

Functional Skills Maths

Level 1

Study Pack 2

Money and Number

HCUC

A merger between Uxbridge College and Harrow College

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HCUC offers courses in mathematics at Entry level, Level 1, GCSE and A level. The following resource gives you a taste of some of the topics covered in Functional Skills and GCSE maths lessons. It includes some important facts along with worked examples and exam style questions. The solutions are included for your reference.

The purpose of this resource is to give an initial insight into an example lesson. Actual lessons may consist of more activities/use of technology and may be adapted to meet the needs of individual learners.

In this pack there are 3 example lessons:

Lesson 1: Money

Pages 3 – 12

Lesson 2: Whole numbers, decimals & Rounding

Pages 13 – 21

Lesson 3: Fractions & Decimals

Pages 22 - 34

Functional Skills Maths

Level 1

Money Skills

Study Resource

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Money in Functional Skills Level 1

Money is in the topic of 'Measure'.

At Level 1, you are assessed on being able to calculate simple interest in multiples of 5% on amounts of money, calculate discounts in multiples of 5% on amounts of money and convert between units money in the same currency.

Money skills

Introduction

We all know how to spend money, but how are your Maths skills when it comes to money? This document will give you a chance to check and update your skills.

Key Words relating to Money

Convert change from one thing to another

Round To 'round' a number is to change the number to one that is less exact but easier to use for calculations

Currency Another word for money

Profit The money earned or made when something is sold and any other costs

Discount To pay less for something; to get money off the price of an item

Exchange To swap for something else. In terms of money, this usually means swap your British pounds for money from another country or the other way round.

Interest Money paid regularly at a particular rate. This could be money which is in a bank account or money that has been borrowed, like a loan.

We all want save money!

This could be by putting money in a bank account and leaving it there to earn interest or by getting a discount when we are buying things. A discount could be getting money off an item or buying more than one item to pay less for both.

The main way interest or discounts are calculated is using percentages.

The word percentage means 'out of 100' – '*per*' means 'out of' and '*cent*' refers to the 100 part.

At Level 1, we focus on whole number percentages and only use values that are in the 5 times table.

Working out a percentage:



If you are using a calculator, working out a percentage of an amount by dividing by 100 then multiplying by the discount/interest value. Look at the examples below:

$$15\% \text{ of } 180 \rightarrow 180 \div 100 \times 15 = 27$$

$$30\% \text{ of } 345 \rightarrow 345 \div 100 \times 30 = 103.5$$

If you are not using a calculator, there are some useful quick methods to use to work out a percentage.

First, remember the key percentages:

$$50\% = \frac{1}{2} \text{ the value}$$

$$25\% = \frac{1}{4} \text{ of the value} = \frac{1}{2} \text{ then } \frac{1}{2} \text{ again}$$

$$10\% = \text{value} \div 10$$

$$5\% = \text{value} \div 10 \text{ then } \div 2 \text{ (as 5\% is half of 10\%)}$$

Then, use these values to calculate more percentages:

$$15\% = 10\% + 5\%$$

$$30\% = 10\% + 10\% + 10\%$$

$$90\% = 100\% - 10\%$$

We can then calculate the percentage of any value in just a few steps:

$15\% \text{ of } 180 \rightarrow 15\% = 10\% + 5\%$	$30\% \text{ of } 345 \rightarrow 30\% = 3 \times 10\%$
$10\% = 180 \div 10 = \mathbf{18}$	$10\% = 345 \div 10 = \mathbf{34.5}$
$5\% = 10\% \div 2$	$30\% = 10\% + 10\% + 10\%$
$= 18 \div 2$	$= 34.5 + 34.5 + 34.5$
$= \mathbf{9}$	$= \mathbf{103.5}$
$\underline{\mathbf{18 + 9 = 27}}$	

Once we have worked out the percentage value, we need to know if we are adding or subtracting our answer to the original value.

Discounts usually mean subtract.

'Interest' usually means add

Have a go at the questions on the next page. The answers are given at the end of this document.

Question 1

Add up the costs listed below

Could you buy each list with a £5 note or would you need a £10 note?



- A) Coffee (£2), cake (£1), large cola (£1)
- B) Burger (£3), chips (£1.50), water (£1)
- C) Pasta (75p), Beans (50p), milk (£1.10), sugar (£0.80)
- D) 2 x sausage roll (1 is 90p), 3 x vegetable pasty (1 is £1.10), 2 x tomato soup (1 is 85p)

Extension task: How much change would you get from a £5 or £10 note?

Question 2

Copy and complete the table. There are a few answers already done for you:

	10%	20%	50%	5%	45%	95%
£240	£24					
£60				£3		
£22	£2.20					

Question 3

- A) James wants to buy a hat. It costs £12 but has 25% off. How much will James have to pay for the hat?
- B) Ahmed puts £120 into a simple interest account the bank. He earns 5% of £120 each year. He takes all the money out after 4 years.
 - I. How much interest did he earn in 1 year?
 - II. How much money did he withdraw, in total, after the 4 years?

Question 4

Which is better value, 15% discount on £140 or 10% discount on £215?

