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Maths

Entry Level 3, Book 10
GLH 3
Measure

Name	
Number	
Location	
Date Issued	

E3

Introduction

This booklet is part of your learning programme.

Remember to read carefully and try your best. Don't worry if you get stuck, make a note on the booklet and move on to the next task. Try coming back to it later, see if you can work it out then.

If you are still stuck, remember to make a note at the end of the booklet.

Throughout the booklet, you will see that some words have been printed **blue and bold**. You will find more detailed explanations of each of these words in the 'Glossary' at the back of the booklet.

Glossary is a list of often difficult or specialised words with their definitions, placed at the back of a book. You may also know this as a word bank.

By working through this booklet, you will become confident using different units of measure for weight, length and capacity. Being confident in using measurements is a useful skill in both our daily lives and employment.

What Do the Symbols in this Booklet Mean?

Where you see this symbol, there is a skills practice or activity for you to complete.

Information, explanations and case studies are shown with this icon.

This shows you there is a glossary or word bank with the meaning and correct spelling of key words.

This icon shows where to write comments for your tutor to read.

This symbol lets you know there are some key points to remember.

The Big Picture

You are studying Entry Level 3 Maths, which is taught over 55 Guided Learning Hours (GLH).

The programme covers the units listed below. The unit that you're working on today is ticked.

	Booklet	GLH	
1	Place Value and Sequencing		
2	Addition and Subtraction		
3	Multiplication		
4	Division		
5	Fractions		
6	Decimals and Money		
7	Rounding		
8	Time		
9	Shape and Space		
10	**Measure**	3	✓
11	Handling Data		
12	Recap & Summary		

Outcomes

These are the outcomes you can achieve by completing the learning activities in this booklet.

1 Use and compare measurements of length, capacity, weight and temperature using metric or imperial units to the nearest labelled or unlabelled division.

2 Compare metric measurements of length including millimetres, centimetres, metres and kilometres.

3 Compare metric measurements of capacity including millilitres and litres.

4 Compare metric measurements of weight including grams and kilograms.

Recap

A **recap** is an effective way of helping you to remember and apply what you have learnt. If this is your first booklet, it may help you to think about what you know already about this subject. Can you answer the following questions?

What was the last booklet you completed?

Can you remember what you learnt about?

Can you remember three key points from the booklet?

1

2

3

Measuring

Why do we measure?

Measuring is important when doing tasks such as:

baking, building, carpentry, planning gardens, map-drawing, weighing yourself, etc.

We are going to look at 4 types of measurement.

They are weight, length, temperature and capacity.

- **Weight:** How heavy an object is
- **Length:** How long an object is
- **Temperature:** How hot or cold an object is
- **Capacity:** How much an object can hold

We will also look at two types of units of measurement. Here are some that you might come across and the **abbreviations** used for them.

Imperial	
Measurement	**Abbreviation**
Inches	in
Feet	ft
Yards	yd
Miles	mi
Pints	pt

Metric	
Measurement	**Abbreviation**
Millimetres	mm
Centimetres	cm
Metres	m
Kilometres	km
Millilitres	ml
Grams	g
Litres	l

- Imperial measurements date back many centuries. Some of these measurements are still used in the UK today.
- Metric measurements are a more modern method of measuring weight, length, temperature and capacity.
- It is important to add the unit of measurement to the end of any number so that we know what we're working in. This is because there is a difference in the units of measurement. For example, if you needed a kitchen unit that was 2 foot wide this would not be the same as 2 metres wide. If you ordered a 2 metre wide cupboard by mistake you would have a cupboard that was too big for the space. We will look at **conversions** some more later in this booklet.

Task 1

Using the words below, can you put the name of each measuring instrument under the correct picture?
One has been completed for you.

Weight

1.

2.

Capacity

3.

4.

Length

5.

6.

7.

Temperature

8. Mercury Thermometer

9.

10.

Oven thermometer	~~Mercury thermometer~~
Measuring jug	Electronic thermometer
Sewing tape measure	Bucket
Bathroom scales	Retractable tape measure
Kitchen scales	Measuring wheel

Decimalisation

In 1971, the UK changed its money system. The UK had to change because we used the imperial system and Europe used the metric system. By using the same system this meant that the UK was able to trade and do business better with businesses in Europe.

The change didn't just affect our money system. It also meant that the units we use for things such as length, capacity, weight and temperature changed too.

So, now, in the UK, we often use some metric measurements and some imperial measurements.

