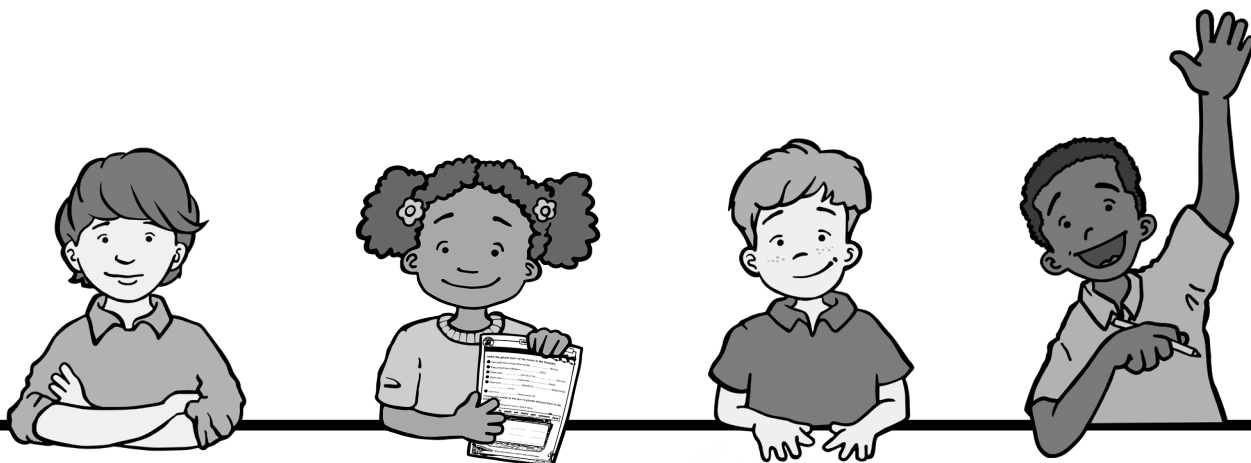


# HeadStart

primary



## PROBLEM SOLVING AND REASONING

YEAR 1

# Part 3

Name:

## **Acknowledgements:**

**Author:** Lizzie Marsland & Susannah Palmer

**Cover and Page Design:** Kathryn Webster, Jo Sullivan

**Illustration:** Kathryn Webster

The right of Lizzie Marsland & Susannah Palmer to be identified as the authors of this publication has been asserted by them in accordance with the Copyright, Designs and Patents Act 1988.

# **HeadStart** primary

**HeadStart Primary Ltd**

Elker Lane

Clitheroe

BB7 9HZ

T. 01200 423405

E. [info@headstartprimary.com](mailto:info@headstartprimary.com)

[www.headstartprimary.com](http://www.headstartprimary.com)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.

**Published by HeadStart Primary Ltd 2021 © HeadStart Primary Ltd 2021**

# Guidance

## YEAR 1: PROBLEM SOLVING AND REASONING

### Introduction - National Curriculum

This booklet is Part 3 of a 3-booklet series covering all the 'matters, skills and processes' specified in the Mathematics National Curriculum. These 'matters, skills and processes' are often referred to as 'learning objectives' or 'learning outcomes'.

Solving problems and mathematical reasoning in context are difficult skills for children to master; a real-life, written problem is an abstract concept and children need opportunities to practise and consolidate their problem solving techniques.

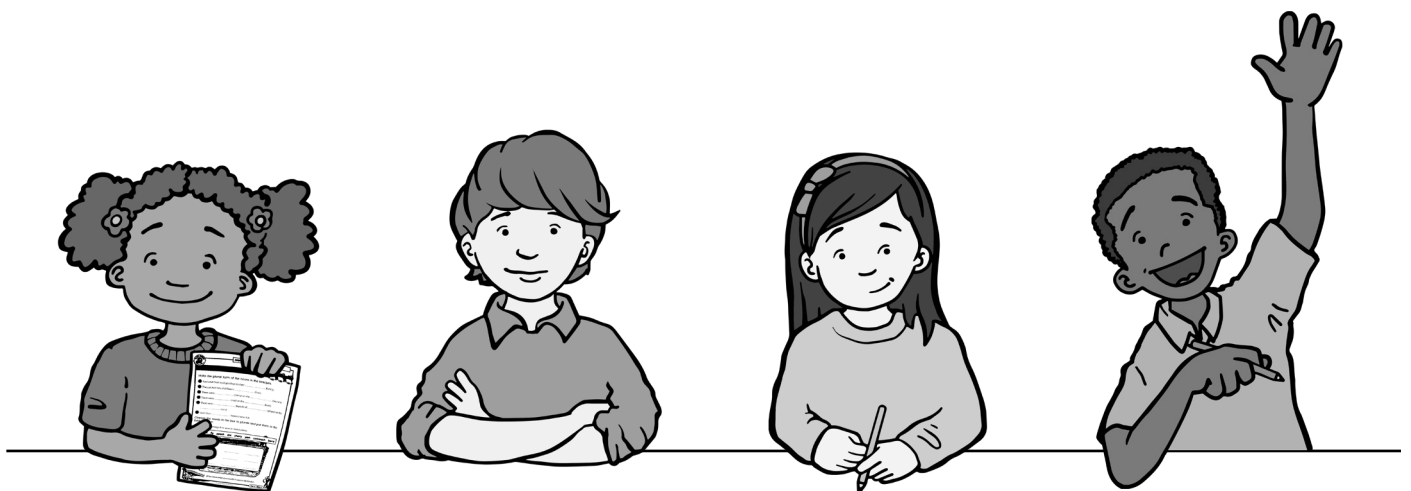
The specific objectives covered in this booklet are identified on the contents page. The 3 booklets in the series cover all the National Curriculum objectives for Year 1.

### Content of the booklet

The first section of each content domain is intended to provide opportunities for children to practise and consolidate their problem solving skills. Each page has an identified objective from the National Curriculum; the difficulty level of the questions increases towards the bottom of each page, thus providing built-in differentiation.

The MASTERING sections provide extra challenges as children's problem solving skills and confidence increase. The problems in the MASTERING sections encompass several objectives from the relevant curriculum domain.

It may be appropriate for children to use exercise books or paper to record any necessary working out.



**PART 3****Year 1: MEASUREMENT**

- Page 1 Compare lengths and heights  
Page 2 Solve problems involving lengths and heights  
Page 3 Compare mass or weight  
Page 4 Solve problems involving mass or weight  
Page 5 Compare capacity and volume  
Page 6 Solve problems involving capacity and volume  
Page 7 Compare time  
Page 8 Solve problems involving time  
Page 9 Solve problems involving time  
Page 10 Choose appropriate measuring tools  
Page 11 Solve problems involving knowing the value of different denominations of coins and notes  
Page 12 Solve problems involving knowing the value of different denominations of coins and notes  
Page 13 Sequence events in chronological order  
Page 14 Sequence events in chronological order  
Page 15 Recognise and use language relating to dates  
Page 16 Recognise and use language relating to days of the week  
Page 17 Recognise and use language relating to weeks, months and years  
Page 18 Solve problems involving time to the hour and half past the hour  
Page 19 Solve problems involving time to the hour and half past the hour

Pages 20 - 27 **MASTERING - Measurement**

**Year 1: GEOMETRY - Properties of shapes / Position and direction**

- Page 28 Recognise common 2D shapes and compare them to everyday objects  
Page 29 Recognise, name and compare common 2D shapes  
Page 30 Recognise common 3D shapes and compare them to everyday objects  
Page 31 Recognise, name and compare common 3D shapes  
Page 32 Solve problems involving 2D and 3D shapes  
Page 33 Solve problems involving 2D and 3D shapes  
Page 34 Describe position, direction and movement

Pages 35 - 51 **MASTERING - Geometry - Properties of shapes / Position and direction**

**ANSWERS: Pages 52 - 53**

# MEASUREMENT

Rose



Throughout this booklet, 6 children are solving problems. Their names are Rose, Ali, Usma, Jing, Olivia and Matt.

Compare lengths and heights

- 1 The blue line is **10 metres** long and the red line is **14 metres** long. Which is the longer line?

- 2 Jing's foot is the length of **9** cubes. Olivia's foot is the length of **7** cubes. Whose foot is longer?

- 3 Usma is **110 cm** tall. Rose's height is **111 cm**. Who is taller?

- 4 Ali's sunflower is **123 cm** tall. Olivia's flower grows to be **132 cm** tall. Whose flower is taller?

- 5 Rose is **108 cm** tall. Rose's dog is **55 cm** tall. Is Rose's dog exactly **half** of Rose's height?

Explain your answer.

.....

.....

