

# Number and Place Value

# Knowledge Organiser

## Key Vocabulary

hundreds

tens

ones

zero

place value

greater than

less than

order

partition

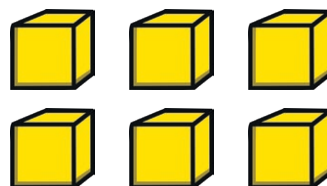
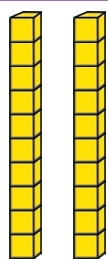
digit

## 2-Digit Numbers

# 26

twenty

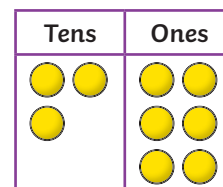
six



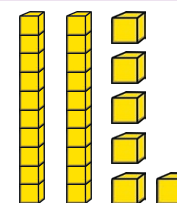
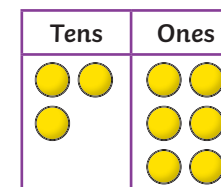
20

6

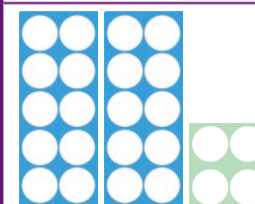
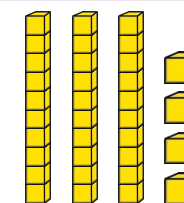
## Compare Numbers



$36 = 36$   
equals



$26 < 34$   
less than



$24 > 19$   
greater than



## Counting

Counting in 2s

0	2	4	6	8	10	12	14	16	18	20
---	---	---	---	---	----	----	----	----	----	----

Counting in 3s

0	3	6	9	12	15	18	21	24	27	30
---	---	---	---	----	----	----	----	----	----	----

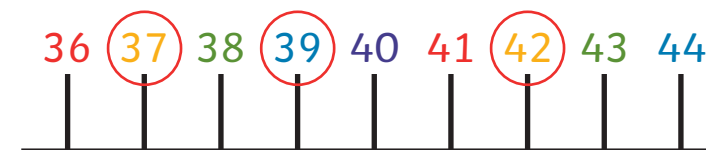
Counting in 5s

0	5	10	15	20	25	30	35	40	45	50
---	---	----	----	----	----	----	----	----	----	----

Counting in 10s

0	10	20	30	40	50	60	70	80	90	100
---	----	----	----	----	----	----	----	----	----	-----

## Order Numbers



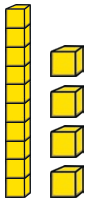
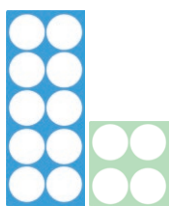

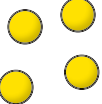

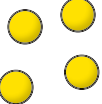
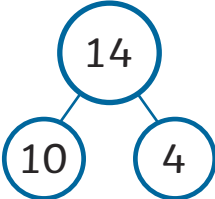

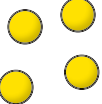
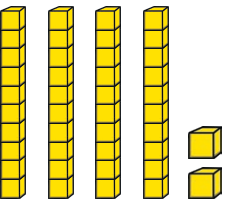
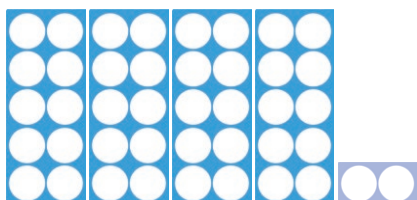
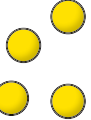
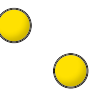
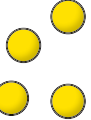
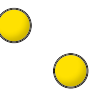
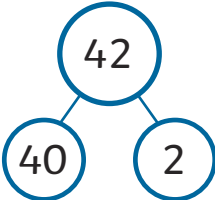
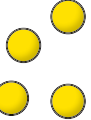
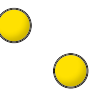
$37 < 39 < 42$

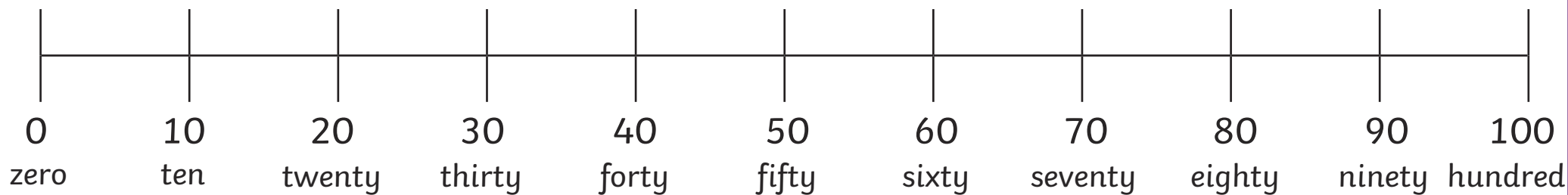
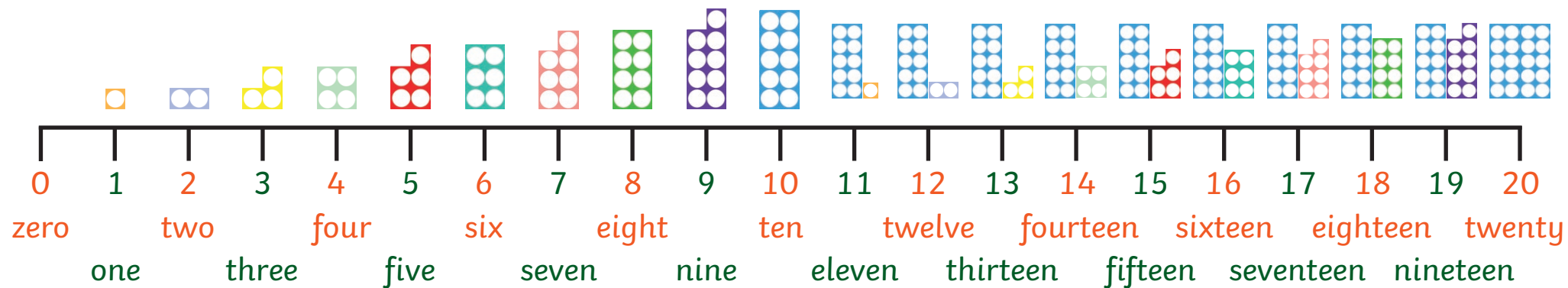


