:

mm millimetres

cm centimetres

m metres

km kilometres



Understanding metric units of weight

Common metric units for weight are **grams** and **kilograms**.

A normal bag of crisps weighs 35 grams.



$$1 \text{ kilogram} = 1000 \text{ grams}$$

A kilogram is the weight of two tins of baked beans.



CAPACITY

Common metric units for capacity are **millilitres** and **litres**.

A millilitre is very small.

A normal spoonful of medicine is about 5 millilitres.



$$1 \text{ litre} = 1000 \text{ millilitres}$$

The capacity of two pint bottles of milk is roughly the same as one litre.



Remember

Abbreviations for weight units are:

g grams

kg kilograms

Remember

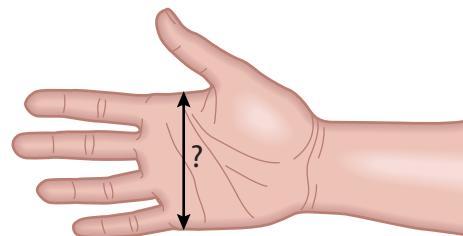
Abbreviations for capacity units are:

ml litres

l litres

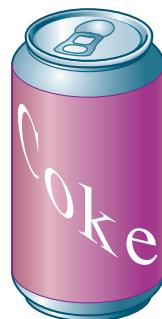
Try the skill

1. Estimate the width of your hand using centimetres.
-



2. Estimate the height of a kitchen using metres.
-

3. Estimate the amount of liquid in a can of fizzy pop using litres.
-



4. Estimate the weight of a new born baby in kilograms.
-

5. Billie is taking two spoonfuls of cough medicine twice a day. Approximately how many millilitres of cough medicine is this per day?
-



Learn the skill

You should know the metric units and how to convert between them.

- ▶ To change from big units to small units, you **multiply**.
- ▶ To change from small units to big units, you **divide**.

Converting length units

▶ $10 \text{ mm} = 1 \text{ cm}$

▶ $100 \text{ cm} = 1 \text{ m}$

Example 1: Change:

a 560 mm to cm. b 3.2 m to cm.

- a You change from a smaller unit (mm) to a bigger unit (cm) so you divide.
 $560 \div 10 = 56$

Answer: 56 cm

- b You change from a bigger unit (m) to a smaller unit (cm) so you multiply.
 $3.2 \times 100 = 320$

Answer: 320 cm

Tip

To change millimetres to centimetres, divide by 10.
To change metres to centimetres, multiply by 100.

Converting weight units

► **1000 g = 1 kg**

Example 2: Which is the lighter weight, 4.5 kg or 4 kg 50 g?

First, change both amounts so they are in grams:

$$4.5 \times 1000 = 4500 \text{ so } 4.5 \text{ kg} = 4500 \text{ g}$$

$$4 \text{ kg} = 4000 \text{ g} \text{ so } 4 \text{ kg } 50 \text{ g} = 4050 \text{ g}$$

4500 g is more than 4050 g.

Answer: 4 kg 50 g is lighter.

Tip

To change kilograms to grams, multiply by 1000.

To change grams to kilograms, divide by 1000.

Converting capacity units

The metric units of capacity are litres (l) and millilitres (ml).

► **1000 ml = 1 l**

Example 3: Three bottles contain 75 ml, 750 ml and 1.75 litres of juice. Can all the juice be mixed in a 2.5 litre jug?

First, change the amount in litres into millilitres:

$$1.75 \times 1000 = 1750 \text{ so } 1.75 \text{ litres} = 1750 \text{ ml}$$

Now add the three amounts: $75 + 750 + 1750 = 2575 \text{ ml}$

2575 ml = 2.575 litres, which is more than 2.5 litres.

Answer: The juice cannot all be mixed in a 2.5 litre jug.

Tip

To convert from litres to millilitres, multiply by 1000.

To convert from millilitres to litres, divide by 1000.

Try the skill

1. Convert these lengths from metres into centimetres.

- a 5.4 m b 0.25 m c 2.25 m

Tip

Check to make sure your answer makes sense:

5.4 m is about 5 m

5m is 500 cm

2. Convert these lengths from centimetres into metres.

- a 250 cm b 65 cm c 3 cm

3. Convert these lengths from centimetres into millimetres.

- a 4 cm b 2.5 cm c 0.2 cm

4. Convert these lengths from millimetres into centimetres.

- a 50 mm b 63 mm c 3 mm

5. A tiling pattern uses three small tiles. The lengths of the tiles are 5.3 cm, 32 mm and 19 mm. What is their total length, in centimetres?