Solve problems involving lengths and heights

- 1 Mr Green's lawn is **14 metres** long. Mr Black's lawn is **11 metres** long. How much longer is Mr Green's lawn than Mr Black's?

 m

- 2 Rose is **110 cm** tall. She grows **6 cm**. How tall is she now?

 cm

- 3 Matt can kick a ball **16 metres**. Usma can kick a ball **half** this distance. How far can Usma kick a ball?

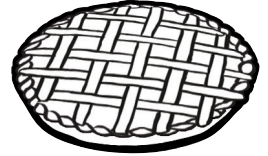
 m


- 4 Rose makes a tower **12** bricks high. Olivia makes a tower **7** bricks higher. How high, in bricks, is Olivia's tower?

- 5 Ali's pencil case is the length of **9** rubbers. Usma's pencil case is **twice** as long. How long, in rubbers, is Usma's pencil case?

## Compare mass or weight

- 1 The baker weighs **70 grams** of flour and **40 grams** of butter. Which ingredient weighs more?



- 2 Matt weighs **5 stones**. Olivia weighs **6 stones**. Who is heavier?

- 3 In Bowl **A**, there are **50 grams** of grapes. In Bowl **B**, there are **30 grams** of grapes. Which bowl has fewer grapes?

- 4 Jing can lift **8** weights. His dad can lift **12**. Who can lift more weights?

- 5 Usma's apple weighs **110 grams**. Ali's apple weighs **101 grams**. Whose apple is lighter?



## Solve problems involving mass or weight

- 1 Ali weighs the same as **12** bricks. His little sister weighs only **half** as much. How many bricks weigh the same as his sister?

- 2 A pen weighs **12 grams**. A pencil weighs **8 grams**. Which is heavier and by how much?

by  grams

- 3 Olivia is making a cake. She weighs out **60 grams** of flour and **40 grams** of sugar in a bowl. How much do the flour and sugar weigh together?

 g

- 4 Matt can lift a weight of **14 kilograms**. Jing can lift **8 kilograms**. How much more can Matt lift than Jing?

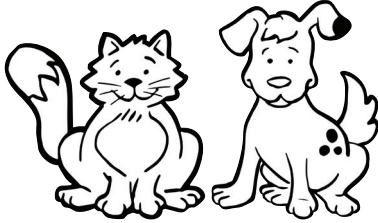
 kg

- 5 A large bag weighs **22 kg** and a small bag weighs **9 kg**. How much heavier is the large bag than the small bag?

 kg

Compare capacity and volume

- 1 The dog drinks **3** bowls of water. The cat drinks **2** bowls of water. Who drinks more?




- 2 Mum uses **20** buckets of water to wash her car. Dad uses **28** buckets to wash his car. Who uses more?

- 3 Usma drinks **16** bottles of water in a week. Her sister drinks **19** bottles of water. Who drinks fewer bottles?



- 4 The red paddling pool has **120 litres** of water. The blue paddling pool has **102 litres** of water. Which pool has more water?

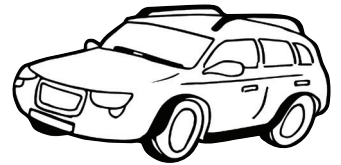
- 5 Glass A has **100 ml** of water. Glass B is **half** as full. How much water is in Glass B?

 ml

## Solve problems involving capacity and volume

- 1 Olivia drinks **2** glasses of water at lunchtime and **4** glasses of water at dinner time. How many glasses does she drink altogether?

- 2 Miss Jones uses **8** buckets of water to wash her car. Mr Williams uses **twice** as many buckets of water to wash his van. How many buckets of water does Mr Williams use?



- 3 A vase holds **5** cups of water. How many cups of water can **three** vases hold?

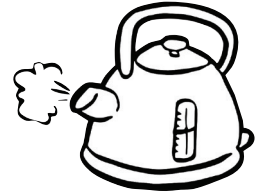
- 4 Rose drinks **18** cups of milk in one week. This is **eight** more than Usma. How many cups does Usma drink?

- 5 The dog drinks **2 litres** of water each day for **seven** days. How much water does the dog drink altogether in **seven** days?

 litres

## Compare time

- 1 Mr Smith wakes up at **7 am**. His wife, Mrs Smith, wakes up at **6 am**. Who wakes up earlier?



- 2 Usma goes to bed at **9 pm**. Rose goes to bed at **8 pm**. Who goes to bed **first**?

- 3 Olivia eats her dinner at **5 pm**. Ali eats his dinner at **7 pm**. Who eats at the later time?

- 4 Playtime 1 is at **10.30 am**. Playtime 2 is at **2.30 pm**. Which playtime is in the morning?

- 5 Usma finished the race at **11.15 am**. Jing finished the race at **11.30 am**. Who finished **first**?

## Solve problems involving time

- 1 It is **9 o'clock**. Olivia got up **three hours** ago. What time did she get up?

- 2 The time is **half past three**.  
What time will it be in **2 hours**?

- 3 It is **4 o'clock**. Rose is having dinner in **three hours'** time. What time does she have her dinner?

- 4 Ali went out at **3 o'clock**. He got back at **8 o'clock**. How long was he out for?

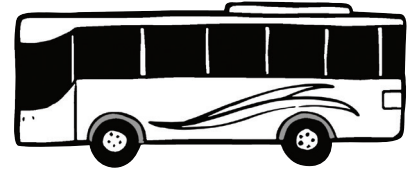
 hours

- 5 The Summer Fair begins at **half past one** and finishes at **half past five**. How long does the Fair last?

 hours

## Solve problems involving time

- 1 The bus sets off at **9 o'clock**. The journey to the seaside takes an **hour**. What time will the bus arrive?



- 2 It is **11 o'clock**. Rose got up **3 hours** ago. What time did she get up?

- 3 The film starts at **7 o'clock** and lasts **2 hours**. What time does the film finish?

- 4 Matt goes to the park at **2 o'clock**. He comes back at **5 o'clock**. How long was he at the park?

 hours

- 5 The party starts at **3.30 pm** and lasts **2 hours**. What time does the party finish?

## Choose appropriate measuring tools

- 1 Which would be the best tool to measure the length of a piece of string? Circle your answer.

a ruler      a measuring jug

- 2 Ali says, "The best way to weigh an apple is on bathroom scales." Is he correct?

Yes / No

Explain your answer.

.....

.....

- 3 Which would be the best container to measure a small amount of water? Circle your answer.

a bucket      a measuring jug

- 4 What is the name of the instrument that you use to tell the time?

.....

- 5 Write down **two** things you could measure on some weighing scales.

.....

.....

**Solve problems involving knowing the value of different denominations of coins and notes**

1 Olivia has **four 2p** coins. How much money does she have?

p

2 Matt has **£1.50** in **50p** coins. How many coins does he have?

3 How many **10p** coins make **40p**?

4 Mr Ball has **two £5** notes. How much money does he have?

£

5 Ali says that a **ten pound** note has the same value as **5 pound** coins. Is he correct?

Explain why.....  
 .....  
 .....

## Solve problems involving knowing the value of different denominations of coins and notes

- 1 5 children need to share **50p**. Which coin will they each need so they have the same amount of money?

 p

- 2 Which **two** coins will make **£1**? Circle the correct coins.



- 3 How many **5 pence** pieces does Rose need to buy a ball for **20p**?

- 4 Mrs Sunny has **two £10** notes. How much money does she have?

£ 

- 5 Matt puts **twelve 10p** coins on the table. How many more **10p** coins does he need to make **£1.50**?

## Sequence events in chronological order

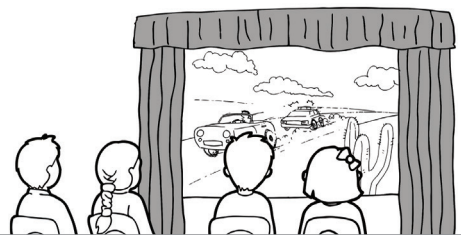
- 1 Olivia wakes up at **9 am**. Is this morning or afternoon?

- 2 Jing went swimming at **11 am**. He went to the park at **2 pm**. Which did he do **first**?




- 3 Ali needs to be at the zoo for **9 o'clock**. The bus takes **one hour**. What time should he set off?

- 4 The film starts at **4 pm**. Usma arrives at the cinema at **4.30 pm**. Is she late or early?



- 5 If it is **10 o'clock** in the **morning**, what time comes next, **12 noon** or **12 midnight**?

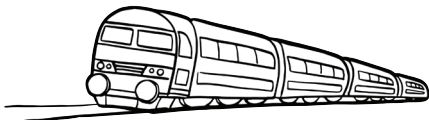
## Sequence events in chronological order

- 1 Ali brushes his teeth at **8 o'clock**. He eats his breakfast at **7 o'clock**. What does he do **first**?