# Number and Place Value

# Knowledge Organiser

## Read, Write and Represent Numbers to 100

<h1>14</h1>	<p>fourteen</p>	<p>one ten four ones</p>			<table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Tens	Ones			
Tens	Ones									
										
<h1>42</h1>	<p>forty-two</p>	<p>four tens two ones</p>			<table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Tens	Ones			
Tens	Ones									
										



# Addition and Subtraction

# Knowledge Organiser

## Key Vocabulary

## Addition and Subtraction Bonds to 20

Add

Total

Make

Plus

Sum

More

Altogether

Difference

Leave

Subtract

Difference between

Less

Minus

Take away

Mentally, Orally

Column Addition

Column Subtraction

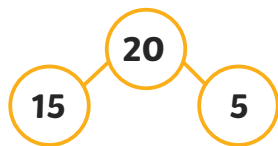
Estimate

Inverse operation

Solve problems

Number facts

Place Value



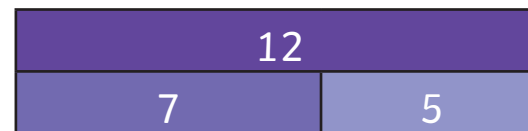
$15 + 5 = 20$

$20 - 5 = 15$

$20 - 15 = 5$



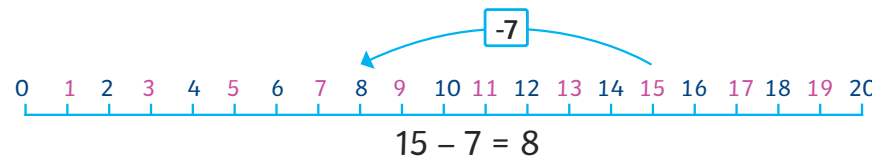
$4 + 3 = 7$



$7 + 5 = 12$

$12 - 5 = 7$

$12 - 7 = 5$

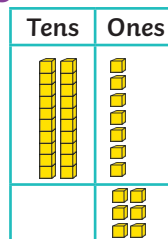


## Methods

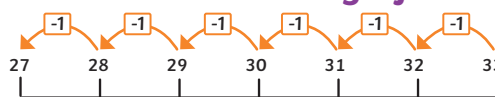
### Add 2-digit and 1-digit



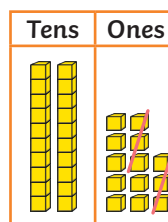
$27 + 6 = 33$



### Subtract 1-digit from 2-digit



$33 - 6 = 27$



### Add 2-digit numbers

$34 + 28 = 62$

3 tens and 4 ones

add

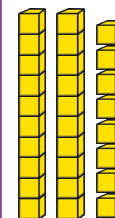
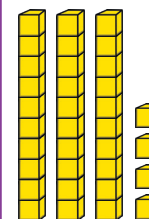
2 tens and 8 ones

equals

5 tens and 12 ones

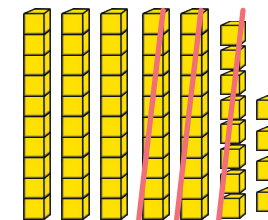
becomes

6 tens and 2 ones



### Subtract 2-digit numbers

$62 - 28 = 34$



6 tens and 2 ones becomes

5 tens and 12 ones subtract

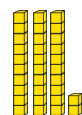
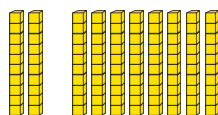
2 tens and 8 ones equals

3 tens and 4 ones

## Addition and Subtraction Bonds to 100

$2 + 8 = 10$

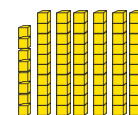
$so\ 20 + 80 = 100$



$32 + 68 = 100$

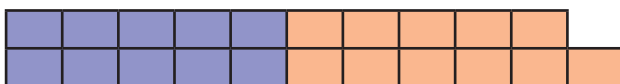
3 tens and 2 ones + 6 tens and 8 ones

= 9 tens and 10 ones = 10 tens = one hundred

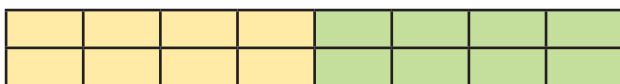


## Mental Methods

### Compare Number Sentences



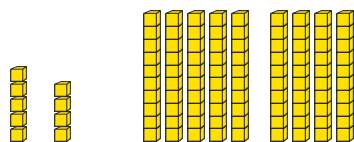
$$6 + 4 < 6 + 5$$



$$5 + 3 = 6 + 2$$

### Related facts

$$5 + 4 = 9 \text{ so } 50 + 40 = 90$$



### Add 3 1-digit numbers



$$9 + 5 + 3 = 17$$

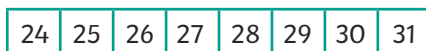
## More or Less/ Add and Subtract 1s and 10s

### Add and subtract 1s

$$24 + 1 = 25$$

$$24 + 2 = 26$$

$$24 + 3 = 27$$



$$37 - 1 = 36$$

$$37 - 2 = 35$$

$$37 - 3 = 34$$



There are 7 flowers in a vase. One more is added.

Now there are 8 flowers.



### 10 More or Less

30	40	50	60	70	80
----	----	----	----	----	----

47	57	67	77	87	97
----	----	----	----	----	----

The ones digit stays the same.

10 less	Number	10 more
1	11	21
34	44	54

Take care when crossing hundreds:

86	96	106	116
----	----	-----	-----

### Add and Subtract 10s

10	30	50	70	90
----	----	----	----	----

3	33	63	93
---	----	----	----

Tens	Ones

$$27$$

$$+ 40$$

---


$$67$$

Tens	Ones

$$72$$

$$- 30$$

---


$$42$$

Crossing hundreds:

74	94	114	134
----	----	-----	-----

## Check Calculations



$19 - 8 = 11$  can be checked using  $8 + 11 = 19$

$32 + 5 = 82$  ✗ Spot that 5 tens have been added not 5 ones


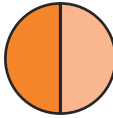




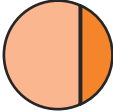

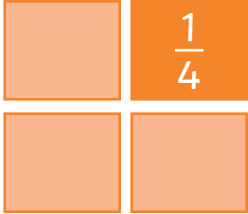

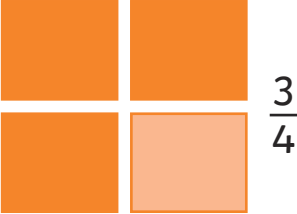
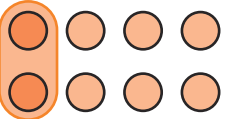
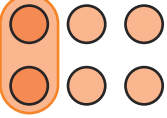
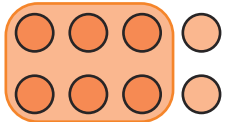
$28 - 26 = 12$  ✗ Spot that 28 and 26 are very close together, so difference won't be 12.