Examples:

- Our road signs have never changed and all distances to towns and cities are in miles (imperial). All speed signs are in miles per hour (imperial). In many other countries, distances are measured in kilometres (metric) with speed signs in kilometres per hour (metric).
- Some people give their height in feet and inches (imperial) but others give it in metres and centimetres (metric).
- Carpets are usually measured in metres or square metres (metric).
- Temperature is often talked about in **Celsius** (metric).

> When we use metric measures, we are counting in tens, hundreds and thousands so we need to recap how to multiply and divide by tens and hundreds so that you can compare between these measures.

Decimalisation

When you times numbers by 10, it is like moving the decimal point one place to the right.

Example:

- 2 x 10 moves the decimal point that would be after the 2 by one place, so the answer is 20.

When you times numbers by 100, it is like moving the decimal point two places to the right.

Example:

- 2 x 100 moves the decimal point that would be after the 2 by two places, so the answer is 200.

When you times numbers by 1000 it is like moving the decimal point three places to the right.

Example:

- 2 x 1000 moves the decimal point that would be after the 2 by three places, so the answer is 2000.

This table helps to show how the decimal place moves:

The number in the examples above is **2** (or we can say **2.0** which will help to show where the decimal point is)	2	.	0					
x by 10 Decimal point is moved **one** place to the right to make 20	2	0	.	0				
x by 100 Decimal point is moved **two** places to the right to make 200	2	0	0	.	0			
x by 1000 Decimal point is moved **three** places to the right to make 2000	2	0	0	0	.	0		

Decimalisation

Here are some examples:

Times numbers by 10

52 x 10 = 520   85 x 10 = 850   6 x 10 = 60

Times numbers by 100

9 x 100 = 900   10 x 100 = 1000   70 x 100 = 7000

Times numbers by 1000

9 x 1000 = 9000   10 x 1000 = 10000   5 x 1000 = 5000

Task 2

Now you have a try at completing these:

1. 50 x 10 =

2. 600 x 10 =

3. 70 x 1000 =

4. 5 x 1000 =
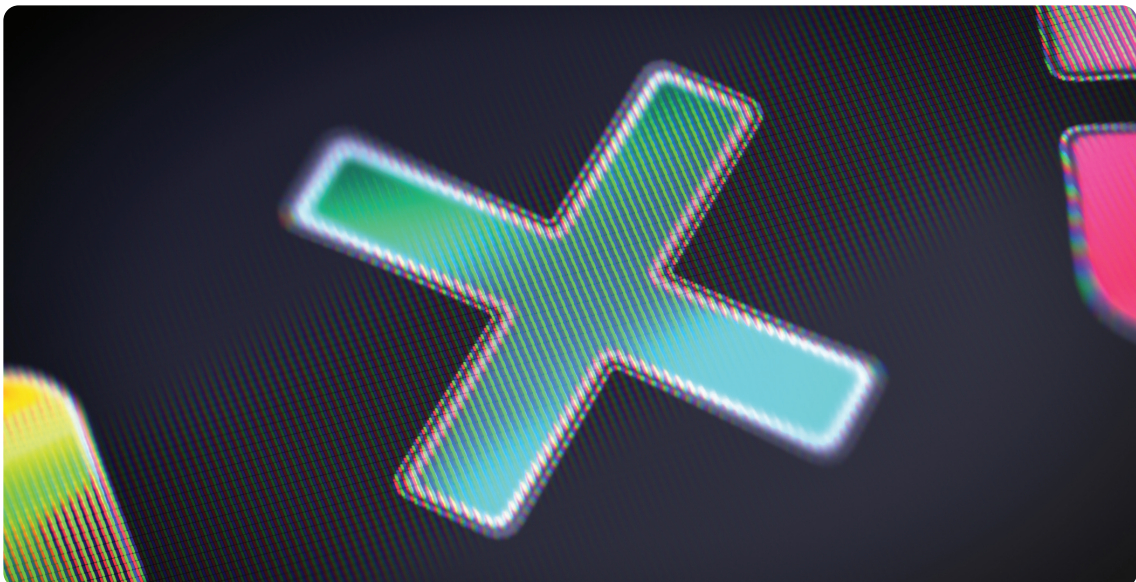
Decimalisation

When you divide (or share) numbers by 10, move the decimal point 1 place to the left.

200 ÷ 10 = 20   520 ÷ 10 = 52   850 ÷ 10 = 85

When you divide numbers by 100, move the decimal point 2 places to the left.