- 2 Olivia bakes cakes at **2 o'clock** and biscuits at **3 o'clock**. What does she bake **first**?

- 3 Jing has football at **4 pm** and swimming at **6 pm**. Which activity does he do **first**?

- 4 Train **A** leaves at **11 am**. Train **B** leaves at **3 pm**. Which train leaves **last**?



- 5 The funny film starts at **4.30 pm**. The scary film starts at **5.15 pm**. Which film starts **first**?

Recognise and use language relating to dates

- 1 It is the **1<sup>st</sup> of March**. The circus arrives in **two days**. What **date** does the circus arrive?

- 2 It is the **5<sup>th</sup> of January**. Usma went swimming **2 days** ago. What was the **date** when she went swimming?




- 3 It is the **5<sup>th</sup> of July**. Jing is going on holiday on the **18<sup>th</sup>**. How many **days** is it before he goes on holiday?

 days

- 4 It is Matt's birthday **today**. How long is it until his next birthday?



- 5 Christmas Day is on the **25<sup>th</sup> of December**. It is **10 days** until Christmas Day. What is today's **date**?

## Recognise and use language relating to days of the week

1 How many **days** are there in a **week**?

days

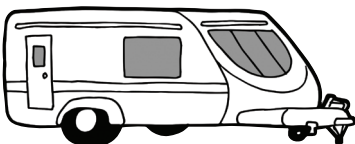
2 What day is the day before **Wednesday**?

3 It is **Thursday**. Rose is going swimming in **two days**. What day is she going swimming?

4 Today is **Monday**. How many **days** are there until **Saturday**?

days

5 Ali goes on holiday for a **week**. He sets off on **Tuesday**. Which day of the week does he return?



## Recognise and use language relating to weeks, months and years

- 1 Ali thinks that **October** comes before **September**. Is he correct?

Yes / No

- 2 Usma was born in **2009**. Rose was born in **2011**.  
How much older is Usma than Rose?

years

- 3 Jing went to live in France for **half a year**. How many **months** was this?

- 4 The date is **February 25<sup>th</sup>**. What month will it be in **two weeks**?

- 5 Ali got his new bike **24 months** ago. How many **years** has he had the bike?



## Solve problems involving time to the hour and half past the hour

- 1 Mrs Booth goes to the shops at **10 o'clock**. She shops for **half an hour**. What time does she finish shopping?

- 2 It is **7 o'clock** in the morning. Mum, got up **one hour** ago. What time did she get up?

- 3 Usma went out at **half past two**. She got back at **3 o'clock**. How long was she out?

- 4 Olivia went out at **3 o'clock**. She got back at **8 o'clock**. How long was she out?

 hours

- 5 Mr Driver parks his car on the car park at **half past one**. He goes back to the car at **3 o'clock**. How long was the car on the car park?



## Solve problems involving time to the hour and half past the hour

- 1 Rose reads her magazines for an **hour**. She starts at **10 o'clock**. What time does she stop reading?



- 2 It is **4 o'clock**. School finished **one hour** ago. What time did school finish?

- 3 Usma went out at **half past one**. She got back at **2 o'clock**. How long was she out for?

- 4 Rose went out at **5 o'clock**. She got back at **9 o'clock**. How long was she out for?

- 5 The show started at **7 pm**. It lasted for **one and a half hours**. What time did the show finish?

# MASTERING

## Measurement

Ali



- 1** Rose weighed different fruits using cubes. This table shows the number of cubes she needed to balance each type of fruit.



Type of fruit	Number of cubes
apple	31
orange	26
banana	32
plum	16
peach	21



- a** Which fruit is the heaviest?

- b** Which fruit is the lightest?

- c** Which **two** fruits weigh between **20** and **30** cubes each?

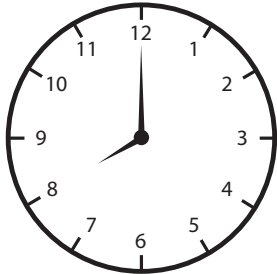
and

- d** Which fruit is **10** cubes heavier than a plum?

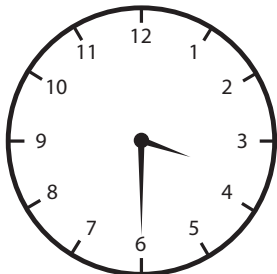
- e** Which fruit is **5** cubes heavier than a peach?

- f** Which fruit is **5** cubes lighter than an apple?

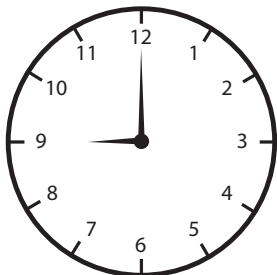
**2** Look at these clocks. Write the time next to each clock, then match the time with what Jing was doing. One has been done for you.



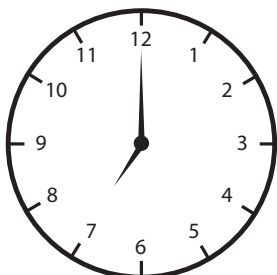

**Jing woke up.**




**Jing started school.**

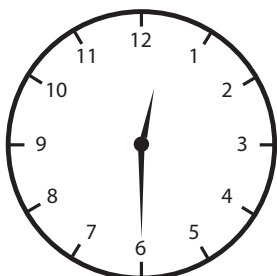



**Jing had lunch.**



**7 o'clock**

**Jing left school.**




**Jing went to bed.**



**3** Write the words in this box to show the order in which they happen at your school.

**home time**

**assembly**

**break time**

**arrive at school**

**lunch**

<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	

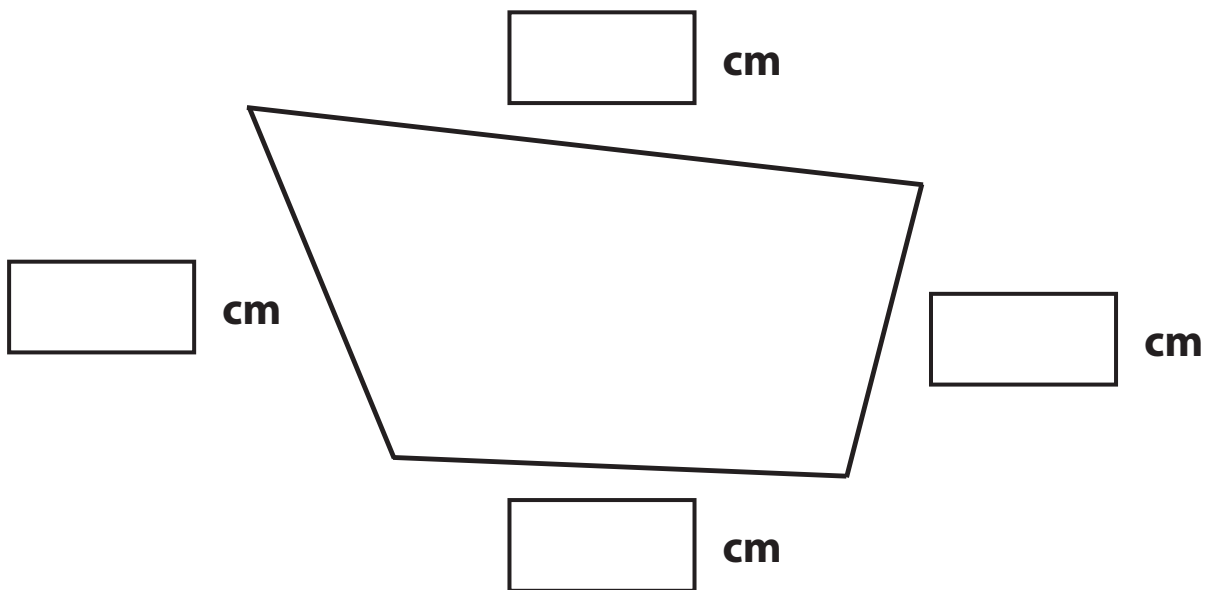
**4** You need **5** cubes.  
Find objects in your classroom that are longer or shorter than your **5** cubes.

<b>Longer</b>	<b>Shorter</b>

- 5 Ali has **one** silver coin and **one** bronze coin.  
 How much money might Ali have?  
 Can you find **8** possibilities?

<input type="text"/>	p	<input type="text"/>	p	<input type="text"/>	p	<input type="text"/>	p
<input type="text"/>	p	<input type="text"/>	p	<input type="text"/>	p	<input type="text"/>	p

- 6 Measure each side of this shape using a ruler. Write the correct lengths in the lines.





- 7 Usma has a **5 litre** bottle of water.  
 How many **1 litre** bottles of water can she fill from her **5 litre** bottle?



- 8 Rose has **2** bricks.  
 Matt has **3** shorter bricks.  
 Matt's bricks are **half** the length of Rose's bricks.