$37 - 4 = 41$  ✗ Spot that if subtracting 4 the answer will be smaller.

$68 - 40 = 64$  ✗ Spot that 4 ones have been subtracted and not 4 tens.

# Fractions

# Knowledge Organiser

Key Vocabulary	Whole	Equal Parts	Finding the Whole	Half
fraction			The <b>whole</b> is split into 2 equal parts. If 1 part is 3, the other part must be 3.	A <b>half</b> is 1 of 2 equal parts.
part				
whole	<b>Part</b>	<b>Unequal Parts</b>		
equal				
share				$\frac{1}{2}$ of 6 = 3
half	<b>Quarter</b>		<b>Third</b>	<b>Three-Quarters</b>
quarter	A <b>quarter</b> is 1 of 4 equal parts.		A <b>third</b> is 1 of 3 equal parts.	<b>Three-quarters</b> is 3 of 4 equal parts.
third				
equivalent				
numerator	$\frac{1}{4}$ of 8 = 2		$\frac{1}{3}$ of 6 = 2	$\frac{3}{4}$ of 8 = 6
denominator				

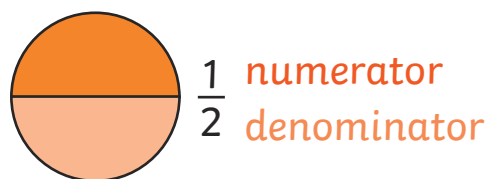
# Fractions

# Knowledge Organiser

## Denominator and Numerator

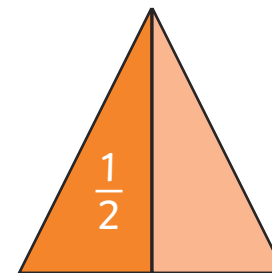
The **numerator** shows the number of **equal parts** to focus on.

The **denominator** shows the number of **equal parts** the **whole** is split into.



## Unit Fractions

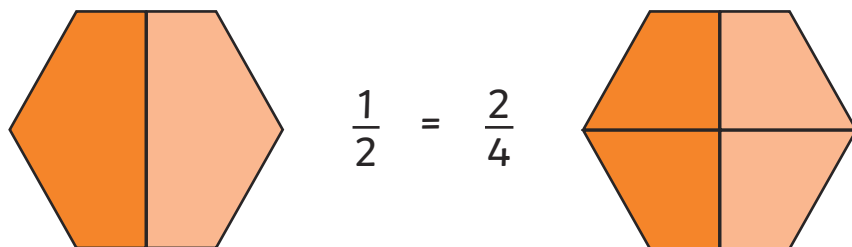
A **unit fraction** is **1 equal part** of a whole.



The **numerator** is **1**.

## Equivalent Fractions

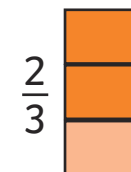
**1 half** has an equal value to **two quarters**.



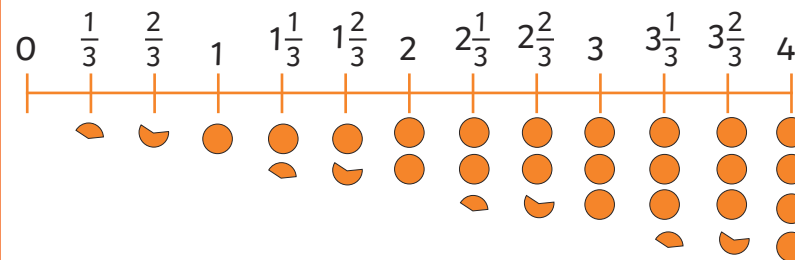
## Non-Unit Fractions

A **non-unit fraction** is **more than 1 equal part** of a whole.

The **numerator** is **greater than 1**.



## Counting in Fractions



# Multiplication and Division

# Knowledge Organiser

## Key Vocabulary

groups

equal groups

lots of

arrays

repeated addition

multiplication

times tables

divison

odd

even

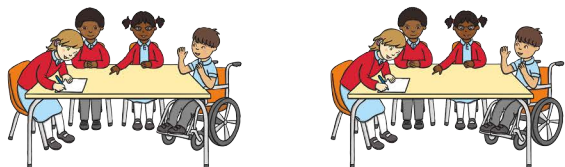
double

half

## Recognise Equal Groups



5 equal groups with 3 in each group



2 equal groups with 4 in each group

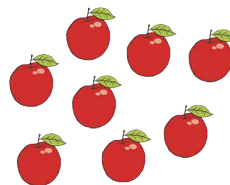


4 equal groups of 10

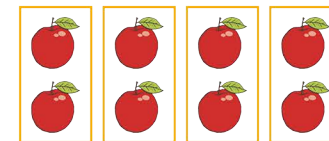


6 equal amounts of 5 pence

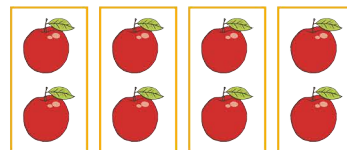
## Make Equal Groups



Make 4 equal groups.