Answers to Tasks on pages 4 & 5

Question 1

- A) $£2 + £1 + £1 = £4 \rightarrow$ Yes, you could use a £5 note
- B) $£3 + £1.50 + £1 = £5.50 \rightarrow$ No, you could not use a £5 note, you need a £10 note
- C) $75p + 50p + £1.10 + £0.80 = £3.15 \rightarrow$ yes, you could use a £5 note
- D) $(2 \times 90p) + (3 \times £1.10) + (2 \times 85p) = 180p + £2.20 + 170p = £1.80 + £2.20 + £1.70 = £5.70 \rightarrow$ No, you could not use a £5 note, you need a £10 note.

Question 1 Extension

- A) $£5 - £4 = £1$ change B) $£10 - £5.50 = £4.50$ C) $£5 - £3.15 = £1.85$ D) $£10 - £5.70 = £4.30$

Question 2

Answers are shown in red, with comments underneath the box

	10%	20%	50%	5%	45%	95%
£240	£24	£48	£120	£12	£108	£228
£60	£6	£12	£30	£3	£27	£57
£22	£2.20	£4.40	£11	£1.10	£9.90	£20.90

<i>Start value</i> = 100%	10%: $100\% \div 10$	20%: $10\% \times 2$	50%: <i>Half the value</i>	5%: <i>Half of 10%</i>	45%: $50\% - 5\%$	95%: $100\% - 5\%$
------------------------------	--------------------------------	--------------------------------	--------------------------------------	----------------------------------	-----------------------------	------------------------------

Question 3

- i) 5% of £120 \rightarrow either $120 \div 100 \times 5 = \underline{£6}$ OR $10\% = £12, 5\% = \underline{£6}$
The answer is £6.
- ii) If he earned £6 each year for 4 years, he earned £24 in total. Add that to £120 which will give you £144.
He will withdraw £144.

Question 4

- 15% of £140 \rightarrow either $140 \div 100 \times 15 = \underline{£21}$ OR $10\% = 14, 5\% = 7, 15\% = 14 + 7 = \underline{£21}$
- 10% of £215 \rightarrow either $215 \div 100 \times 10 = £21.50$ OR $10\% = £21.50$

The second option is a better discount, by 50p / £0.50.

Links to websites

Below are a few websites which you might find useful. We suggest you go to them by clicking on the links below, rather than try and type them in!

Link	Information
https://youtu.be/LVGZPT2Ilsc	Rounding pounds and pence
https://youtu.be/oi-J_8TAEul	Adding pounds and pence
https://youtu.be/_n7IWGMREqo https://youtu.be/arw4XshpwpQ	Solving Money problems
https://youtu.be/1QK81UdpMkg https://youtu.be/TefuinvnXUQ	Short videos about calculating and using discounts. (Less than 2 mins) (The amounts are in US dollars but the maths is the same!)
https://youtu.be/1pdnLsx6tkQ	A longer (7 minutes) but very good video about calculating discounts

Topic Quiz

Test your skill with this online quiz:

<https://forms.gle/Tx6wXbXDuV3V4rod8>

It will mark it for you and give you feedback if you got a question wrong. Good luck!

Exam-Style Questions

Here are some typical exam questions at this level:

For a healthy diet, Rory is allowed 2500 calories each day.

There are 260 calories in his breakfast each day.

He says,

"I have **more than** 10% of my allowed daily calories in my breakfast."

Is he correct?

You **must** show your working.

[3 marks]

June 2017

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Reece goes to see a film at the cinema.

He wants to buy a large drink and a large popcorn.

Reece sees this price list and a special offer.

| Price list     |       |        |       |
|----------------|-------|--------|-------|
|                | small | medium | large |
| <b>drink</b>   | £1.99 | £2.99  | £3.99 |
| <b>popcorn</b> | £2.49 | £3.49  | £4.49 |

**Special offer!**  
Get a large drink and a large popcorn for £7.50

- (a) How much will Reece save using the special offer to buy his large drink and large popcorn?  
Show a check of your working.

(4)

Use the box below to show clearly how you get your answer.

## Exam Question 1

|             |                                                                  |          |                                                                                        |
|-------------|------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------|
| <b>1(c)</b> | <b>Alternative method 1</b>                                      |          |                                                                                        |
|             | $\frac{10}{100} \times 2500$                                     | M1<br>Aa | any correct method to find 10%                                                         |
|             | 250 <b>and</b> Yes<br>or 250 <b>and</b> it's 10 more             | A2<br>/  | A1 250<br>A1ft Correct conclusion for their value                                      |
|             | <b>Alternative method 2</b>                                      |          |                                                                                        |
|             | $\frac{260}{2500} (\times 100)$ or 0.104                         | M1<br>Aa |                                                                                        |
|             | 10.4 <b>and</b> Yes<br>or<br>0.104 <b>and</b> 0.1 <b>and</b> Yes | A2<br>/  | A1 10.4<br>or<br>A1 0.104 <b>and</b> 0.1<br>A1ft Correct conclusion for their value(s) |
|             | <b>Additional Guidance</b>                                       |          |                                                                                        |
|             | 10% of 2500 is not a method (unless evaluated correctly)         |          |                                                                                        |

## Exam Question 2

Reece goes to see a film at the cinema.  
He wants to buy a large drink and a large popcorn.  
Reece sees this price list and a special offer.

|         | Price list |        |       |                                                 |
|---------|------------|--------|-------|-------------------------------------------------|
|         | small      | medium | large | Special offer!                                  |
| drink   | £1.99      | £2.99  | £3.99 | Get a large drink and a large popcorn for £7.50 |
| popcorn | £2.49      | £3.49  | £4.49 |                                                 |

- (a) How much will Reece save using the special offer to buy his large drink and large popcorn?  
Show a check of your working.