Which is longer?  
 Circle the correct answer in each case.

<b>2 long bricks</b>	<b>or</b>	<b>3 short bricks</b>
<b>4 long bricks</b>	<b>or</b>	<b>7 short bricks</b>
<b>7 long bricks</b>	<b>or</b>	<b>15 short bricks</b>

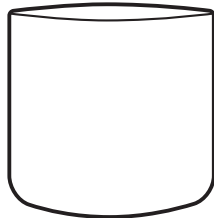
- 9 The doll is **twice** as heavy as a car.  
 A car is **twice** as heavy as a pencil.  
 A cube is **half** as heavy as a pencil.  
 Look at the pictures.  
 Which is heavier?  
 Circle the correct answer in each case.

a  

b  

c  

- 10** Look at these glasses.  
 Tick the glass that will hold the most water.  
 Draw a circle around the glass that will hold the least water.



- 11** Usma has **three** identical bottles of milk.  
 She pours all the bottles of milk into a saucepan.  
 Which has the greater capacity? Circle the correct answer.

**1 bottle of milk**

**1 saucepan**

- 12** Put these units of time in order of size, starting with the smallest.

**1 month**

**1 minute**

**1 day**

**1 hour**

**1 year**

**smallest**





**largest**

**13** Matt's class is very busy this month. Read the following statements to help you decide the date Matt's class will be doing each activity.

Write each activity in the correct place on the timetable.

**Just write the letters in the brackets.**

You may need to write each activity more than once.

The children in Matt's class are:

- going swimming (S) every Thursday
- going to the animal farm (AF) on the 1st Monday of the month
- having a cake sale (CS) **4** days after going to the animal farm
- doing their class assembly (CA) **one** week after the cake sale

June						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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					

**14** Rose ran around the playground during her PE lesson.  
It took her exactly **2 minutes**.  
Rose ran faster in her next PE lesson.

**a** Did Rose take more or less than **2 minutes**  
to run around the playground this time?

In her **3rd** PE lesson, Rose took **2½ minutes** to run around the playground.

**b** In which of her PE lessons did Rose run fastest and slowest?  
Circle the correct answers below.

<b>fastest:</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>
<b>slowest:</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>

**15** Jing bought a comic costing **40p**.  
He paid for the comic exactly using silver coins only.  
What coins might Jing have used?  
Can you find **6** different ways?



# GEOMETRY

Properties of shapes / Position and direction

Usma



**Recognise common 2D shapes and compare them to everyday objects**

**1** What can you see in the classroom that is in the shape of a **square**?

**2** Is a **whole** pizza usually in the shape of a **circle** or a **rectangle**?

**3** Ali says, "My maths book is in the shape of **triangle**." Do you think he is correct?

**Yes / No**

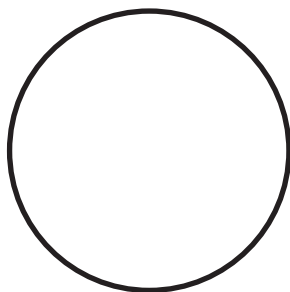
**4** Look around the room you are in and write down **3** things that are in the shape of a **rectangle**.

**5** Which has more sides: a **triangle** or a **pentagon**?

Recognise, name and compare common 2D shapes

1 Matt counted the sides on a **triangle**. How many sides did he count?

2 Mr Ahmed draws this shape on the board. What shape is it?




3 How many more sides are there on a **rectangle** than on a **triangle**?

4 I am a **five-sided** flat shape. All my sides are the same length. What shape am I?

5 If you add the number of sides on a **hexagon** to the number of sides on a **pentagon**, what answer do you get?

**Recognise common 3D shapes and compare them to everyday objects**

**1** What can you see in your classroom that is in the shape of a **cuboid**?

**2** Usma and Jing are playing snakes and ladders with a dice. What shape is the dice?

**3** Ali is trying to remember what shape a cornflakes box is. Can you help him?

**4** Olivia says, "**Pyramids** are always big like the ones in Egypt." Is she correct?

Yes / No

Explain your answer.

.....

.....

**5** Matt is playing a game with a shape that has no edges or corners. What might the game be?

**Recognise, name and compare common 3D shapes**

1 Ali says, "Dice can be in the shape of a **sphere**."  
Is he correct?

Yes / No

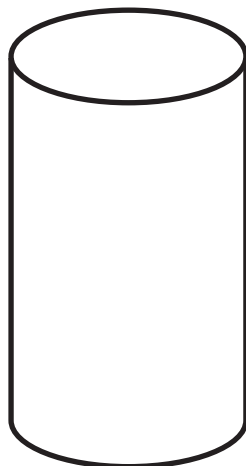
Explain your answer.

.....

.....

2 Which would be the best shape for a box to hold biscuits: a **cuboid** or a **pyramid**?

3 What is the name of this **3D** shape?



4 Which would make a better wheel: a **cylinder**, a **cuboid** or a **cube**?

**Solve problems involving 2D and 3D shapes**

- 1 Jing names a **2D** shape with **four** sides and **four** corners. What shape might it be?

---



- 2 How many sides are there on a **hexagon** and a **square** altogether?

---



- 3 Rose correctly counts how many faces there are on a **cube**. How many does she count?

---



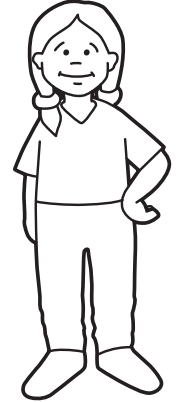
- 4 Draw a **pentagon** where all the sides are not the same length. Use your book or some paper.

- 5 What is the total number of faces on a **cuboid** and a **triangular prism**?

---

Solve problems involving 2D and 3D shapes

- 1 Usma names a shape with **3** sides and **3** corners. What does she say?



- 2 What is the difference between the number of sides on a **triangle** and a **pentagon**?

- 3 Can you name an object in your house that is in the shape of a **cylinder**?

- 4 Explain why a **pyramid** would not be a good shape for a football.

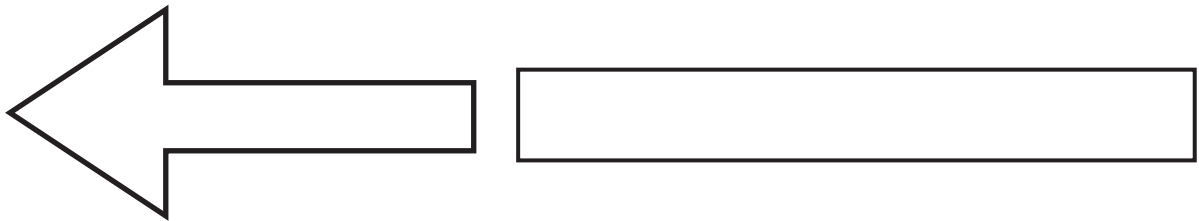
.....

.....

- 5 What is the total number of faces on a **triangular prism**?

**Describe position, direction and movement**

- 1 Ali is following signs and he sees the one below. Which way should he turn? **Left** or **right**?

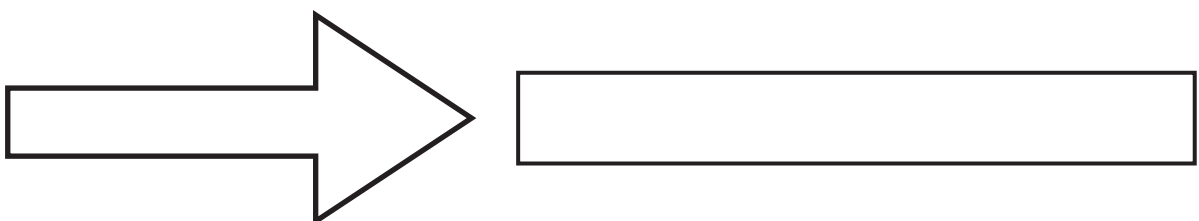


- 2 On a cold night, is it better to sleep inside or outside your house? Circle your answer.

**inside**

**outside**

- 3 Which way is this arrow pointing? **Left** or **right**?