Tip

Look at the units in the answer. Make sure the quantities are all in these units before you calculate.

6. Put these lengths in order of size, starting with the smallest first:

7.2cm 71mm 0.07m 68mm

7. Convert the following from kilograms into grams.

a 5kg b 4.5kg c 2.25kg

8. Convert these weights from grams into kilograms.

a 5000g b 600g c 350g

9. A farmer sells three lambs. Their weights are 86.7kg, 80kg and 79kg 75g. What is their total weight?
-

10. Charlotte and Hannah weigh 43kg 750g and 34.5kg. How much heavier is Charlotte?
-

11. Convert these capacities into millilitres.

a 3 litres b 2.6 litres c 4.75 litres

12. Convert these capacities into litres.

a 2000ml b 3500ml c 6750ml

13. Put these capacities in order, starting with the smallest.

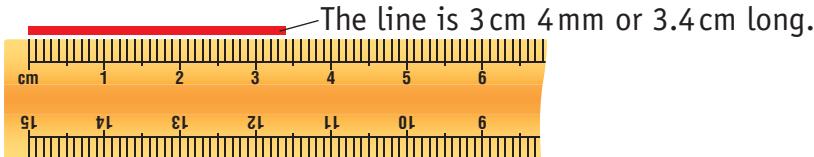
750ml 0.075 litres 0.5 litres

Measuring in metric units

A ruler is a scale for measuring length.

A metric ruler is marked in millimetres and centimetres.

The line ends between 3 cm and 4 cm, at the fourth small mark.



Tip

There are 10 mm in 1 cm, so each small mark on the ruler counts as 1 mm.

To read a scale you need to know what each mark is worth.

Example 2: What is the measurement indicated by the arrow?

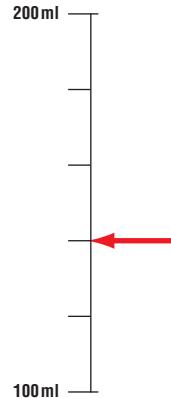
This scale shows 100 ml to 200 ml.

There are five divisions between 100 ml and 200 ml.

$100 \text{ ml} \div 5 = 20 \text{ ml}$, so each division is worth 20 ml.

The arrow is pointing at the second mark: $100 + 40 = 140 \text{ ml}$

Answer: 140 ml



Try the skill

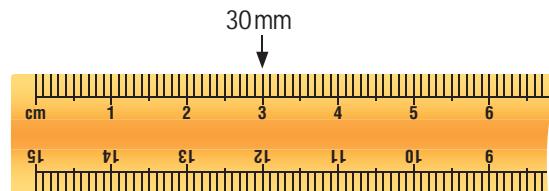
Use metric units for all these questions.

1. What unit would you use to measure:

- a the amount of milk in a small container?
- b the weight of a suitcase?
- c your height?
- d the amount in a tin?
- e rope needed for climbing?
- f the distance between two towns?

2. Mark each of these measurements with an arrow on the ruler. The first one is done for you.

- a 30mm b 45mm c 3mm
- d 2cm e 1.3cm f 4.8cm



4. These scales show weights, in kilograms.

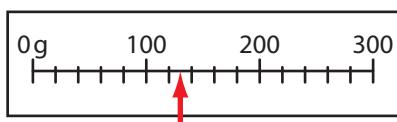
What weights are the arrows pointing to:

- a in kg
- b in kg and g?

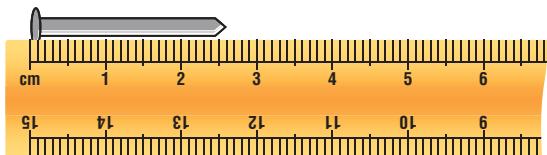


5. This postal scale measures the weights of letters, in grams.

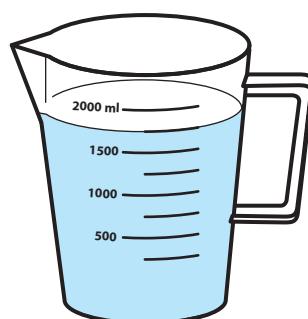
What weight does the pointer show?