Use the box below to show clearly how you get your answer.

$$\begin{array}{r} \text{£}3.99 \\ + \text{£}4.49 \\ \hline \text{£}8.48 \\ - \text{£}7.50 \\ \hline \text{£}0.98 \text{ or } 98\text{p} \end{array}$$

1 POINT

1 POINT

1 POINT

Answer MUST indicate £ or p correctly

# Functional Skills Maths

## Level 1

### *Whole numbers, decimals, rounding*

## Study Resource

*HCUC offer courses in mathematics at Entry level, Level 1, GCSE and A level. The following resource give you a taste of some of the topics covered in Functional Skills and GCSE maths lessons. It includes some important facts along with worked examples and exam style questions. The solutions are included for your reference.*

*The purpose of this resource is to give an initial insight into an example lesson. Actual lessons may consists of more activities/use of technology and may be adapted to meet the needs of individual learners.*

## **Numbers, Decimal and Rounding in Functional Skills Level 1**

### **Content List**

|                                                  |                 |
|--------------------------------------------------|-----------------|
| <i>Topic explanation and some examples</i>       | <i>Page 15</i>  |
| <i>Links to external videos &amp; websites</i>   | <i>Page 19</i>  |
| <i>Online quizzes</i>                            | <i>Page 19</i>  |
| <i>Exam-style questions and worked solutions</i> | <i>Pages 20</i> |

At Level 1, you are assessed on being able to Count, read, write and understand positive whole numbers to one million. This document helps you with updating your skills on the above skills.

## Reading and writing numbers:

The first step in working on maths and dealing with problem solving questions is to know how to read and write numbers. In your daily life, you may plan to buy a car/house and need to read the advertisements with prices, for instance.

Aiming this, you will need to know the place names in numbers. Look at the first example now.

### Example 1:

| millions | hundred thousands | ten thousands | thousands | hundreds | tens | units |
|----------|-------------------|---------------|-----------|----------|------|-------|
| 5        | 3                 | 0             | 4         | 8        | 9    | 1     |

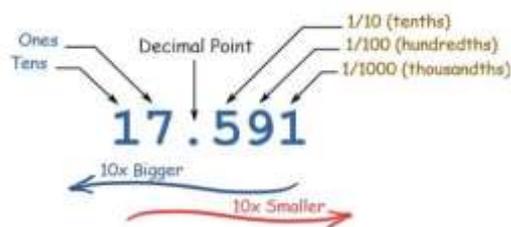
We read the above number as: *five million, three hundred and four thousand, eight hundred and ninety one.*

This is how we write this number: **5,304,891** (use the comma to make it easier when reading, however, it is optional).

A point (small dot) is used to separate the whole number from the fractional part of a number.

**Example 2:** In the number 21.9 the point separates the 21 (the whole number part) from the 9 (the fractional part, which means 9 tenths). So 21.9 is 21 and nine tenths.

**Example 3:** below is how we show and express decimal places up to 3.



## Rounding numbers:

Rounding is often used in real life situations.

Rounding is used in everyday life for example at a football match if there were 2984 fans, the commentator would say that about 3000 fans attended the match.

This is rounding the number to nearest thousand.

By rounding the numbers, you will be able to approximate numbers to a given number of places. At FS Level 1, numbers can be asked to be rounded to the nearest 10, 100 and 1000.

### **The general rule:**

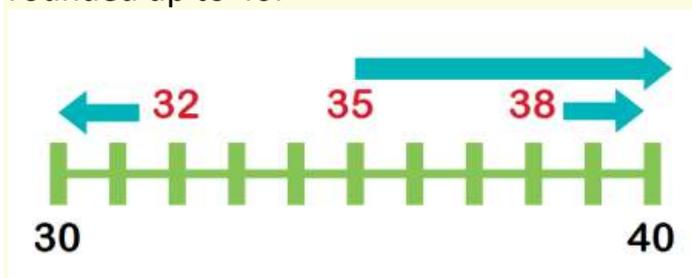
A good way of explaining this is to use a **number line**.

First, we identify the place value we are rounding to (nearest 10, 100 or 1000).

If we were rounding to the nearest ten, we would consider the value in the 'ones' column.

- If that number was **less than five**, the number needs to be **rounded down**.
- If that number is **5 or above**, the number needs to be **rounded up**.

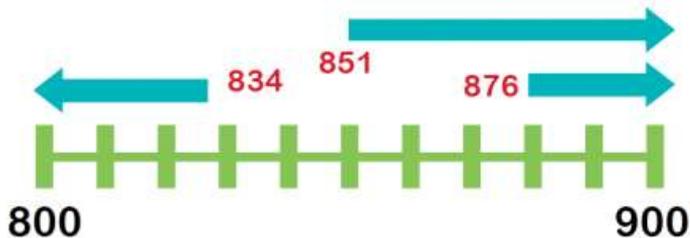
So 32 would be rounded down to 30, 35 would be rounded up to 40 and 38 would also be rounded up to 40:



If we were rounding to the nearest hundred, we would consider the value in the 'tens' column.