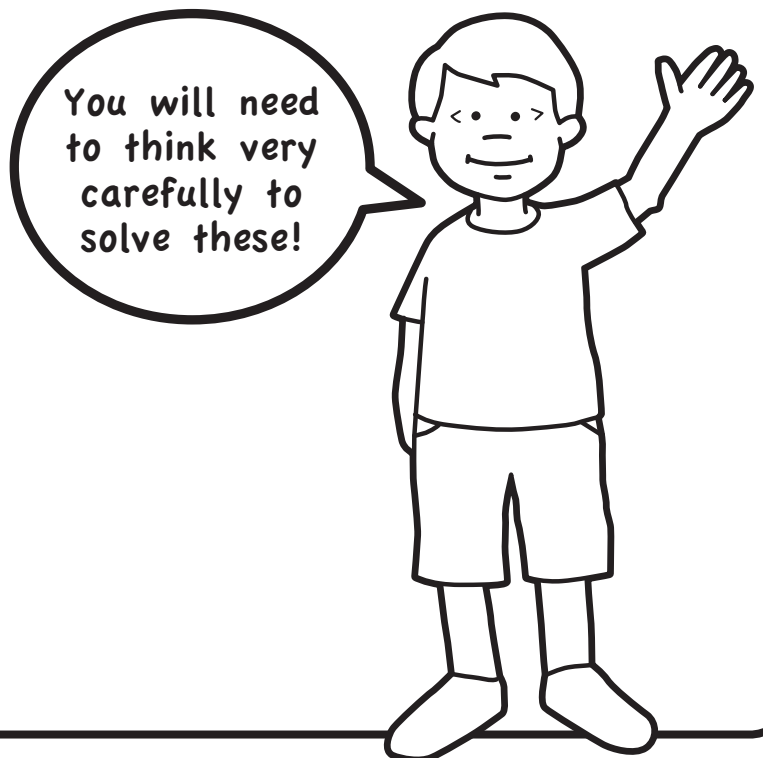
- 4 Using the words **turn left**, **turn right** and **go straight on**, describe to an adult how you would get to the playground from your classroom.

# MASTERING

## Geometry

Properties of shapes / Position and direction

Jing



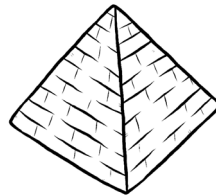
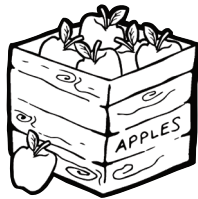
1 Draw lines to match the names to the shapes.

cuboid

cylinder

pyramid

sphere



2 Decide how you could sort these shapes into **two** groups. Write them in the table.

Group 1	Group 2

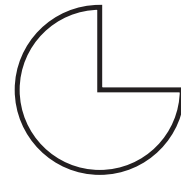
Explain why you sorted the shapes like this.

.....

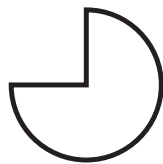
.....

3 Find **two** more objects in the classroom to add to each group.

4 Ali wants to turn this shape around a **quarter** of a full turn clockwise.



Put a circle around how the shape will look after he has turned it.



5 Usma says that all **2D** shapes have at least **4** sides. Is she correct?

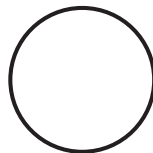
Yes / No

Explain your answer.

.....

.....

6 Circle the shapes which have no curved sides.

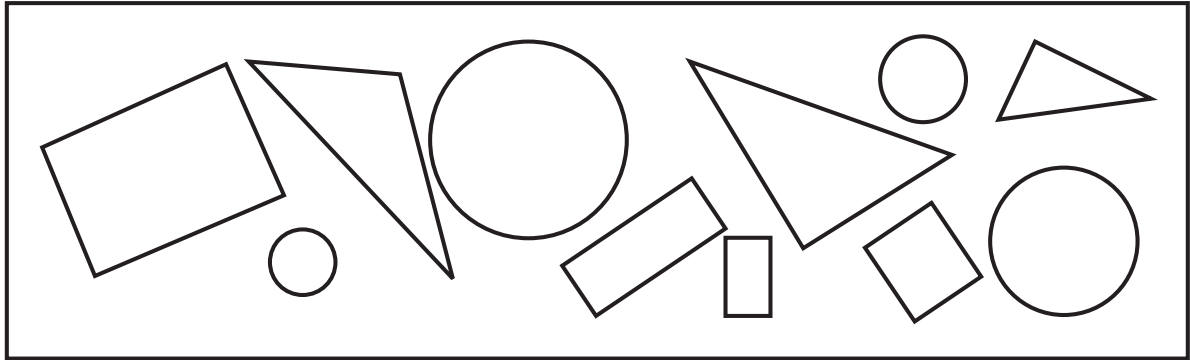


**7** Colour the shapes:

**triangles - red**

**rectangles - blue**

**circles - green**



**8** Draw lines to match the names to the shapes.

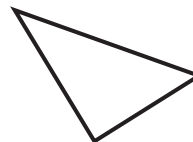
**pentagon**



**square**



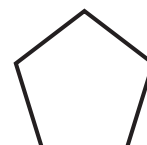
**triangle**



**hexagon**



**rectangle**

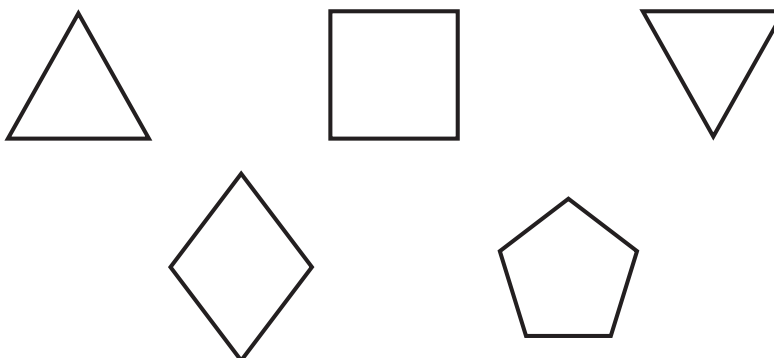


9 Jing has some shapes.

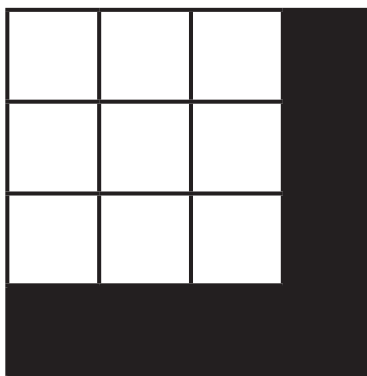
He puts **two** together to make this shape.



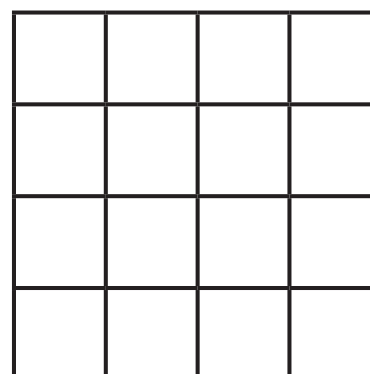
Put a circle around the **two** shapes that Jing chose.



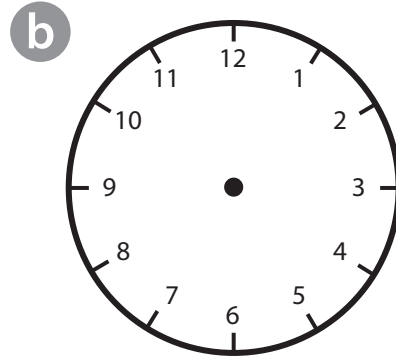
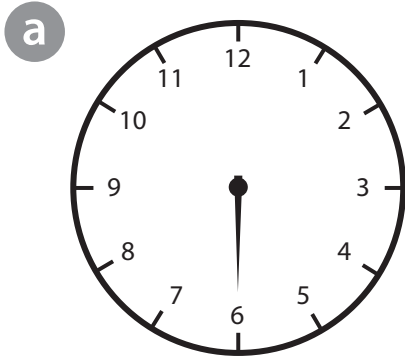
10 Look at this shape.



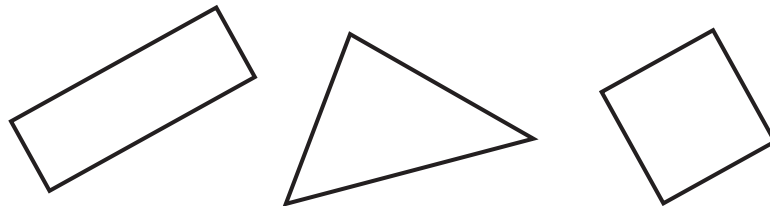
Draw it on this grid after it has turned **half** a turn clockwise.



- 11** The big hand of clock **a** is pointing to **6**.  
 Draw the big hand on clock **b** after it has passed through  $\frac{1}{4}$  turn clockwise.



- 12** Look at these shapes.