300 ÷ 100 = 3   900 ÷ 100 = 9   5500 ÷ 100 = 55

When you divide numbers by 1000, move the decimal point 3 places to the left.

3000 ÷ 1000 = 3   5000 ÷ 1000 = 5   8000 ÷ 1000 = 8
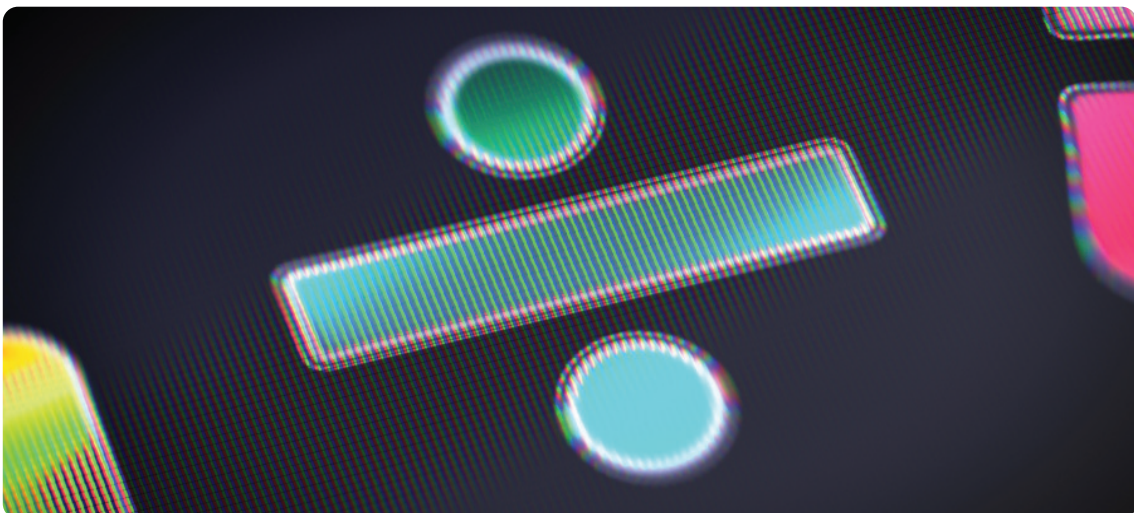
Task 3

Now you have a try at completing these:

1. 100 ÷ 10 =

2. 50 ÷ 10 =

3. 700 ÷ 100 =

4. 1000 ÷ 10 =

Recap

So far in this booklet we have identified:

The difference between metric and imperial measurements.	✔️
We have also re-capped on how to multiply and divide by 10, 100 and 1000.	✔️

We will now move onto comparing different measurements.

Converting Length

Here are some different measures of length and how they compare to each other.

Millimetres (mm)	10mm = 1cm	1000mm = 1m
Centimetres (cm)	100cm = 1m	
Metres (m)	1000m = 1km	

We use different measurements for different purposes.

- Millimetres are used to work out **accurate** lengths and sizes in small detailed work, such as creating design drawings and maps.
- Centimetres are used to work out slightly larger lengths. They are good to use in projects such as carpentry and decorating.
- Metres are useful measurements for bigger projects, such as garden projects and building work.
- Kilometres are used to show longer distances, such as how far away another town or city is.

To change (convert) centimetres into millimetres, we have to remember that **for every 1cm, there are 10mm**. This means that you have to multiply the measurements in centimetres by 10 to convert them to millimetres. Remember to use the symbols **mm** and **cm.** Here are a few examples:

- 2cm (x10) = **20mm**
- 3.5cm (x10) = **35mm**
- 60cm (x10) = **600mm**

Task 4

Try completing these. The first one has been done for you.

	Centimetres (cm)	Millimetres (mm)
1.	7cm	**70mm**
2.	2.5cm	
3.	80cm	
4.	25cm	
5.	61cm	
6.	2.2cm	

Converting Length

To change metres into centimetres, you have to remember that **for every 1m, there are 100cm**. This means that you have to multiply the measurements in metres by 100 to convert them to centimetres. Here are a couple of examples:

- 3m (x100) = **300cm**
- 9.5m (x100) = **950cm**
- 10m (x100) = **1000cm**

Remember to use the symbols **cm** and **m.**

Task 5

Try completing these (remember 0.5 is a half, or $\frac{1}{2}$).

The first one has been done for you.