- If the **tens digit** is **less than 50** the **number is rounded down**.
- If the **tens digit** is **50 or more**, the **number is rounded up**.
- The 'ones' digit can be ignored when rounding a three-digit number to the nearest 100

So 834 would be rounded down to 800, 851 would be rounded up to 900 and 876 would be rounded up to 900:



(The examples above were taken from <https://www.theschoolrun.com/what-is-rounding-numbers>)

**Example 4:** round the number 6471 to the nearest 10, 100 and 1000.

Rounding to the nearest 10:

6 4 7 1

Less than 5 therefore it will be rounded down

7 is in the 'tens' column in this number. The ones digit is 1 and hence, this number to the nearest 10 would be rounded as 6470

**Rounded to 10 = 6470**

Rounding to the nearest 100:

6 4 7 1

75 is above 50 so will be rounded up

4 is in the 'Hundreds' column and the digits on the right-hand are 75. Therefore, this number to the nearest 100 would be rounded as 6500

**Rounded to 100 = 6500**

6 is in the 'Thousands' column. The rest of the number is 471, which is less than 500, the value would round down, meaning the 6 would not change:

| Number | Round to 10 | Round to 100 | Round to 1000 |
|--------|-------------|--------------|---------------|
| 6471   | 6470        | 6500         | 6000          |

## Ordering integers:

Integers are whole numbers, exact numbers, numbers you could count on your fingers. When you are given a set of integer numbers to be written in order, for instance, starting with the biggest number, you could consider looking at how many digits for each number.

This only works with whole numbers, not any numbers with a decimal point!

You can choose the number with the most digits. Then, comparing the numbers with the same amount of digit, you need to look at the digits from left-hand side onwards to judge which number goes first. Try the question below:

### Example 5:

Put these numbers in descending order (means from biggest to smallest):

**46598, 952, 4910 and 47023.**

|   |   |   |   |   |
|---|---|---|---|---|
| 4 | 6 | 5 | 9 | 8 |
|   |   | 9 | 5 | 2 |
|   | 4 | 9 | 2 | 0 |
| 4 | 7 | 0 | 2 | 3 |

Write the numbers underneath each other, in a list.

- Look at the first column, the left-hand column. There are two numbers that have digits in that column, so they will be first and second, but in which order? We need to look at the next column for just those numbers.
- 
- One number has a '6' and the other a '7'. 7 is higher than 6 so 47023 is bigger than 46598.
- Next, we look at the second column. We have two numbers left to sort and only one of them has a value in the second column, so it must be bigger. It goes next.
- We are left with one value, which goes at the bottom of the list.

|   |   |   |   |   |
|---|---|---|---|---|
| 4 | 7 | 0 | 2 | 3 |
| 4 | 6 | 5 | 9 | 8 |
|   |   | 9 | 5 | 2 |
|   | 4 | 9 | 2 | 0 |

|   |   |   |   |   |
|---|---|---|---|---|
| 4 | 7 | 0 | 2 | 3 |
| 4 | 6 | 5 | 9 | 8 |
|   | 4 | 9 | 2 | 0 |
|   |   | 9 | 5 | 2 |

## **Link to website(s)**

Below are a few websites which you might find useful. We suggest you link to these on your device, rather than try and type them in!

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Place Value</b></p> <p><a href="https://www.bbc.co.uk/teach/skillswise/place-value/zbd747h">https://www.bbc.co.uk/teach/skillswise/place-value/zbd747h</a></p> <p><a href="https://www.mathsisfun.com/place-value.html">https://www.mathsisfun.com/place-value.html</a></p> <p><a href="https://www.youtube.com/watch?v=T5Qf0qSSJFI">https://www.youtube.com/watch?v=T5Qf0qSSJFI</a></p>                                                                                                                                                                                                            | <p><b>Value of a digit in a number</b></p> <p><a href="https://www.youtube.com/watch?v=gfyS3g04i4Y">https://www.youtube.com/watch?v=gfyS3g04i4Y</a></p> <p><a href="https://www.basic-math-explained.com/place-value.html#.Xse23WhKjIU">https://www.basic-math-explained.com/place-value.html#.Xse23WhKjIU</a></p>             |
| <p><b>Writing number words in figures or figures in number words</b></p> <p><a href="https://www.youtube.com/watch?v=AsJ8ohjbvaM">https://www.youtube.com/watch?v=AsJ8ohjbvaM</a></p> <p><a href="https://www.khanacademy.org/math/pre-algebra/pre-algebra-arith-prop/pre-algebra-place-value/v/writing-numbers-in-words-and-standard-form">https://www.khanacademy.org/math/pre-algebra/pre-algebra-arith-prop/pre-algebra-place-value/v/writing-numbers-in-words-and-standard-form</a></p> <p><a href="https://www.youtube.com/watch?v=f7nzbrc4gN8">https://www.youtube.com/watch?v=f7nzbrc4gN8</a></p> | <p><b>Whole number/Big numbers</b></p> <p><a href="https://www.youtube.com/watch?v=izQ3Y7CL8u0">https://www.youtube.com/watch?v=izQ3Y7CL8u0</a></p> <p><a href="https://www.youtube.com/watch?v=occNpyEusLs">https://www.youtube.com/watch?v=occNpyEusLs</a></p>                                                               |
| <p><b>Rounding to nearest 10/100/1000</b></p> <p><a href="https://www.helpingwithmath.com/by_subject/place_value/rounding.htm">https://www.helpingwithmath.com/by_subject/place_value/rounding.htm</a></p> <p><a href="https://www.youtube.com/watch?v=XnJw2wq930U">https://www.youtube.com/watch?v=XnJw2wq930U</a></p>                                                                                                                                                                                                                                                                                   | <p><b>Rounding/estimating – decimals</b></p> <p><a href="https://www.bbc.co.uk/teach/skillswise/rounding-and-estimating/zv8qcqt">https://www.bbc.co.uk/teach/skillswise/rounding-and-estimating/zv8qcqt</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zmdqxn">https://www.bbc.co.uk/bitesize/topics/zmdqxn</a></p> |