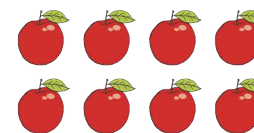


## Add Equal Groups



$2 + 2 + 2 + 2 = 8$  apples

## The Multiplication Symbol



$$4 \times 2 = 8$$

8 apples



$$2 \times 4 = 8$$

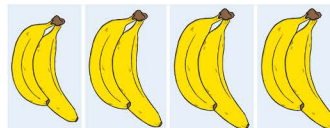


$$2 \times 5 = 10$$

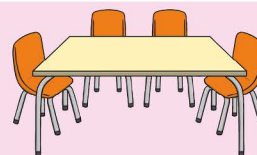
10 cookies

$$5 \times 2 = 10$$

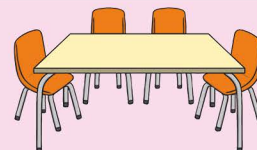
## Multiplication from Pictures



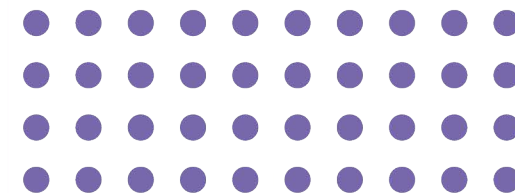
4 lots of 2  
 $= 8$



2 lots of 4  
 $= 8$



## Use Arrays



4 rows of 10 = 40  
10 columns of 4 = 40

# Multiplication and Division

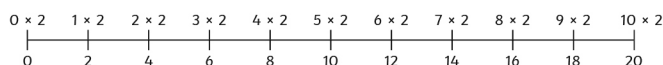
## The 2 Times Table



$$6 \text{ lots of } 2 = 12$$

$$6 \times 2 = 12$$

2	4	6	8	10	12	14	16	18	20	22	24
---	---	---	---	----	----	----	----	----	----	----	----



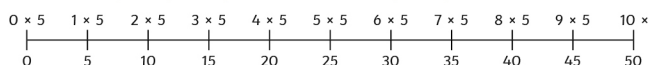
## The 5 Times Table



$$9 \text{ lots of } 5 = 45$$

$$9 \times 5 = 45$$

5	10	15	20	25	30	35	40	45	50	55	60
---	----	----	----	----	----	----	----	----	----	----	----



# Knowledge Organiser

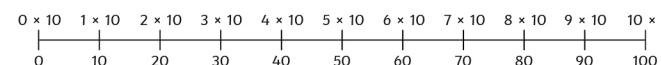
## The 10 Times Table



$$7 \text{ lots of } 10p = 70p$$

$$7 \times 10 = 70$$

10	20	30	40	50	60	70	80	90	100	110	120
----	----	----	----	----	----	----	----	----	-----	-----	-----



## Divide by 2

There are 10 sandwiches altogether.

There are 5 lunch boxes.

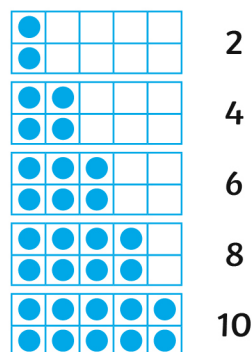
There are 2 sandwiches in each lunch box.



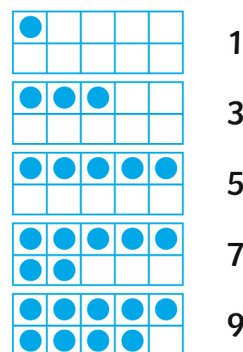
$$10 \div 5 = 2$$

## Odd and Even Numbers

### Even Numbers



### Odd Numbers



## Divide by 5

There are 30 grapes altogether.

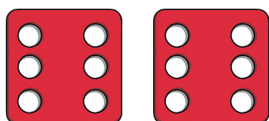
There are 5 bowls.

There are 6 grapes in each bowl.



$$30 \div 5 = 6$$

## Doubling and Halving



Double 6 is 12



Half of 12 is 6

## Divide by 10

There are 50 pencils altogether.

There are 10 pots.

There are 5 pencils in each pot.



$$50 \div 10 = 5$$

## The 5 and 10 Times Table

5	10	15	20	25	30	35	40	45	50
---	----	----	----	----	----	----	----	----	----

10	20	30	40	50	60	70	80	90	100
----	----	----	----	----	----	----	----	----	-----

What do you notice?

# Length and Height

# Knowledge Organiser

## Measuring in Centimetres

### Key Vocabulary

length

longer

shorter

height

taller

measure

ruler

tape measure

metre stick

centimetre (cm)

metre (m)

compare

order

Measure from zero.



This ruler measures in **centimetres (cm)**.  
The paintbrush is 8cm long.

This ruler is to scale.

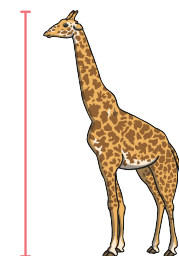


## Comparing Height

The giraffe is **taller** than the lion. The lion is **shorter** than the giraffe.

4m

$4m > 1m$



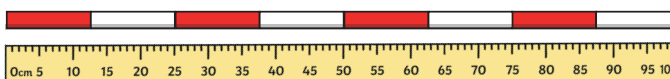
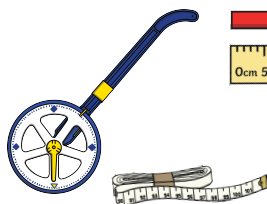
1m



## Measuring in Metres

We can measure the length or height of larger objects in **metres (m)**.

The girl is 1m and 20cm tall.



We can use metre sticks, trundle wheels or tape measures.  
**1 metre = 100 centimetres**

## Comparing Length

The pencil is **shorter** than the pen.  
The pen is **longer** than the pencil.

7cm



10cm

$7cm < 10cm$

# Length and Height

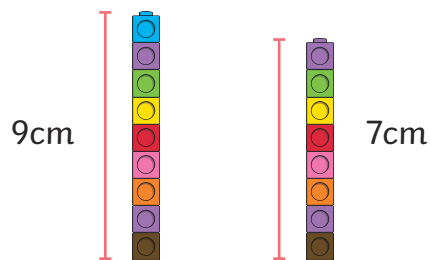
## Ordering Length

The straws are in order from **longest** to **shortest**.



A is the **longest**. B is **longer** than C.  
D is the **shortest**. C is **shorter** than A.

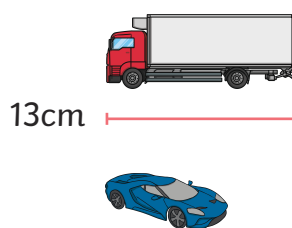
## Addition with Height



If we stacked the towers, how tall would they be altogether?

$$9\text{cm} + 7\text{cm} = 16\text{cm}$$

## Subtraction with Length



The car is 6cm **shorter** than the truck. How long is the car?

$$13\text{cm} - 6\text{cm} = 7\text{cm}$$

## Multiplication with Length



The chain has 5 links. Each link is 5cm long. How long is the chain?