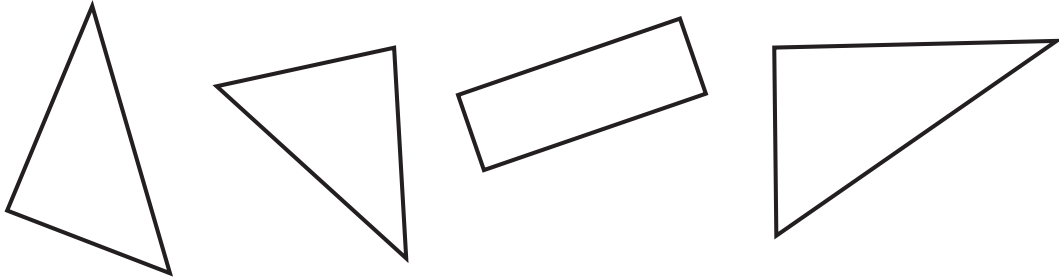
Colour in red the shape with **4** equal sides.

Colour in blue the shape with **2** long sides and **2** short sides.

Colour in green the shape with **3** sides of different lengths.

13 Put a circle around the odd one out in each group. Why is it different from the rest of the shapes?

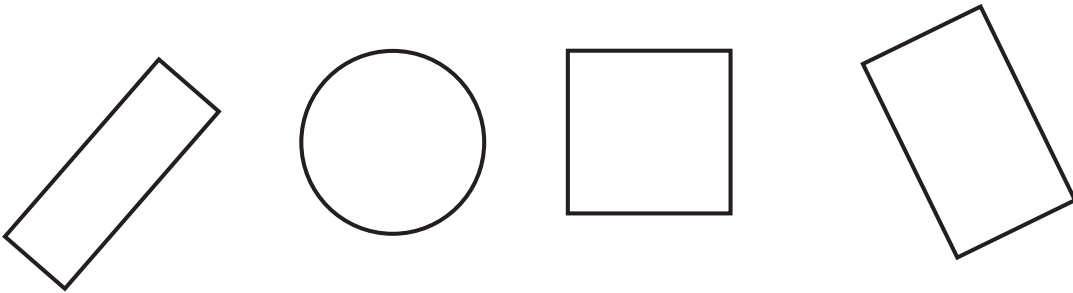
a



.....

.....

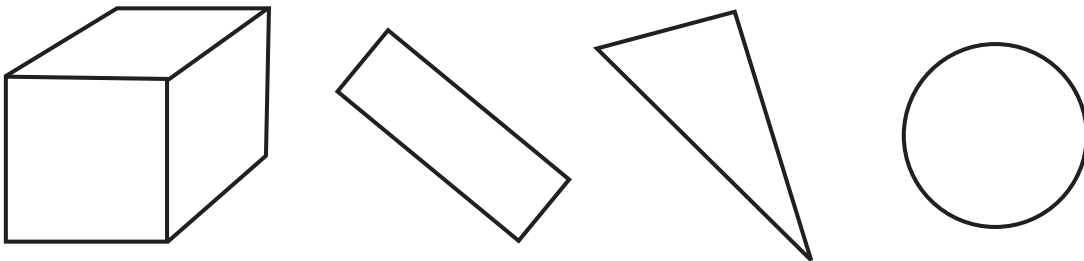
b



.....

.....

c



.....

.....

**14** Which shape is being described? Choose a name from the list and write it in the correct box.

- |                 |                |                  |               |
|-----------------|----------------|------------------|---------------|
| <b>circle</b>   | <b>cube</b>    | <b>triangle</b>  | <b>square</b> |
| <b>cylinder</b> | <b>pyramid</b> | <b>rectangle</b> | <b>sphere</b> |

**a** a **2D** shape with **four** equal sides

**b** a **3D** shape with a square base and **four** triangular faces

**c** a **3D** shape with **one** curved face

**d** a **2D** shape with **three** sides

**e** a **3D** shape with **6** square faces

**f** a **2D** shape with **two** long sides and **two** short sides

**g** a **3D** shape with **two** flat circular faces and **one** curved face

**h** a **2D** shape with **one** curved edge

**15** The big hand of a clock is pointing to **9**.  
 What number will it be pointing to when it has made:  
 (It goes back to **9** each time.)

**a**  $\frac{1}{2}$  turn clockwise?

**b**  $\frac{1}{4}$  turn anti-clockwise?

**c**  $\frac{3}{4}$  turn clockwise?

**d** 1 full turn anti-clockwise?



**16** Rose has a new badge which looks like this:



She turns it **three quarters** of a turn anti-clockwise.

Circle the picture which shows how Rose's badge looks now.

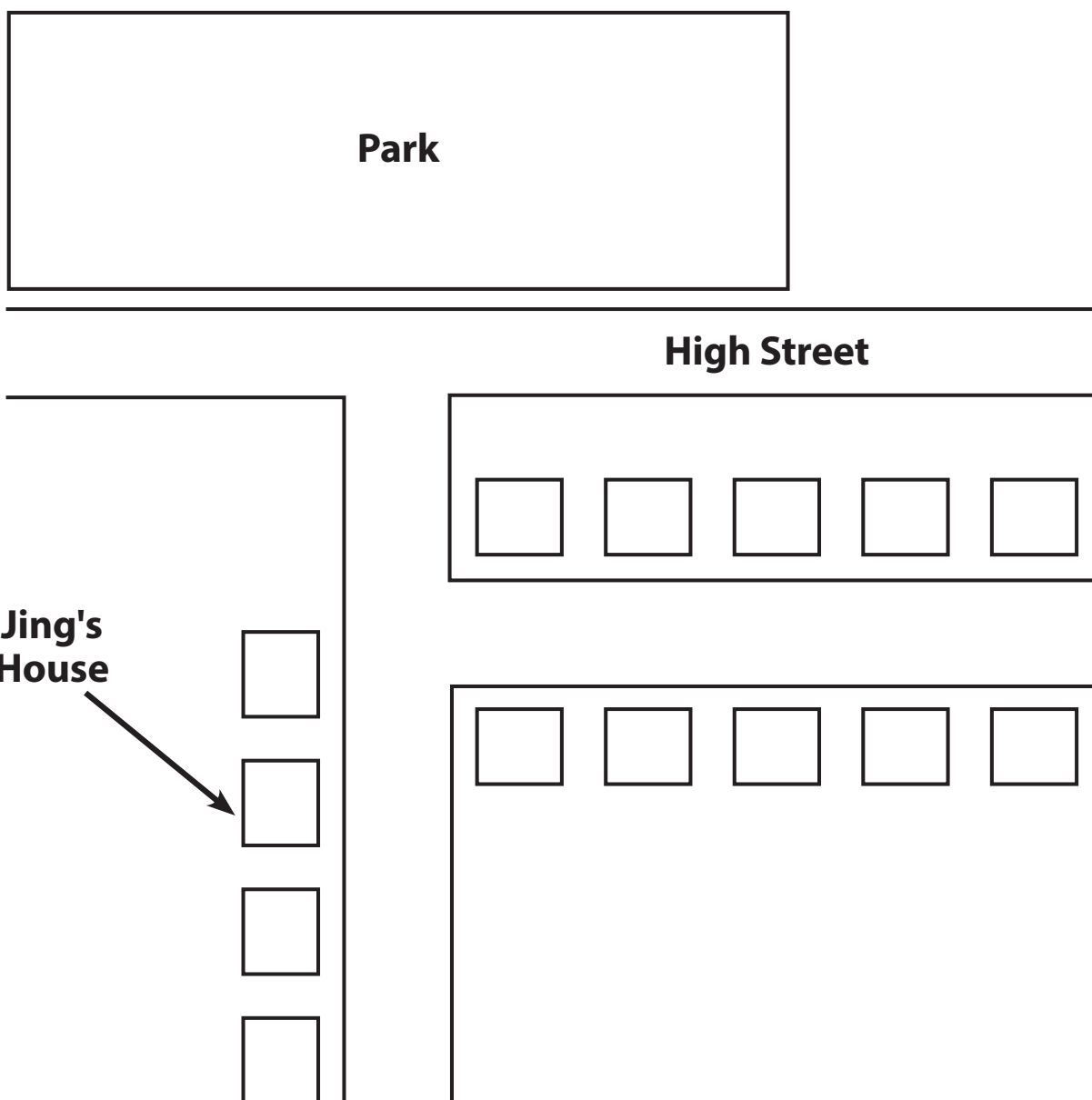


17 Jing turns left out of his house and walks towards the park.

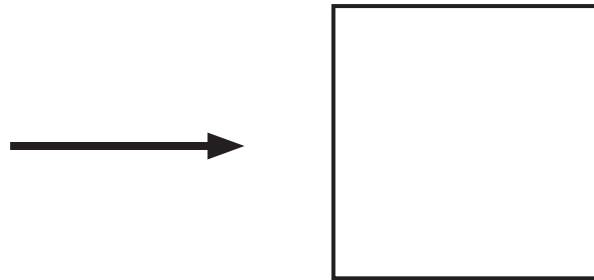
Before he gets to the park, he turns right down High Street.

