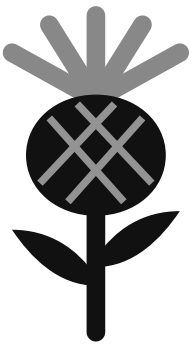
REAL-LIFE MATHS

Numeracy

Workbook for National 4 Applications of Mathematics

Unit 3: Numeracy



C. Blewis

Blewis LEARNING

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How to use this book

This book helps you use numbers with confidence in real life: money, time, measuring, percentages, ratio, graphs and chance. Each topic follows the same pattern, so you always know what comes next.

EACH TOPIC HAS

Opener	the story for the topic, what you will learn and the key words
Skill pages	a short explanation, a method box and a worked example
Practice pages	questions for you to try, with space for your working
Real-life task	a bigger problem that uses all the skills in the topic
Check-up	a few questions to show what you can do, and a checklist

LOOK OUT FOR

Method	the steps to follow
Worked example	a question that has been answered for you, step by step
Top tip / Watch out	helpful hints and common mistakes
Talk about it	questions to discuss with a partner or your teacher

SHOW YOUR WORKING

Write down your working in the boxes, not just the answer. It helps you check your answer, and your teacher can see how you got there.

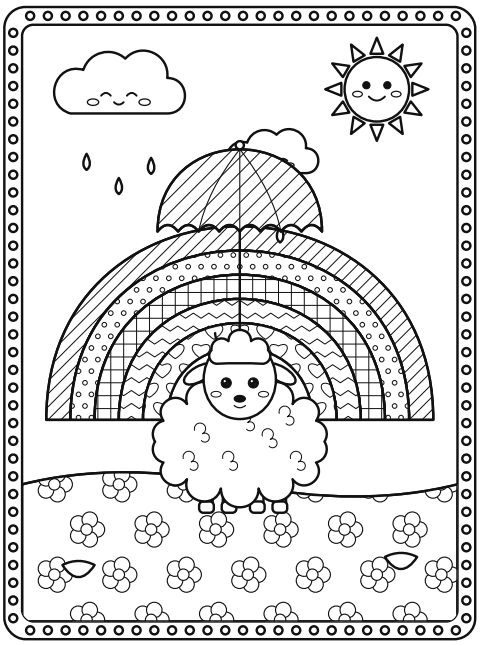
CALCULATORS

Try to work things out in your head or on paper first. You can use a calculator when the page says so, or when your teacher says it is OK.

ANSWERS

The answers are at the back of the book. Use them to check your work after you have tried the questions yourself.

Numbers, notation and units



Numbers in real life come with places, signs and units. In this topic you will read and write large numbers and decimals, work with negative numbers and change between metric units.

Theme: the school weather station. Glen Arrin School has a weather station on the roof. Owen and Zara look after it for the science club. They record temperatures, rainfall and wind, and share the results with the village website.

IN THIS TOPIC YOU WILL LEARN TO

Skill 1	read, write and order whole numbers and decimals
Skill 2	use negative numbers in real situations
Skill 3	choose and convert metric units

KEY WORDS

Place value	what a digit is worth because of where it is in the number
Decimal	a number with a decimal point, like 12.75
Negative number	a number below zero, like −4
Metric units	units based on 10s, like mm, cm, m and km
Convert	change from one unit to another
Notation	the way something is written, like £3.50 or 14:30

❶ Place value and decimals

The value of a digit depends on its **place**. In **24 306.75** the 3 is worth 300 and the 7 is worth 7 tenths.

PLACE VALUE

Ten thousands	Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths
2	4	3	0	6	.	7	5

WORKED EXAMPLE

The weather station recorded these rainfall totals (mm) for four months. Put them in order, largest first.

112.4 98.75 112.09 101.5

Line up the points	compare hundreds first, then tens, ones, tenths, hundredths
Compare 112.4 and 112.09	same up to the ones; tenths: 4 is bigger than 0, so 112.4 is bigger
Answer	**112.4, 112.09, 101.5, 98.75**

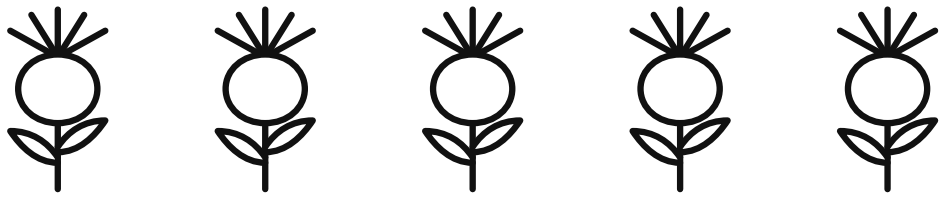
WATCH OUT

More digits does not mean bigger. 98.75 has four digits but it is less than 101.5.

TOP TIP

Multiplying by 10 moves every digit one place to the left: 3.25 × 10 = 32.5. Dividing by 10 moves them one place to the right.

DOODLE CORNER



Practice: place value and decimals

No calculator for these questions.