## **Topic Quiz**

Test your skill with this online quiz / these online quizzes:

<https://forms.gle/Pok3LhuELCYZu7SaA>

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## Exam-Style Questions

Here is an example of some typical exam questions at this level

### **Q1.**

A music festival sells tickets on its website.

There are one hundred and twenty thousand tickets for sale.

### **Festival news**

118 200 tickets sold in the first hour.

**How many tickets are still for sale after the first hour?**

You **must** show your working.

(3)

### **Q2.**

(a) **Round 11.348 correct to two decimal places.**

(1)

Rashid works at an animal centre.

The animal centre sells tickets for 49 weeks of the year.

A student ticket costs £9.90

The animal centre sold 23 student tickets last week.

Rashid assumes that the same number of student tickets are sold each week.

He wants to estimate the income from the sale of student tickets for the year.

(b) **Estimate the income from the sale of student tickets for the year.**

(3)

Answers for L1 Exam Style Questions

Q1

Available tickets for sale = 120000

Tickets sold = 118200

Tickets for sale after first hour is the difference =  $120000 - 118200 = 1800$  tickets.

Q2

- a) The digit to the right of the second digit after the decimal point will decide the rounding. As 8 is more than 5, 11.348 would be rounded up to 11.35(2 dp).
- b) Income for the year =  $23 \times 49 \times 9.90$   
To estimate the income from the sale of student tickets for the year, each number would be rounded to one significant figure (1sf).  
23 rounded down to 20, as 3 is less than 5.  
49 rounded up to 50, as 9 is more than 5.  
9.90 rounded up to 10, as 9 is more than 5.  
Estimation =  $20 \times 50 \times 10 = \text{£}10000$ .
- ~~~~~

# Functional Skills Maths

## Level 1

### ***Fractions, Decimals & Percentages***

## Study Resource

**HCUC**

A merger between Uxbridge College and Harrow College

**H**arrow  
COLLEGE

**UC**  
UXBRIDGE  
COLLEGE

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# Fractions, Decimals, and Percentages

## Introduction

Fractions, Decimals and Percentages are used throughout modern day life, whether it is in the workplace, calculating if you have been charged income tax correctly, or in a shop whether you have been charged VAT correctly or even at the gym seeing whether your gym membership has been charged at the special offer discounted price! A person who chooses to ignore the skill of calculating these equivalences is clearly going to be disadvantaged!



## At Functional Skills Level 1, you will be assessed on the following topics in particular:

- Read, write, compare percentages
- Read, write, order and compare common fractions and mixed numbers
- Find fractions of whole number quantities and measurements
- Read, write, order and compare decimals up to three decimal places
- Add, subtract, multiply, and divide decimals up to two decimal places
- Calculate percentages of quantities including simple percentage increases and decreases by 5% and multiples thereof
- Add, subtract, multiply, divide, both common and mixed fractions

**For an introduction to decimals and fractions, please see the Functional Skills Entry 3 booklet.**

## Introduction to Percentages

The word percentage means 'out of 100' – 'per' means 'out of' and 'cent' refers to the 100 part. At Level 1, we focus on whole number percentages and only use values that are in the 5 times table.

### **Working out a percentage:**

If you are using a calculator, working out a percentage of an amount by dividing by 100 then multiplying by the discount/interest value. Look at the examples below:



$$15\% \text{ of } 180 \rightarrow 180 \div 100 \times 15 = 27$$

$$30\% \text{ of } 345 \rightarrow 345 \div 100 \times 30 = 103.5$$

If you are not using a calculator, there are some useful quick methods to use to work out a percentage.

First, remember the key percentages:

$$50\% = \frac{1}{2} \text{ the value}$$

$$25\% = \frac{1}{4} \text{ of the value} = \frac{1}{2} \text{ then } \frac{1}{2} \text{ again}$$

$$10\% = \text{value} \div 10$$

$$5\% = \text{value} \div 10 \text{ then } \div 2 \text{ (as 5\% is half of 10\%)}$$

Then, use these values to calculate more percentages:

$$15\% = 10\% + 5\%$$

$$30\% = 10\% + 10\% + 10\%$$

$$90\% = 100\% - 10\%$$

**We can then calculate the percentage of any value in just a few steps:**

|                                                      |                                                         |
|------------------------------------------------------|---------------------------------------------------------|
| $15\% \text{ of } 180 \rightarrow 15\% = 10\% + 5\%$ | $30\% \text{ of } 345 \rightarrow 30\% = 3 \times 10\%$ |
| $10\% = 180 \div 10 = \mathbf{18}$                   | $10\% = 345 \div 10 = \mathbf{34.5}$                    |
| $5\% = 10\% \div 2$                                  | $30\% = 10\% + 10\% + 10\%$                             |
| $= 18 \div 2$                                        | $= 34.5 + 34.5 + 34.5$                                  |
| $= \mathbf{9}$                                       | $= \mathbf{103.5}$                                      |
| $\mathbf{18 + 9 = 27}$                               |                                                         |