He visits the **third** house on the right, where his friend Matt lives.

Draw a circle around Matt's house.



- 18** Draw this arrow after it has been rotated **three quarters** of a full turn clockwise.



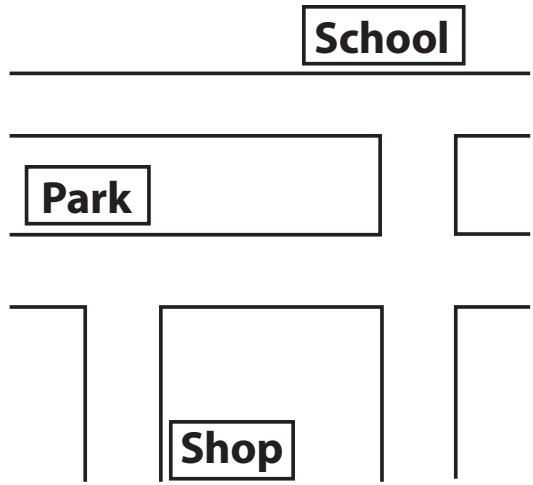
- 19** Find all the shapes that can go in these sets.

circle      hexagon      cube      cuboid      cylinder  
 pyramid      rectangle      pentagon      sphere      square

	<b>Straight sides</b>	<b>Curved sides</b>
<b>2D shapes</b>		

	<b>All straight edges</b>	<b>Not all straight edges</b>
<b>3D shapes</b>		

20 Look at this plan of a village.



a Start at the shop.

Turn right out of the shop.

Walk forwards to the T-junction.

Turn right and walk forwards to the crossroads.

Turn left and walk forwards.

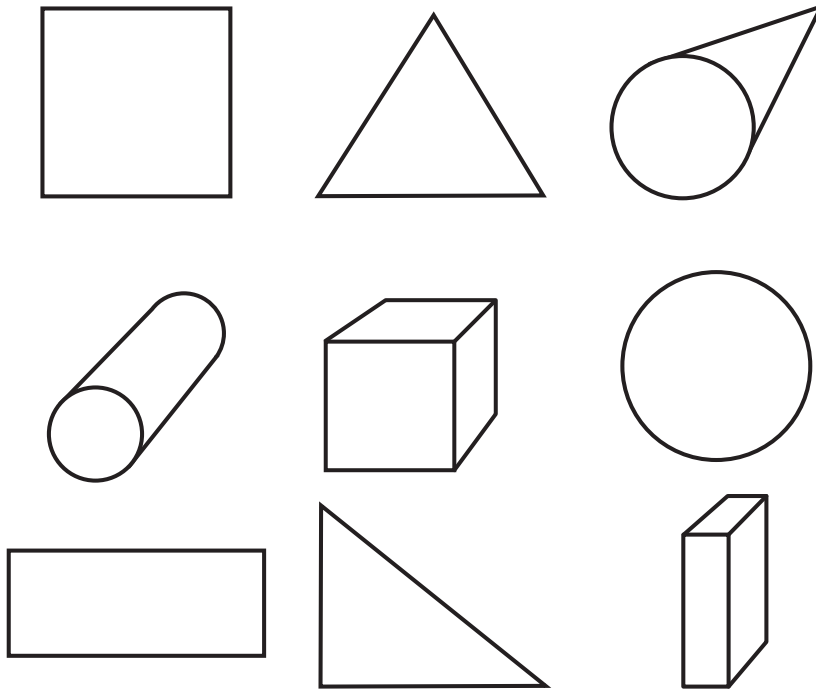
Where are you now?

b How would you get from the school to the park?

.....

.....

21 Look at these shapes.



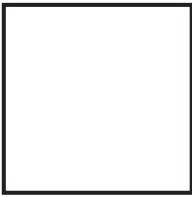
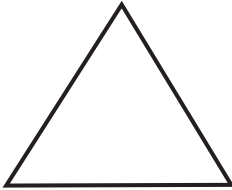


Which shapes are being described below?

- a It is a **3D** shape.  
All the faces are squares.
- b It is a **2D** shape.  
It has **one** curved edge.
- c It has **four** equal straight sides.  
It has **four** equal angles.
- d It is in the bottom row.  
It has **three** sides.

22 Matt has **5** cubes.  
The red cube is in the middle.  
The blue and green cubes are next to each other.  
The yellow cube is the **first** cube.  
The blue cube is **two** cubes away from the orange cube.  
Write the colours to show the order that the cubes are in.

--	--	--	--	--

23 Look at these **two** shapes.

		<b>triangle</b> <b>square</b> <b>rectangle</b> <b>hexagon</b> <b>pentagon</b>
		

Choose the correct names for the shapes from the box and write them underneath each of the shapes.

Write **one** thing that is the same about these **two** shapes.

.....

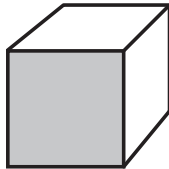
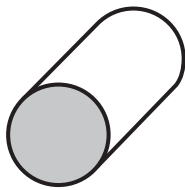
.....

Write **one** thing that is different about these **two** shapes.

.....

.....

24 Look at these 3D shapes.



cone

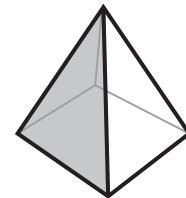
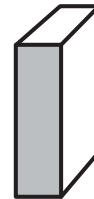
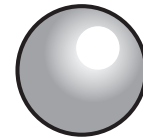
cube

cuboid

cylinder

pyramid

sphere



- a Choose the correct names for these shapes from the box and draw a line from the name to the shape.
- b Sort your shapes into **two** groups.

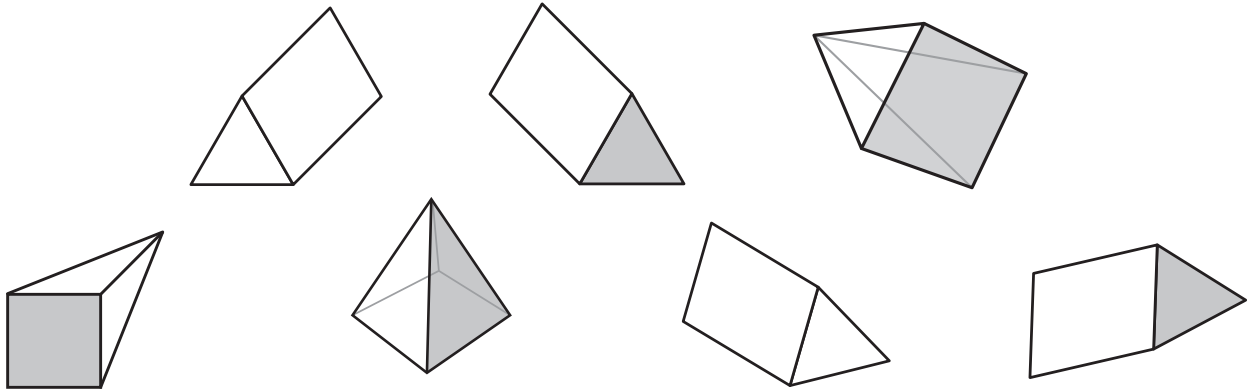
Group 1	Group 2

c Why have you sorted the shapes in this way?

.....

.....

- 25 Look at these **3D** shapes.  
Put a circle around each pyramid in this group.

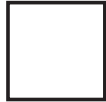



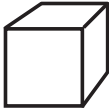


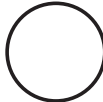

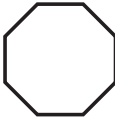
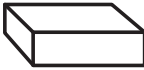



- 26 Rose has a **3D** shape with **6** square faces.  
What is the name of her shape?

- 27 Usma has a **3D** shape with **one** square face and **4** triangular faces.  
What is the name of her shape?

- 28 Matt has a shape with **two** triangular faces and **3** rectangular faces.  
What is the name of his shape?

29 Look at this table with different **2D** and **3D** shapes.

Fill in the gaps to show where each shape can be found.  
An example is shown below.

The square is in the **1st** row and in the **4th** box from the right.

a The pentagon is in the  row and in the  box from the left.

b The rectangle is in the  row and in the  box from the right.

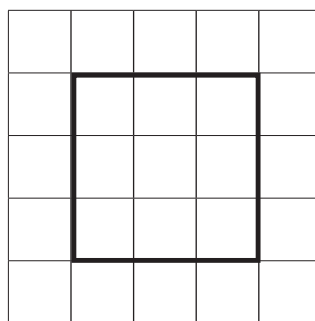
c The cuboid is in the  row and in the  box from the right.