	Metres (m)	Centimetres (cm)
1.	5m	**500cm**
2.	2.6m	
3.	4m	
4.	5.1m	
5.	0.5m	
6.	1.5m	

7. Which of these measurements is the longest?

8. Which of these measurements is the shortest?

Converting Length

To change (convert) millimetres into centimetres, you have to remember that **for every 1cm, there are 10mm** so you need to divide by 10 to convert them to cm. Here are a couple of examples:

- 210mm (÷10) = **21cm**
- 35mm (÷10) = **3.5cm**
- 600mm (÷10) = **60cm**

Remember to use the symbols **mm** and **cm.**

Task 6

Try completing these. The first one has been done for you.

	Millimetres (mm)	Centimetres (cm)
1.	50mm	**5cm**
2.	250mm	
3.	800mm	
4.	1000mm	
5.	610mm	
6.	55mm	

7. Which of these measurements is the longest?

8. Which of these measurements is the shortest?
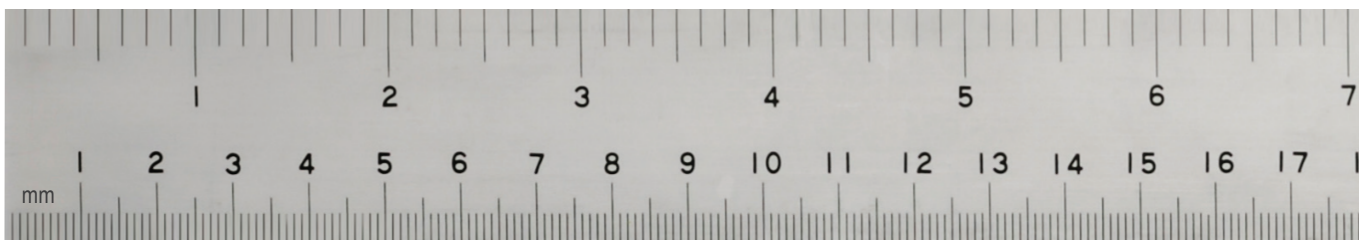
Converting Length

To change (convert) centimetres into metres, you have to remember that **for every 1m, there are 100cm** so you need to divide by 100 to convert to metres. Here are a couple of examples:

- 400cm (÷100) = **4m**
- 1000cm (÷100)= **10m**
- 600cm (÷100) = **6m**

Remember to use the symbols **cm** and **m.**

Task 7

Try completing these. The first one has been done for you.

	Centimetres (cm)	Metres (m)
1.	400cm	**4m**
2.	750cm	
3.	300cm	
4.	1000cm	
5.	615cm	
6.	505cm	

7. Which of these measurements is the longest?

8. Which of these measurements is the shortest?
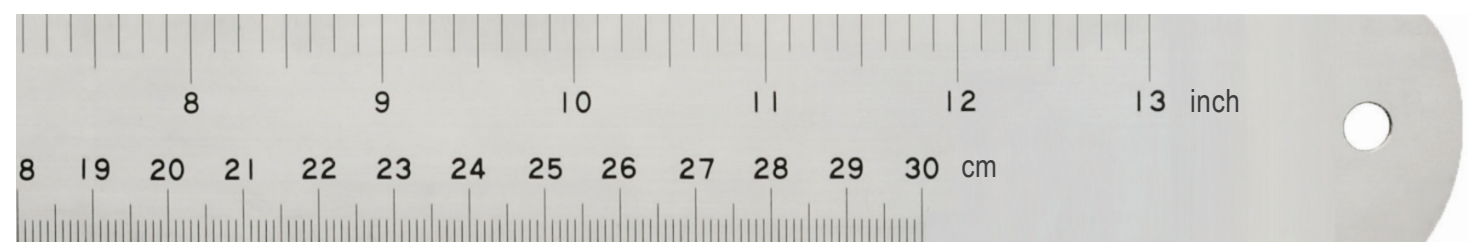
Notes

Notes

Let's keep going

Feedback

WWW (What Went Well)

EBI (Even Better If)

Next steps

Learner feedback (Please provide some feedback for your tutor following the comments that you have just made on your work.)

Stretch and Challenge Activity

Keenan wants to replace the fridge in his kitchen. There is a narrow gap that the fridge has to fit into. He has looked at the width of five different fridges:

Type A	Width 580mm, height 2000mm
Type B	Width 610mm, height 1800mm
Type C	Width 625mm, height 1850mm
Type D	Width 720mm, height 1600mm
Type E	Width 530mm, height 2200mm

He has measured the width of the gap and it is 62cm.
The maximum height is 2m.