Once we have worked out the percentage value, we need to know if we are adding or subtracting our answer to the original value.

**Discounts usually mean subtract.**

**'Interest' usually means add**

## Fractions

### Key words

You may come across some of the following words in this document or when you are dealing with fractions:

|                       |                                                                                                                          |                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Numerator             | The number or value at the top of a fraction                                                                             | $\frac{3}{5}$ ← numerator<br>← denominator |
| Denominator           | The number or value at the bottom of the fraction                                                                        |                                            |
| Proper or vulgar      | What you might think of as a 'normal' fraction.<br>The number on the top is <b>smaller</b> than the number on the bottom |                                            |
| Improper or top-heavy | The number on the top is <b>bigger</b> than the number on the bottom                                                     | $\frac{16}{3}$                             |
| Mixed number          | A value that has a whole number (we would write it BIG) and a fraction                                                   | Whole number $2$ $\frac{1}{7}$ Fraction    |
| Equivalent            | When 2 fractions are made up of different numbers but are actually the same value, they are worth the same amount        | $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$  |
| Reciprocal            | The inverse of a fraction. To get a reciprocal fraction, we turn the fraction upside down.                               | $\frac{2}{3} \rightarrow \frac{3}{2}$      |

*(Images taken from Google searches)*

## Fractions of Amounts

To find a fraction of an amount or quantity, you divide:

- ▶ To find  $\frac{1}{2}$  of a quantity, you divide by 2.
- ▶ To find  $\frac{1}{3}$  of a quantity, you divide by 3.
- ▶ To find  $\frac{1}{4}$  of something, you divide by 4.
- ▶ To find  $\frac{1}{5}$  of something, you divide by 5 ... and so on.

**Example** Find: **a**  $\frac{1}{2}$  of £16      **b**  $\frac{1}{3}$  of 18 cm.

**a**  $\frac{1}{2}$  of £16 = £16  $\div$  2 = £8

Answer: £8

---

**b**  $\frac{1}{3}$  of 18 cm = 18 cm  $\div$  3 = 6 cm

Answer: 6 cm

---

▶ To find  $\frac{2}{3}$  of a quantity:

▶ find  $\frac{1}{3}$  by dividing by 3

▶ then find  $\frac{2}{3}$  by multiplying your answer by 2.

**Example 3:** Find: **a**  $\frac{2}{3}$  of £36      **b**  $\frac{3}{4}$  of £12.

**a**  $\frac{1}{3}$  of £36 = £36  $\div$  3 = £12

$\frac{2}{3}$  of £36 = £12  $\times$  2 = £24

Answer: £24

---

**b**  $\frac{1}{4}$  of £12 = £12  $\div$  4 = £3

$\frac{3}{4}$  of £12 = £3  $\times$  3 = £9

Answer: £9

---

## Ordering Decimal Numbers

When you are given a set of decimal numbers to be written in order, for instance, starting with the biggest number, take the following steps:

1. Put the numbers in a place-value table with decimal points lined up.
2. Converts the numbers to the same number of digits by filling the gaps with zero.
3. Compare the numbers starting from the whole numbers, then the tenth, hundredth and so on.

**Example:** Put these numbers in order of size, starting with the largest: 2.7, 2.57, 3.7 and 2.75

First step, put them in place-value table and then as the second step, fill the gap with zero:

| <i>Ones</i> | <i>point</i> | <i>Tenths</i> | <i>Hundredths</i> |
|-------------|--------------|---------------|-------------------|
| 2           | .            | 7             | 0                 |
| 2           | .            | 5             | 7                 |
| 3           | .            | 7             | 0                 |
| 2           | .            | 7             | 5                 |

By comparing the whole number parts first, 3 is bigger than 2, so 3.7 is the largest. Next compare tenth: 7 is bigger than 5, so the next largest number is either 2.7 or 2.75

Next compare hundredth: 2.7 means 2.70

On the other hand, 0.5 is bigger than 0 so 2.75 is bigger than 2.7. Therefore, the answer in descending order is: **3.7, 2.75, 2.7, 2.57**

---

(The following document was used when producing this material:

[https://qualifications.pearson.com/content/dam/pdf/Functional-skills/teaching-support/Maths%20Level%201\\_Chapter%202%20Learner%20Materials.pdf](https://qualifications.pearson.com/content/dam/pdf/Functional-skills/teaching-support/Maths%20Level%201_Chapter%202%20Learner%20Materials.pdf))

## Links to websites

Below are a few websites which you might find useful. We suggest you link to these on your device, rather than try and type them in!

|                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Read, Write &amp; Compare % - Video</b><br/> <a href="https://www.youtube.com/watch?v=Hg3_GCXyy6w">https://www.youtube.com/watch?v=Hg3_GCXyy6w</a></p>                                                                                                                                                                                         | <p><b>Dividing Fractions Game</b><br/>           (Click on the picture below to start the game)<br/> </p>                                                                                                                                                         |