1 What is the value of the 6 in each number?

a 46 210	b 3.6	c 12.06	d 615.4

2 Write these numbers in figures.

a twenty-three thousand and fifty

Answer:

b four and three tenths

Answer:

3 Wind speeds (km/h) for one week are shown. Put them in order, smallest first.

14.5 9.8 14.25 10.07 9.75

Answer:

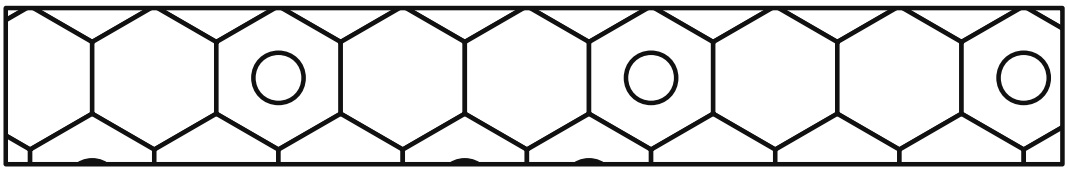
4 Work these out.

a 4.75 × 10	b 36 ÷ 100	c 0.8 × 100	d 125 ÷ 10

5 Zara says 0.5 is smaller than 0.45 because 45 is bigger than 5. Is she right? Explain.

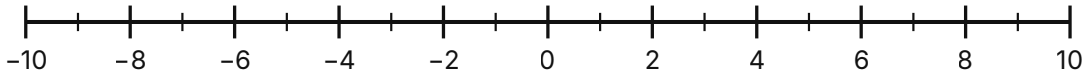
Answer:

DOODLE CORNER



2 Negative numbers

Numbers below zero are **negative**. We use them for temperatures, bank balances and heights below sea level.



METHOD

Rise or go up	move to the right (add)
Fall or go down	move to the left (subtract)
Difference	count the steps between the two numbers, across zero if you need to

WORKED EXAMPLE

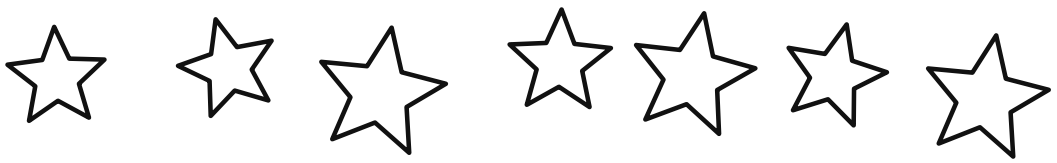
At 6 am the temperature on the roof was **−4 °C**. By midday it was **7 °C**. How much did it rise?

From −4 to 0	4 degrees
From 0 to 7	7 degrees
Answer	**4 + 7 = 11, so it rose by 11 °C.**

WATCH OUT

−8 is colder than −3. The further a number is below zero, the smaller it is.

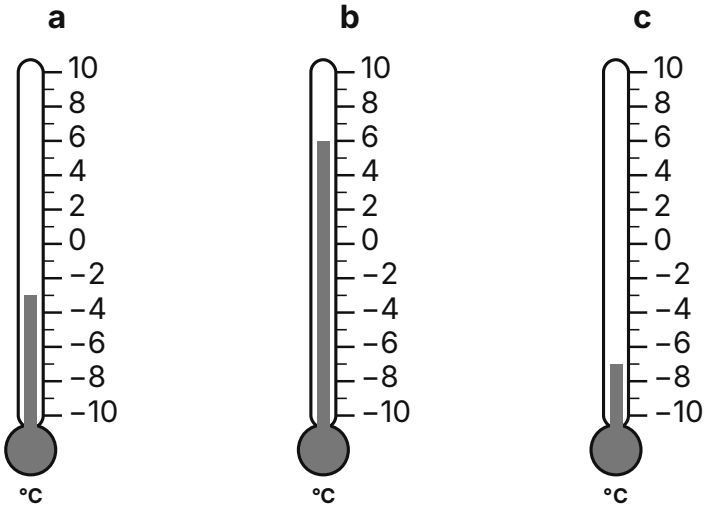
DOODLE CORNER



Practice: negative numbers

No calculator for these questions.

1 Read the temperature on each thermometer.



a	b	c

2 Night-time temperatures last week were: 2 °C, −5 °C, 0 °C, −1 °C, 3 °C. Put them in order, coldest first.

Answer: .....

3 Work out the new temperature.

a It is −2 °C and the temperature rises by 6 degrees.

Answer: .....

b It is 3 °C and the temperature falls by 8 degrees.

Answer: .....

4 Owen's bank balance is −£15. He pays in £40. What is his balance now?

Answer: .....

5 The lowest temperature in January was −9 °C. The highest was 8 °C. What is the difference?

Answer: .....

3 Metric units

Choose a unit that suits the size of the thing you measure, and change units when you need to compare.

METRIC CONVERSIONS

Length	Mass	Volume
10 mm = 1 cm	1000 g = 1 kg	1000 ml = 1 litre
100 cm = 1 m	1000 kg = 1 tonne	1 cm^3 = 1 ml
1000 m = 1 km		

METHOD

Big to small you need more of them, so multiply (2.5 m = 250 cm)

Small to big you need fewer of them, so divide (750 g = 0.75 kg)

WORKED EXAMPLE

The rain gauge held 0.35 litres of water after a storm. A jug holds 400 ml. Will it fit in the jug?

Same units 0.35 litres × 1000 = 350 ml

Compare 350 ml is less than 400 ml

Answer **Yes, it will fit, with 50 ml to spare.**

TOP TIP
Always write the unit with your answer. 350 on its own could be 350 ml or 350 litres.

DOODLE CORNER



FREE SAMPLE

Numeracy (N4 Apps of Maths)

This sample shows a few pages. The full printed workbook is available from Amazon.

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