$$5 \times 5\text{cm} = 25\text{cm}$$

## Division with Length

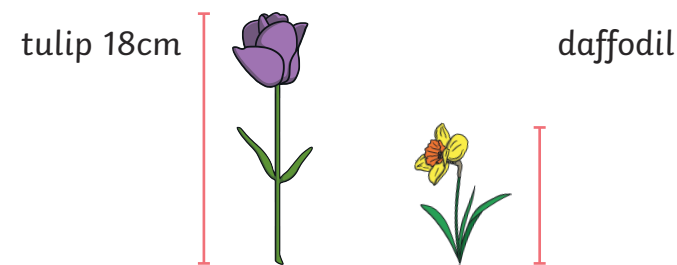


The string of beads is 20cm long. How long is each bead?

$$20\text{cm} \div 10 = 2\text{cm}$$

# Knowledge Organiser

## Halving with Height



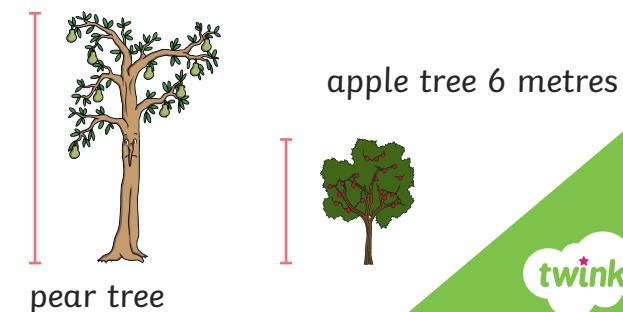
The daffodil is half as tall as the tulip. How tall is it?

Half of 18cm is 9cm.

## Doubling with Height

The pear tree is double the height of the apple tree. How tall is it?

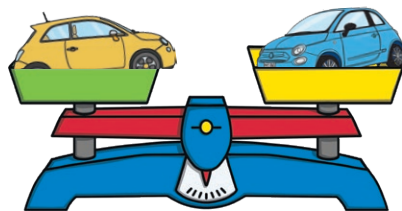
12 metres is double 6 metres.



Key Vocabulary
mass
gram
kilogram
lighter
heavier

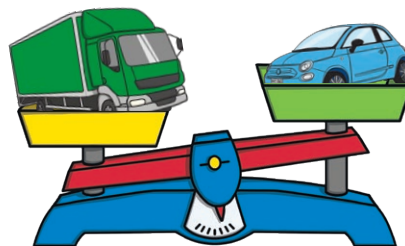
## Comparing Mass

balanced



heavier

lighter



lighter

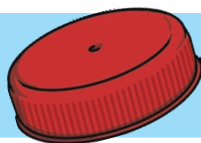
heavier



## Grams

**Grams** are standard units used to measure the mass of lighter objects.

These have about the same **mass** as 1 **gram**.

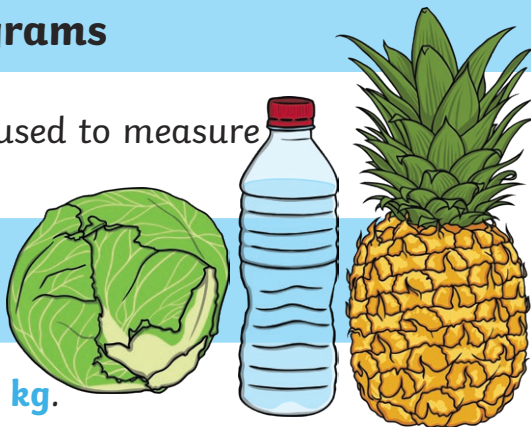


We can also write **gram** as **g**.

## Kilograms

**Kilograms** are standard units used to measure the mass of heavier objects.

These have about the same **mass** as 1 **kilogram**.

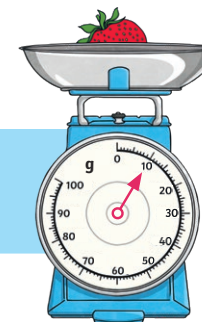


We can also write **kilogram** as **kg**.

## Measuring Mass in Grams

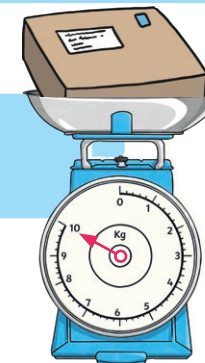
We can use **scales** to measure **mass**.

The strawberry has a **mass** of 10 **grams**.




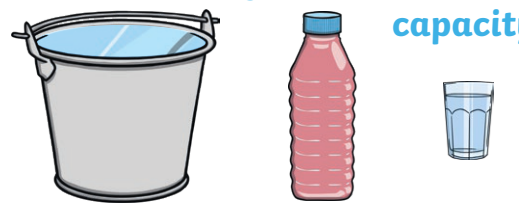
## Measuring Mass in Kilograms

The parcel has a **mass** of 10 **kilograms**.



# Mass, Capacity and Temperature

# Knowledge Organiser

Key Vocabulary	Volume	Capacity
capacity	<p>Volume tells us the amount a container <b>is holding</b>.</p> <p><b>full</b>      <b>half full</b>      <b>empty</b></p> 	<p>Capacity tells us the amount a container <b>can hold</b> when full.</p> <p><b>greatest capacity</b>      <b>smallest capacity</b></p> 
volume		
millilitre		
litre		

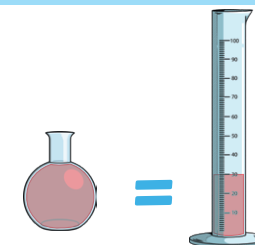
## Millilitres

**Millilitres** are standard units used to measure volume and capacity.  
We can also write **millilitres** as **ml**.



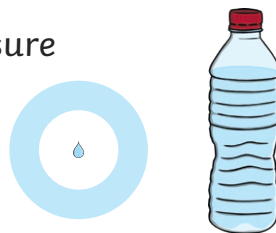
## Measuring Capacity in Millilitres

The full bottle was poured into the measuring cylinder.  
The bottle has a capacity of 30ml.



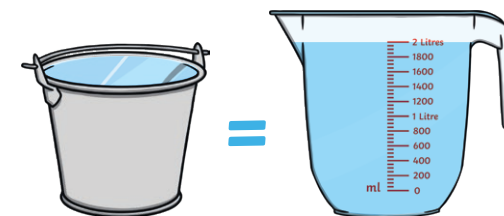
## Litres

**Litres** are standard units used to measure volume and capacity.  
There are 1000 millilitres in 1 litre.  
We can also write **litres** as **l**.



## Measuring Capacity in Litres

The full bucket was poured into the measuring jug.  
The bucket has a capacity of 2l.