| <p><b>Simplifying Fractions Game</b><br/>           (Click on the picture below to start the game)<br/> </p>                                                                                                                                                        | <p><b>Multiplying Fractions Game</b><br/>           (Click on the picture below to start the game)<br/> </p>                                                                                                                                                      |
| <p><b>Simplifying Fractions</b><br/> <a href="https://youtu.be/O3tEHya04FY">https://youtu.be/O3tEHya04FY</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2013/02/simplifying-fractions-pdf1.pdf">https://corbettmaths.com/wp-content/uploads/2013/02/simplifying-fractions-pdf1.pdf</a></p>                                       | <p><b>% to Decimal Fractions</b><br/><br/> <a href="https://youtu.be/pmHwZ7WYRXE">https://youtu.be/pmHwZ7WYRXE</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2013/02/percentages-to-decimals-pdf2.pdf">https://corbettmaths.com/wp-content/uploads/2013/02/percentages-to-decimals-pdf2.pdf</a></p>                             |
| <p><b>Adding &amp; Subtracting fractions (Different denominator)</b><br/><br/> <a href="https://youtu.be/lalcQLW6MWE">https://youtu.be/lalcQLW6MWE</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-Addition-2-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-Addition-2-pdf.pdf</a></p> | <p><b>Adding &amp; Subtracting fractions (Same denominator)</b><br/> <a href="https://youtu.be/nMBsc2KRQZI">https://youtu.be/nMBsc2KRQZI</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-Addition-1-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-Addition-1-pdf.pdf</a></p>           |
| <p><b>Multiplying Fractions</b><br/><br/> <a href="https://youtu.be/cs8lcT5GVwc">https://youtu.be/cs8lcT5GVwc</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/12/Multiplying-Fractions-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/12/Multiplying-Fractions-pdf.pdf</a></p>                                    | <p><b>Dividing Fractions</b><br/><br/> <a href="https://youtu.be/4n7AoTkLHDg">https://youtu.be/4n7AoTkLHDg</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/11/Dividing-Fractions-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/11/Dividing-Fractions-pdf.pdf</a></p>                                             |
| <p><b>Mixed Number to Improper Fractions</b><br/><br/> <a href="https://youtu.be/hqxiP3IYHiQ">https://youtu.be/hqxiP3IYHiQ</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/12/Improper-Fractions-and-Mixed-Numbers.pdf">https://corbettmaths.com/wp-content/uploads/2018/12/Improper-Fractions-and-Mixed-Numbers.pdf</a></p> | <p><b>Improper to Mixed Number Fractions</b><br/><br/> <a href="https://youtu.be/hqxiP3IYHiQ">https://youtu.be/hqxiP3IYHiQ</a><br/><br/> <a href="https://corbettmaths.com/wp-content/uploads/2018/12/Improper-Fractions-and-Mixed-Numbers.pdf">https://corbettmaths.com/wp-content/uploads/2018/12/Improper-Fractions-and-Mixed-Numbers.pdf</a></p> |

|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>% to Decimal</b></p> <p><a href="https://youtu.be/pmHwZ7WYRxE">https://youtu.be/pmHwZ7WYRxE</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2013/02/percentages-to-decimals-pdf2.pdf">https://corbettmaths.com/wp-content/uploads/2013/02/percentages-to-decimals-pdf2.pdf</a></p>    | <p style="text-align: center;"><b>Decimal to %</b></p> <p><a href="https://youtu.be/4qXExT4xgD8">https://youtu.be/4qXExT4xgD8</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Percentages-worksheet.pdf">https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Percentages-worksheet.pdf</a></p> |
| <p style="text-align: center;"><b>Fractions to %</b></p> <p><a href="https://youtu.be/5fq_tcX9Vq4">https://youtu.be/5fq_tcX9Vq4</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-to-Percentages-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-to-Percentages-pdf.pdf</a></p>  | <p style="text-align: center;"><b>% to Fractions</b></p> <p><a href="https://youtu.be/Alod_I-STl8">https://youtu.be/Alod_I-STl8</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2018/09/Percentages-to-Fractions-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/09/Percentages-to-Fractions-pdf.pdf</a></p>         |
| <p style="text-align: center;"><b>Fractions to Decimals</b></p> <p><a href="https://youtu.be/mTY6qa6GhQo">https://youtu.be/mTY6qa6GhQo</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-to-Decimals-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/11/Fractions-to-Decimals-pdf.pdf</a></p> | <p style="text-align: center;"><b>Decimals to Fractions</b></p> <p><a href="https://youtu.be/hO_ITi01Vlk">https://youtu.be/hO_ITi01Vlk</a></p> <p><a href="https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Fractions-pdf.pdf">https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Fractions-pdf.pdf</a></p>        |

## Topic Quiz

Test your skill with this online quiz / these online quizzes:

<https://forms.gle/qXiCcv7wq8ZAxrUK6>

## Exam-Style Questions

Here are examples of some typical exam questions at this level:

### Q1

Vikki works at Westco supermarket.

When she buys groceries she gets 10% discount.

Work out the discount when she buys groceries that normally cost £58