Which fridges could Keenan fit into the gap?

Remember:

- 10mm =   1cm
- 100mm =   10cm
- 1000mm =   100cm, which is the same as:
- 1000mm =   1 metre

Answer:

The Metric Measurements of Weight

Here are some different measures of weight and how they compare to each other.

Grams (g)	1000g = 1kg
Kilograms (kg)	1kg = 1000g

- Grams are often used for smaller measurements, such as how much a bar of chocolate or a bag of crisps weighs.
- Kilograms are used for larger measurements, such as how heavy a bag of flour or a chair weighs.

To change kilograms into grams, you have to remember that **for every 1kg, there are 1000g**, so you need to multiply the kilograms by 1000 to convert them to grams. Here are a few examples:

- 2kg (x1000) = **2000g**
- 3.5kg (x1000) = **3500g**
- 0.5kg (x1000) = **500g**

Remember to use the symbols **g** and **kg.**

Task 9

Try completing these. The first one has been done for you.

	Kilograms (kg)	Grams (g)
1.	4kg	**4000g**
2.	7kg	
3.	3kg	
4.	1kg	
5.	6.5g	
6.	0.5g	

7. Which of these measurements is the heaviest?

8. Which of these measurements is the lightest?

The Metric Measurements of Weight

To change grams into kilograms, you have to remember that **for every 1kg, there are 1000g** so you need to divide by 1000 to convert grams to kilograms. Here are a few examples:

- 2000g (÷1000) = **2kg**
- 5000g (÷1000) = **5kg**
- 400 (÷1000) = **0.4kg**

Remember to use the symbols **g** and **kg.**

Task 10

Try completing these. The first one has been done for you.

	Grams (g)	Kilograms (kg)
1.	4000g	**4kg**
2.	7000g	
3.	3000g	
4.	500g	
5.	750g	
6.	5000g	

7. Which of these measurements is the heaviest?

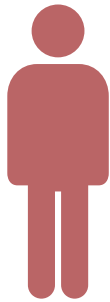**8.** Which of these measurements is the lightest?

Task
11

Can you match the weight to the item?

The first one has been completed for you.

3kg

100g

1kg

45g

77kg

The Metric Measurements of Capacity

These are the measures of capacity and how they compare to each other.

Millilitres (ml)	1000ml = 1l
Litre (l)	1l = 1000ml

- Millilitres can be used to work out small measurements, such as the correct amount of medicine.
- Litres can be used for larger measurements, such as bottles of cola, lemonade and water.

To change litres into millilitres, you have to remember that **for every 1l, there are 1000ml**. This means we multiply by 1000 to convert litres to millilitres. Here are a few examples:

- 3l (x1000) = **3000ml**
- 1l (x1000) = **1000ml**
- 1.2l (x1000) = **200ml**

Remember to use the symbols **ml** and **l.**

Task 12

Have a try at completing these. The first one has been done for you.

	Litres (l)	Millilitres (ml)
1.	1l	**1000ml**
2.	5l	
3.	2.5l	
4.	1.5l	
5.	0.6l	
6.	0.5l	

7. Which of these has the greatest capacity?

8. Which of these has the smallest capacity?

The Metric Measurements of Capacity

To change millilitres into litres, you have to remember that **for every 1l, there are 1000ml** so you need to divide by 1000 to convert millilitres to litres. Here are a few examples:

- 6000ml (÷1000) = **6l**
- 7000ml (÷1000) = **7l**
- 900ml (÷1000) = **0.9l**

Remember to use the symbols **l** and **ml**.

Task 13

Have a try at completing these. The first one has been done for you.

	Millilitres (ml)	Litres (l)
1.	8000ml	8l
2.	3000ml	
3.	4000ml	
4.	600ml	
5.	700ml	
6.	9000ml	

7. Which of these has the greatest capacity?

8. Which of these has the smallest capacity?

Stretch and Challenge

Depending on the amount, different types of measurements are better than others.

Millilitre (ml)   Litre (l)

Should you use ml or l to measure the following? For each question, explain why you have picked that measurement.