## Measuring Temperature

### Key Vocabulary

temperature

Celsius

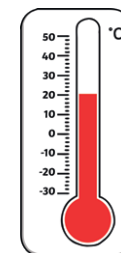
degrees

**Temperature** tells us how **hot** or **cold** something is.

**Degrees Celsius** are standard units used to measure **temperature**.

Degrees Celsius can also be written as °C.

We can use thermometers to measure temperature.



This thermometer shows a temperature of 20°C.

## Key Vocabulary

time

clock

hours

minutes

hand

o'clock

half past

quarter past

quarter to

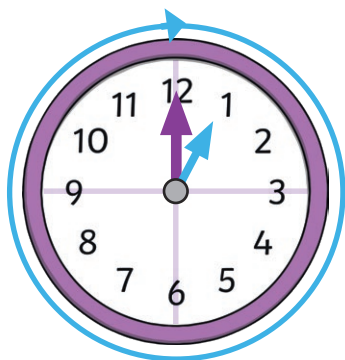
five minutes

duration

shorter

longer

## O'Clock

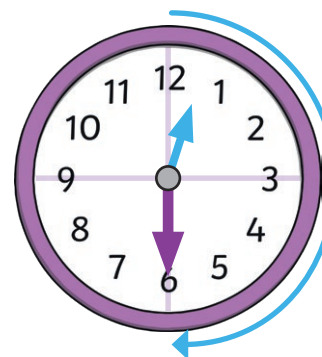


1 o'clock

It takes one hour for the **hour hand** to turn from the number showing this hour and the number showing the next hour.

It takes the **minute hand** an hour to make a whole turn around the clock.

## Half Past

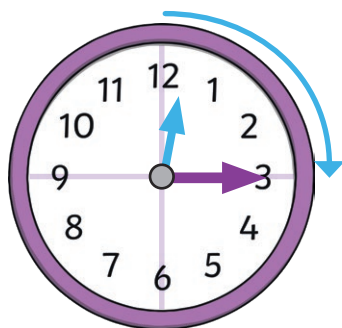


half past 12

It takes half an hour for the **hour hand** to turn halfway between the number showing this hour and the number showing the next hour.

It takes half an hour for the **minute hand** to turn halfway around the clock.

## Quarter Past

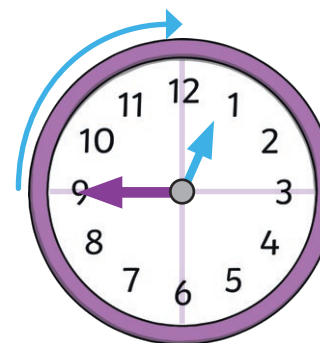


quarter past 12

It takes a quarter of an hour for the **hour hand** to turn a quarter of the way between the number showing this hour and the number showing the next hour.

It takes a quarter of an hour for the **minute hand** to turn a quarter of the way around the clock.

## Quarter To

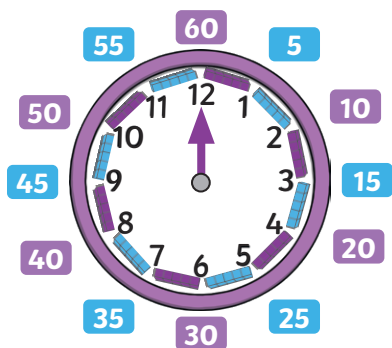


quarter to 1

It will take the **hour hand** a quarter of an hour to reach the number representing the next hour.

It will take the **minute hand** a quarter of an hour to begin the new hour.

## Minutes in an Hour

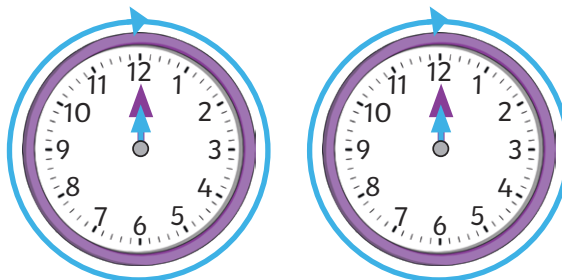


There are 60 minutes in one hour.



## Hours in a Day

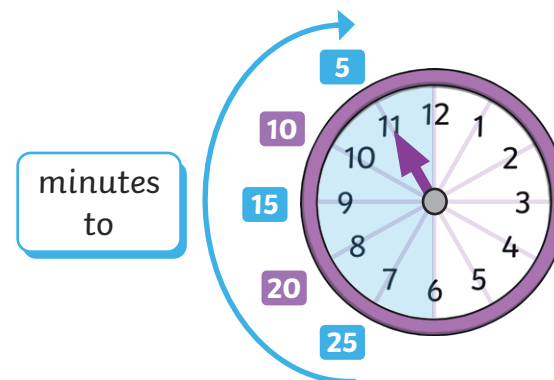
Each day, the hour hand makes 2 full turns around the clock.



Each whole turn takes **12 hours**.  
There are **24 hours** in a day.

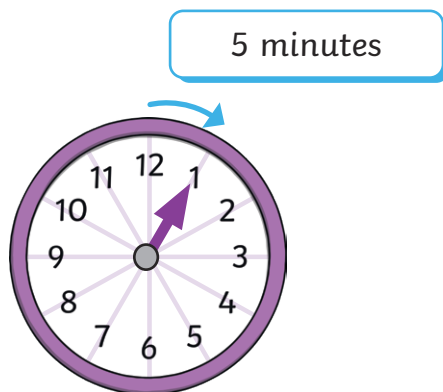


## 5 Minute Intervals to the Hour



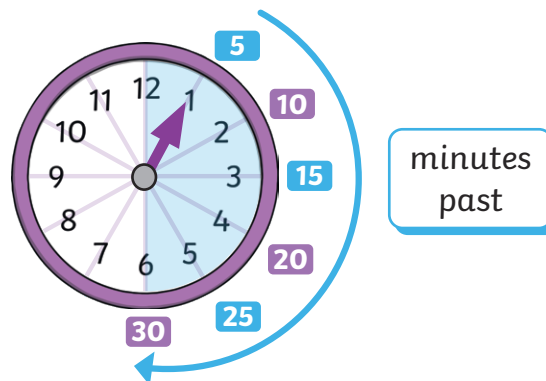
When the **minute hand** turns through the left side of the clock, it shows minutes **to** the next hour.