**[2 marks]**

### Q2

For a healthy diet, Rory is allowed 2500 calories each day.

There are 260 calories in his breakfast each day.

He says,

"I have **more than** 10% of my allowed daily calories in my breakfast."

Is he correct?

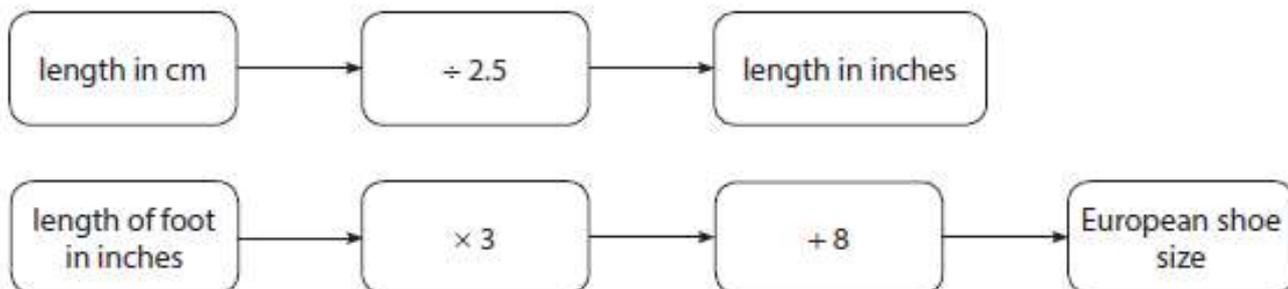
You **must** show your working.

**[3 marks]**

### Q3

Joanne is buying a pair of shoes in Europe.  
The length of her foot is 27.5 cm.

Joanne uses these rules to work out her European shoe size.



Joanne thinks her European shoe size is 38

Is Joanne correct?

### Answers

#### Q1

|       |                                                                                                                                             |          |                                                                      |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------|
| 4 (f) | 0.1 × 58 or 5.8(0)<br>or 580(p) or (£)5.80p                                                                                                 | M1<br>Rc | 52.2(0) implies M1                                                   |
|       | £5.80 or 580p                                                                                                                               | A1<br>/  | must be correct money notation<br>must have £ or p<br>condone £5.80p |
|       | <b>Additional Guidance</b>                                                                                                                  |          |                                                                      |
|       | 5.8 seen scores M1 (even if choice)<br>subtracting the discount can score 1 mark<br>example<br>58 + 10 = 5.8(0)<br>58 - 5.8(0) = 52.20 M1A0 |          |                                                                      |

## Q2

| <b>Alternative method 1</b>                                      |          |                                                                                        |
|------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------|
| $\frac{10}{100} \times 2500$                                     | M1<br>Aa | any correct method to find 10%                                                         |
| 250 <b>and</b> Yes<br>or 250 <b>and</b> it's 10 more             | A2<br>/  | A1 250<br>A1ft Correct conclusion for their value                                      |
| <b>Alternative method 2</b>                                      |          |                                                                                        |
| $\frac{260}{2500} (\times 100)$ or 0.104                         | M1<br>Aa |                                                                                        |
| 10.4 <b>and</b> Yes<br>or<br>0.104 <b>and</b> 0.1 <b>and</b> Yes | A2<br>/  | A1 10.4<br>or<br>A1 0.104 <b>and</b> 0.1<br>A1ft Correct conclusion for their value(s) |
| <b>Additional Guidance</b>                                       |          |                                                                                        |
| 10% of 2500 is not a method (unless evaluated correctly)         |          |                                                                                        |

## Q3

| Process                                  | Mark | Mark Grid | Evidence                                                                                 |
|------------------------------------------|------|-----------|------------------------------------------------------------------------------------------|
| Works with first formula                 | 1    | A         | 27.5 ÷ 2.5 (=11) OR<br>'10' × 2.5 (=25)                                                  |
| Begins to work with second formula       | 1 or | B         | '11' × 3 (=33) OR<br>38 - 8 (=30)                                                        |
| Full process to work with second formula | 2 or | BC        | '33' + 8 (=41) OR<br>'30' ÷ 3 (=10)                                                      |
| Valid decision with accurate figures     | 3    | BCD       | e.g. No AND 41 (shoe size) OR<br>No AND 10 (inches) and 11 (inches) OR<br>No AND 25 (cm) |

## Common Misconceptions

### Do you make these mistakes?

- If fractions are part of a one whole, you can't get a fraction bigger than 1, moreover when you multiply two fractions the answer is always smaller
  - If 5 is bigger than 4 then  $\frac{1}{5}$  is bigger than  $\frac{1}{4}$
  - A pizza can be cut into 5 unequal sizes, each piece is still a fraction  $\frac{1}{5}$  one fifth
  - If  $\frac{2}{9} + \frac{3}{9} = \frac{5}{9}$  then  $\frac{1}{6} + \frac{1}{9} = \frac{2}{15}$  of course
- 
- 
- Which is bigger 0.89 or 0.9? 0.89 of course eighty-nine sounds more than nine
  - 3.25 hours represent 3 hours and twenty-five minutes
  - If 0.1 represents 10% then 2.5 represents? Must be 25%!
  - If rail fares are increased by 10%, then decreased by 10%, then rail fares must be back at the original price because +10% -10% , gets you back to where you started .
- 
- 
- Fractions, Decimals and Percentages, who needs these? I am never going to need these in my life? I mean everything is computerised for you? Right? You just google it and get the answer on your phone! It's a waste of time studying fractions, decimals and percentages.

# CONTACT US:

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