30 Sort these letters into this sorting diagram.

F C O R P T

All straight lines	All curved lines	Straight lines and curved lines

31 Olivia picked a **3D** shape out of a box. She put it on a piece of paper and drew around the base. This is the shape she drew.



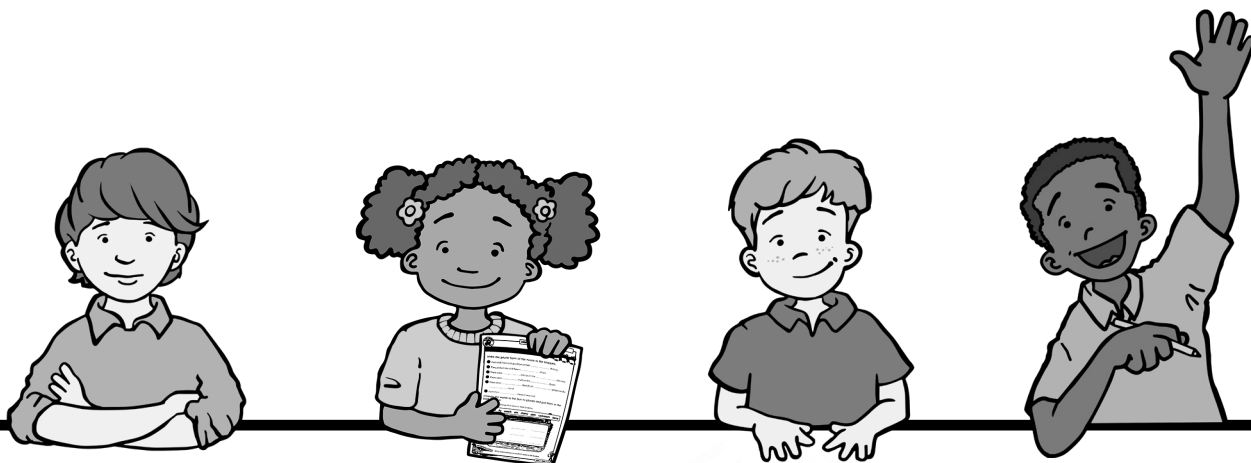
Olivia said, "I have picked up a cube."  
 What other shapes could she have picked up?

.....

.....

# HeadStart

primary



## PROBLEM SOLVING AND REASONING

YEAR 1

Part 3

ANSWERS

## Year 1: MEASUREMENT

- Page 1:** 1) red 2) Jing 3) Rose 4) Olivia's 5) no; appropriate explanation
- Page 2:** 1) 3 metres 2) 116 cm 3) 8 metres 4) 19 5) 18
- Page 3:** 1) flour 2) Olivia 3) Bowl B 4) his dad 5) Ali's
- Page 4:** 1) 6 2) pen; 4 g 3) 100 g 4) 6 kg 5) 13 kg
- Page 5:** 1) dog 2) Dad 3) Usma 4) red 5) 50 ml
- Page 6:** 1) 6 2) 16 3) 15 4) 10 5) 14 litres
- Page 7:** 1) Mrs Smith 2) Rose 3) Ali 4) playtime 1 5) Usma
- Page 8:** 1) 6 o'clock 2) half past 5 3) 7 o'clock 4) 5 hours 5) 4 hours
- Page 9:** 1) 10 o'clock 2) 8 o'clock 3) 9 o'clock 4) 3 hours 5) 5.30 pm
- Page 10:** 1) a ruler circled 2) no ; appropriate explanation 3) a measuring jug circled 4) clock  
5) appropriate answers
- Page 11:** 1) 8p 2) 3 3) 4 4) £10 5) no; appropriate explanation
- Page 12:** 1) 10p 2) 50p 50p 3) 4 4) £20 5) 3
- Page 13:** 1) morning 2) swimming 3) 8 o'clock 4) late 5) 12 noon
- Page 14:** 1) breakfast 2) chocolate cakes 3) football 4) train B 5) funny
- Page 15:** 1) 3rd of March 2) 3rd of January 3) 13 4) 1 year 5) 15th December
- Page 16:** 1) 7 2) Tuesday 3) Saturday 4) 5 5) Tuesday
- Page 17:** 1) no 2) 2 years 3) 6 4) March 5) 2
- Page 18:** 1) 10:30 2) 6 o'clock 3) half an hour 4) 5 hours 5) one hour and a half
- Page 19:** 1) 11 o'clock 2) 3 o'clock 3) half an hour 4) 4 hours 5) 8.30 pm

## MASTERING - Measurement

- Page 20:** 1) a) banana b) plum c) orange, peach d) orange e) orange f) orange
- Page 21:** 2) 8 o'clock - Jing woke up, half past 3 - Jing left school, 9 o'clock - Jing started school  
7 o'clock - Jing went to bed, half past 12 - Jing had lunch
- Page 22:** 3) appropriate order of events 4) any appropriate answer
- Page 23:** 5) 6p, 7p, 11p, 12p, 21p, 22p, 51p, 52p 6) 9 cm, 4 cm, 6 cm, 5 cm 7) 5
- Page 24:** 8) 2 long bricks, 4 long bricks, 15 short bricks 9) cars, cars, cubes
- Page 25:** 10) most = middle glass, least = left glass 11) 1 saucepan  
12) 1 minute, 1 hour, 1 day, 1 month, 1 year
- Page 26:** 13) Animal farm - 2nd June, cake sale 6th - June, class assembly - 13th June,  
swimming 5th, 12th, 19th, 26th June
- Page 27:** 14) a) less time b) fastest in 2nd lesson, slowest in 3rd lesson 15) 20p + 20p, 20p +  
10p + 10p, 20p + 10p + 5p + 5p, 20p + 5p + 5p + 5p + 5p, 10p + 10p + 10p + 10p, 10p  
+ 10p + 10p + 5p + 5p, 10p + 10p + 5p + 5p + 5p + 5p, 10p + 5p + 5p + 5p + 5p + 5p  
+ 5p, 5p + 5p + 5p + 5p + 5p + 5p + 5p

**Year 1: GEOMETRY - Properties of shapes / Position and direction**

**Page 28:** 1) appropriate answer 2) circle 3) no 4) appropriate answers 5) pentagon

**Page 29:** 1) 3 2) circle 3) 1 4) pentagon 5) 11

**Page 30:** 1) appropriate answer 2) cube 3) cuboid 4) no; appropriate explanation  
5) appropriate answer

**Page 31:** 1) no; appropriate explanation 2) cuboid 3) cylinder 4) cylinder

**Page 32:** 1) square or rectangle 2) 10 3) 6 4) appropriate drawing 5) 11

**Page 33:** 1) triangle 2) 2 3) appropriate answer 4) appropriate explanation 5) 5

**Page 34:** 1) left 2) inside circled 3) right 4) appropriate explanation

**MASTERING - Geometry**

**Page 35:** 1) shapes and names matched correctly 2) any appropriate answer 3) any appropriate answer

**Page 36:** 4) shape 3 5) no; reference to a triangle or circle made 6) rectangle, triangle, hexagon

**Page 37:** 7) shapes correctly coloured 8) shapes from the top - square, hexagon, triangle, rectangle, pentagon

**Page 38:** 9) the two triangles 10) shape drawn appropriately

**Page 39:** 11) should point to 9 12) square - red, rectangle - blue, triangle - green

**Page 40:** 13) a) rectangle; it does not have three sides b) circle; it does not have four sides  
c) cube; it is not a 2D shape

**Page 41:** 14) a) square b) pyramid c) sphere d) triangle e) cube f) rectangle g) cylinder  
h) circle

**Page 42:** 15) a) 3 b) 6 c) 6 d) 9 16) diagram 2

**Page 43:** 17) top right, middle house circled

**Page 44:** 18) ↑ 19) 2D straight sides - rectangle, pentagon, square, hexagon; 2D curved sides  
circle; 3D all straight edges - pyramid, cube, cuboid; 3D not all straight edges - sphere,  
cylinder

**Page 45:** 20) a) school b) walk forwards to the crossroads, turn right, walk forwards and the  
park is on your right

**Page 46:** 21) a) cube b) circle c) square d) triangle

**Page 47:** 22) yellow, orange, red, blue, green 23) square, triangle; they are both 2D shapes,  
they have a different number of sides (or other appropriate answers)

**Page 48:** 24) a) shapes identified correctly b) c) any appropriate choices and reasons given

**Page 49:** 25) correctly circled 26) cube 27) pyramid 28) triangular prism

**Page 50:** 29) a) pentagon - 2nd row, second box from the left b) rectangle - 3rd row, first box  
from the right c) cuboid - 3rd row, second box from the right

**Page 51:** 30) all straight lines F, T; all curved lines C, O; straight and curved lines R, P  
31) square based pyramid, cuboid