## 5 Minute Intervals



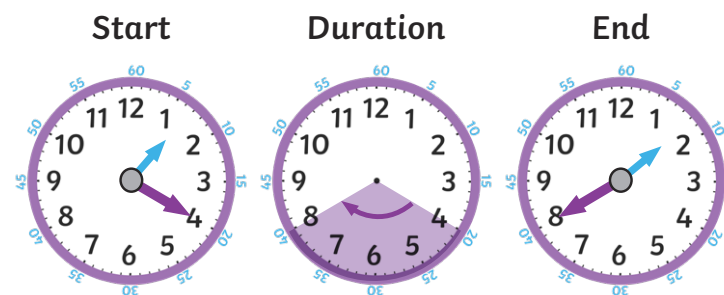
It takes five minutes for the **minute hand** to turn from one number to the next.

## 5 Minute Intervals past the Hour



When the **minute hand** turns through the right side of the clock, it shows minutes **past** the hour.

## Find Durations of Time



20 minutes have passed.

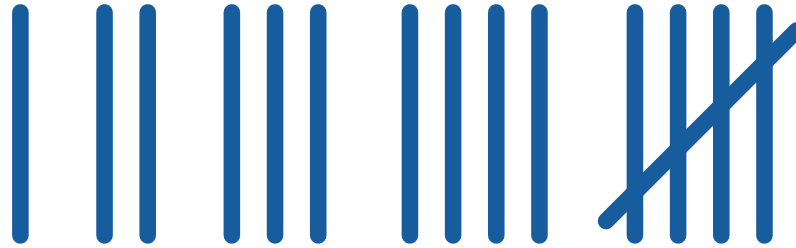
Key Vocabulary

Tally Charts

Block Diagram

data

Tally marks look like this:



interpret

key

tally chart

The fifth mark goes across diagonally, like a gate.

pictogram

A tally chart is one way of collecting data using tally marks.

block diagram

Eye Colour	Tally	Total
brown	I	6
blue	III	8
green		3
grey		4
hazel		5

table

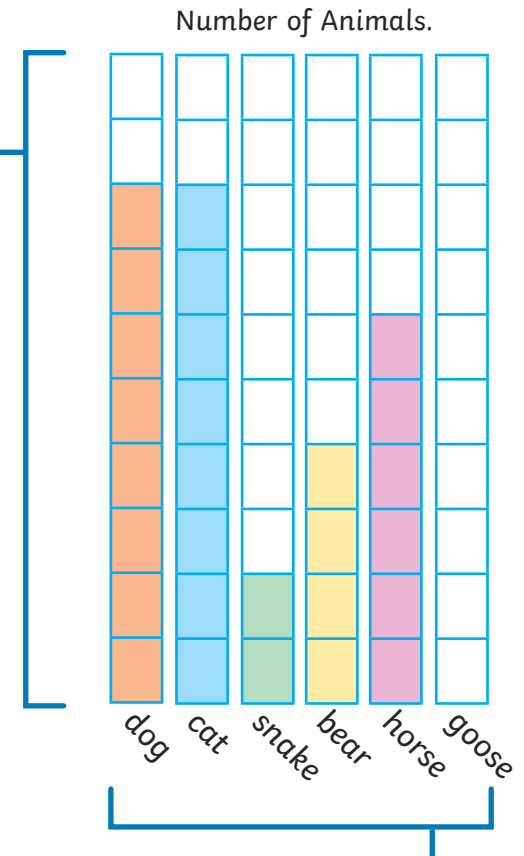
total

compare

symbol

A block diagram represents data using blocks. One block represents one item.

In this block diagram, the **y-axis**, which is vertical, shows the number of items.



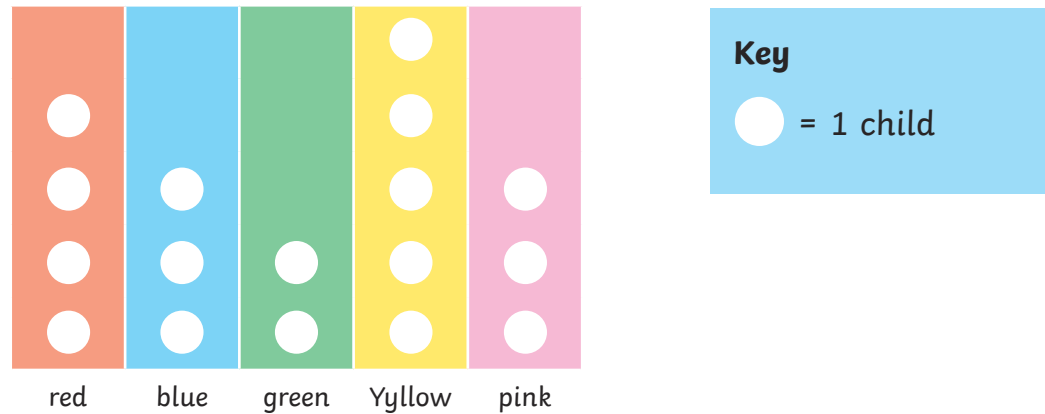
In this block diagram, the **x-axis**, which is horizontal, shows the types of items.

The blocks can go vertically or horizontally.

Pictograms

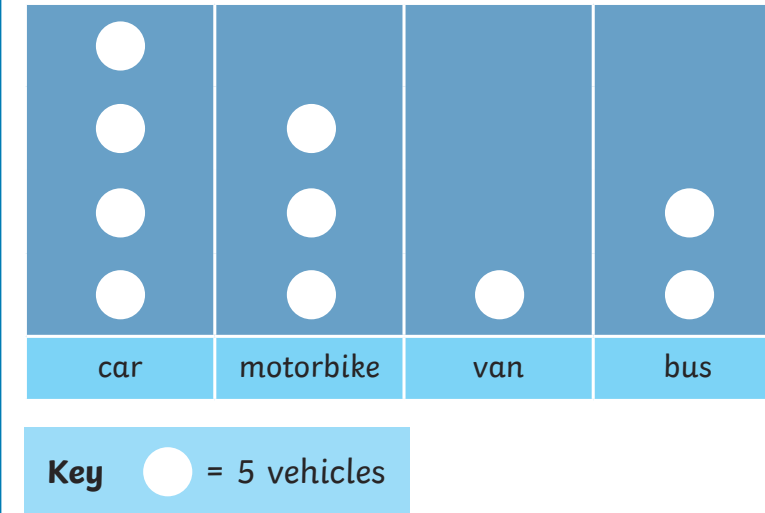
Pictograms use pictures or symbols to represent data. Each picture or symbol can represent one item or more than one. The key shows what each symbol represents.