1. Bottle of milk:

2. Bucket of water:

3. Spoonful of medicine:

4. Can of cola:

5. Bathtub of water:

Temperature

Why is it important to measure temperatures? Some of the reasons are shown below:
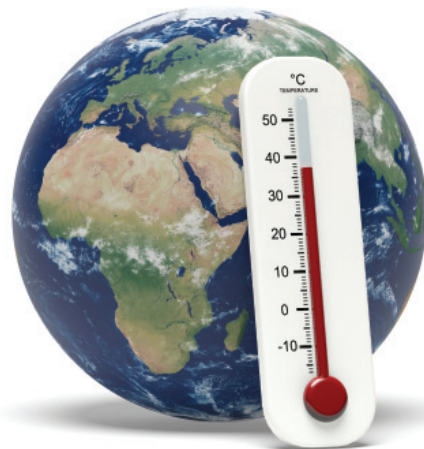

To cook food correctly and safely

To store food safely

To monitor illness

Global warming or climate change

Temperature

Temperature is measured in **Fahrenheit** (imperial) and Celsius (or centigrade) (metric). It is measured in degrees.

Celsius

The boiling point of water is 100°C (degrees Celsius or centigrade) and the freezing point of water is 0°C. Body temperature is around 37.5°C. Nice and easy to remember.

Fahrenheit

The boiling point of water is 212°F (degrees Fahrenheit) and the freezing point of water is 32°F. Body temperature is around 98°F. Not as easy to remember.

When cooking, you can use Celsius, Fahrenheit or gas mark to measure the temperature.

Here is a conversion table, which is useful when following recipes.

Celsius/centigrade	Fahrenheit	Gas mark
140	275	1
150	300	2
160	325	3
180	350	4
190	375	5
200	400	6
220	425	7
230	450	8

Skills Practice

Using the table on page 32, answer these questions:

1. Malik is following a recipe and has to cook his pie in the oven at gas mark 5. Unfortunately, his oven is only able to measure in degrees Fahrenheit. What should he set his oven at?

2. Karina has to bake a cake for 30 minutes at 180°C. What gas mark should she use?

Convert the following to kilograms (kg):

1. 5000g

2. 1000g

3. 500g

Convert the following to grams (g):

4. 5kg

5. 10kg

6. 0.2kg

Skills Practice

Task 17

A recipe states you need:

- 0.5kg of flour
- 400g of butter
- 3g of salt

Which of the ingredients is the heaviest?

Task 18

You buy three different sized packets of sweets, one 35g, one 0.5kg and the third 2.5kg.

1. Which pack of sweets is the lightest?

2. You eat 0.5kg of the sweets. How many kg of sweets do you have left?

Task 19

Circle the largest amount:

1.	1m	1km	1cm
2.	10m	200mm	100cm
3.	100m	1km	500cm
4.	1m	200cm	300mm

Glossary

Abbreviation	A shortened form of a word e.g Dr for Doctor.
Accurate	Exact or reliable.
Capacity	The amount something can hold – for example a bottle.
Celsius	A measurement of temperature at which the boiling point of water is 100°C (degrees Celsius or centigrade) and the freezing point of water is 0°C. Body temperature is around 37.5°C.
Conversion	Process of one thing changing to another.
Fahrenheit	A measurement of temperature at which the boiling point of water is 212°F (degrees Fahrenheit) and the freezing point of water is 32°F.
Imperial	A UK system of measure.
Metric	Measure based on tens, hundreds and thousands.

Next Steps

Now you have completed Booklet 10, please return this to your tutor/trainer.

Your tutor/trainer will mark the work and provide you with some feedback showing what you have done well and suggestions on improvements.

The next booklet will be provided to you.

Feedback

WWW (What Went Well)

EBI (Even Better If)

Next steps

Learner feedback (Please provide some feedback for your tutor following the comments that you have just made on your work.)

Have Your Say

We would be interested in your opinion of this booklet.

1. **Was there anything you found easy in this workbook?**   **Yes**   **No**
If you answered yes, what did you find easy?   ☐   ☐

2. **Was there anything you found hard?**   **Yes**   **No**
If you answered yes, what did you find hard?   ☐   ☐

3. **Is there anything that you would like your tutor to go over again?**   **Yes**   **No**
If you answered yes, what is this?   ☐   ☐

4. **If your tutor provided learning aids, did you use them?**   **Yes**   **No**
If you answered yes, how were they useful?   ☐   ☐

5. **Would you like more support?**   **Yes**   **No**
If you answered yes, one of our Support Staff will get in touch with you.   ☐   ☐

6. **Do you have any questions?**

7. **What have you learnt from this booklet?**

Notes