6. How long is this nail?



7. How much liquid is there in this measuring jug?



6 Mileage charts



Learn the skill

Mileage charts show the distance in miles between cities. The figures in the chart are the distances between two towns, given in miles.

Example 2: Use the mileage chart to work out the distance from Birmingham to Exeter.

First, find the column for Birmingham.

Then read down this column to the row for Exeter.

The value in this cell shows the distance between these cities.

	Birmingham			
298		Edinburgh		
164			Exeter	
102	224	454		Liverpool

Answer: 164 miles



Try the skill

The mileage chart shows distances between towns in the West country.

Barnstaple				
		Penzance		
Bristol		Exeter		
100				
55	84			
108	194	110		
67	125	44	77	Plymouth
50	51	34	144	Taunton

- How far is Penzance from Exeter?
- How far is Taunton from Barnstaple?
- If you drive from Bristol to Taunton and then from Taunton to Penzance, how far have you driven?

7 Remember what you have learned



First complete this

- ▶ To change from big units to small units, you _____.
- ▶ To change from small units to big units, you _____.
- ▶ $10 \text{ mm} = 1 \text{ } \underline{\hspace{1cm}}$
- ▶ $100 \text{ cm} = 1 \text{ } \underline{\hspace{1cm}}$
- ▶ $1000 \text{ g} = 1 \text{ } \underline{\hspace{1cm}}$
- ▶ $1000 \text{ ml} = 1 \text{ } \underline{\hspace{1cm}}$
- ▶ 23:58 in 24-hour time is the same as _____ in 12-hour time
- ▶ Normal body temperature is _____ °C

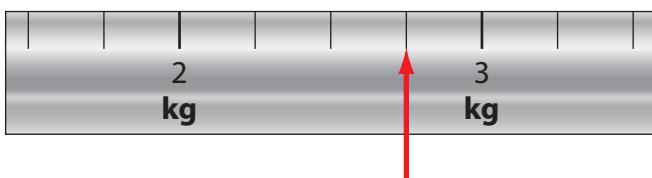


Practise the skill

1. A film starts at 20:50 and finishes at 22:05.
How long, in hours and minutes, does the film last?

- A 1 hour 15 minutes
B 1 hour 45 minutes
C 1 hour 55 minutes
D 2 hours 15 minutes

2. What weight is the arrow indicating?



- A 2 kg 7.5 g
B 2 kg 750 g
C 3 kg
D 2 kg 75 g

3. The table shows the weights of four parcels ready for posting.

2kg 500g	1kg 250g	750g	1kg 50g
----------	----------	------	---------

- A 4 kg 550 g
B 6 kg
C 5 kg 550 g
D 5 kg

4. The mileage chart shows the distances in miles between different cities.

How far is Manchester from Exeter?

Edinburgh			
454	Exeter		
224	258	Liverpool	
219	246	35	Manchester

- A 454 miles
B 258 miles
C 246 miles
D 35 miles

5. Lyndsey pays for council tax by direct debit spread over ten months. The amount per month is £72.05.

How much does she pay in total over the ten months?

- A £720.5
 B £720.50
 C £725.00
 D £7205

6. The length of an average sized bathroom is

- A 35m
 B 3.5m
 C 0.35m
 D 0.035m

7. A woman has an interview at 2pm. She needs 1 hour 45 minutes travel time.

What is the latest time she could leave home?

- A 11:15am
 B 11:55am
 C 12:15pm
 D 12:45pm

8. Which units are likely to be used to measure the amount of medicine on a spoon?

- A square cm
 B litres
 C grams
 D millilitres

9. The timetable shows the times of trains from Manchester Piccadilly to Chester.

Manchester Piccadilly	1333	1358	1428	1445
Chester	1428	1453	1523	1540

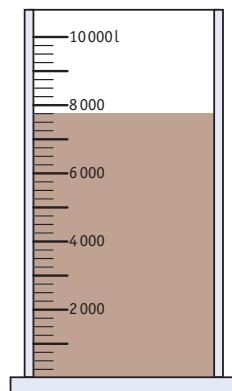
A man arrives at Manchester Piccadilly station at a quarter to two in the afternoon and catches the next train.

What time will he arrive in Chester?

- A 1428
 B 1453
 C 1523
 D 1540

10. The diagram shows the amount of fuel in a storage tank.

How much fuel is there in the tank?



- A 7500 litres
 B 8000 litres
 C 7750 litres
 D 6750 litres