Favourite Colour



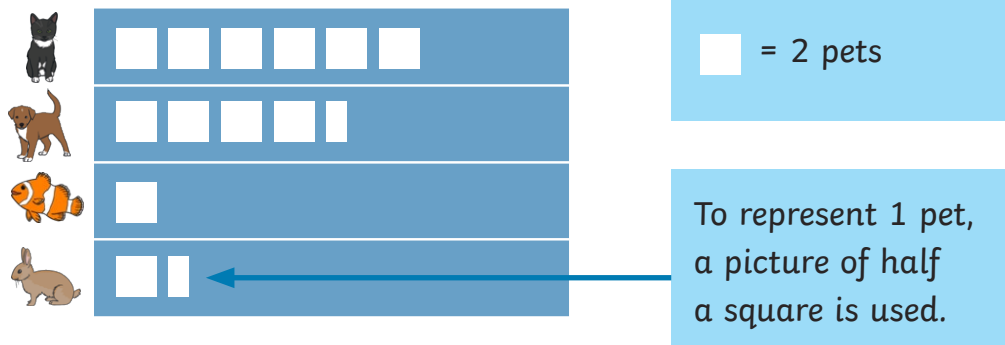
Here is an example of a pictogram with a different scale.

Traffic Survey



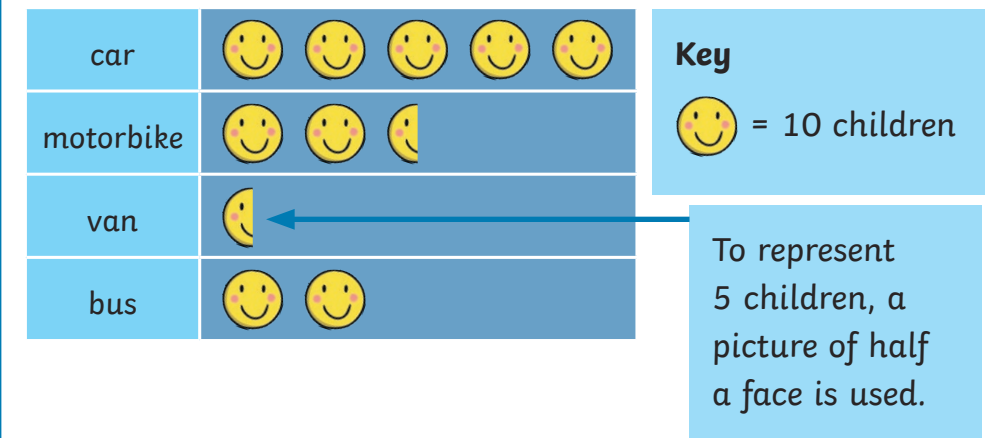
This pictogram uses one symbol to represent 2 pets.

Class 1's Pets



This pictogram has one symbol to represent 10 children.

Ways of Travelling to School



Key Vocabulary

forwards

backwards

left

right

north

south

east

west

quarter turn

half turn

three-quarter turn

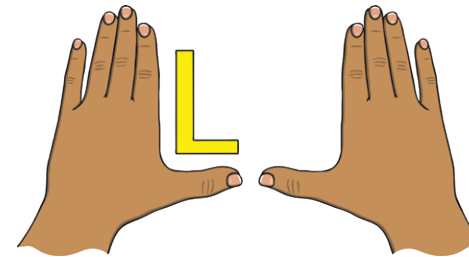
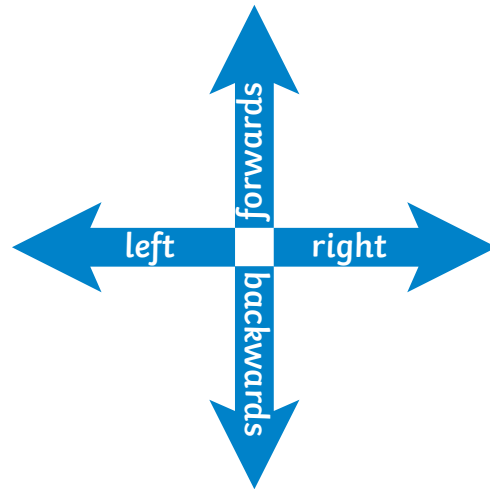
clockwise

anticlockwise

pattern

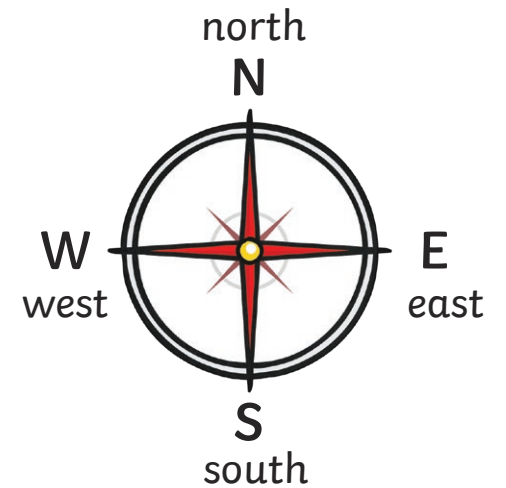
sequence

Describing Straight-Line Movement

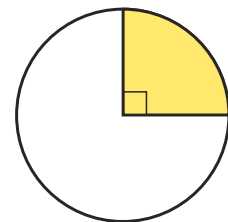


**Left and Right**

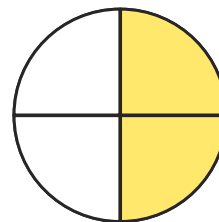
The hand that makes an **L** shape is the **left hand**.



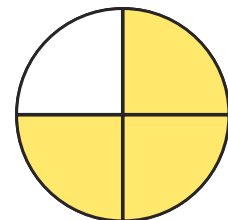
Describing Turns



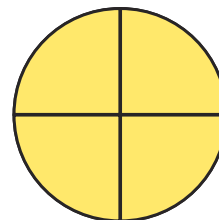
quarter turn



half turn

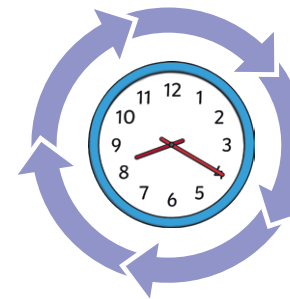


three-quarter turn



full turn

**clockwise**



**anticlockwise**

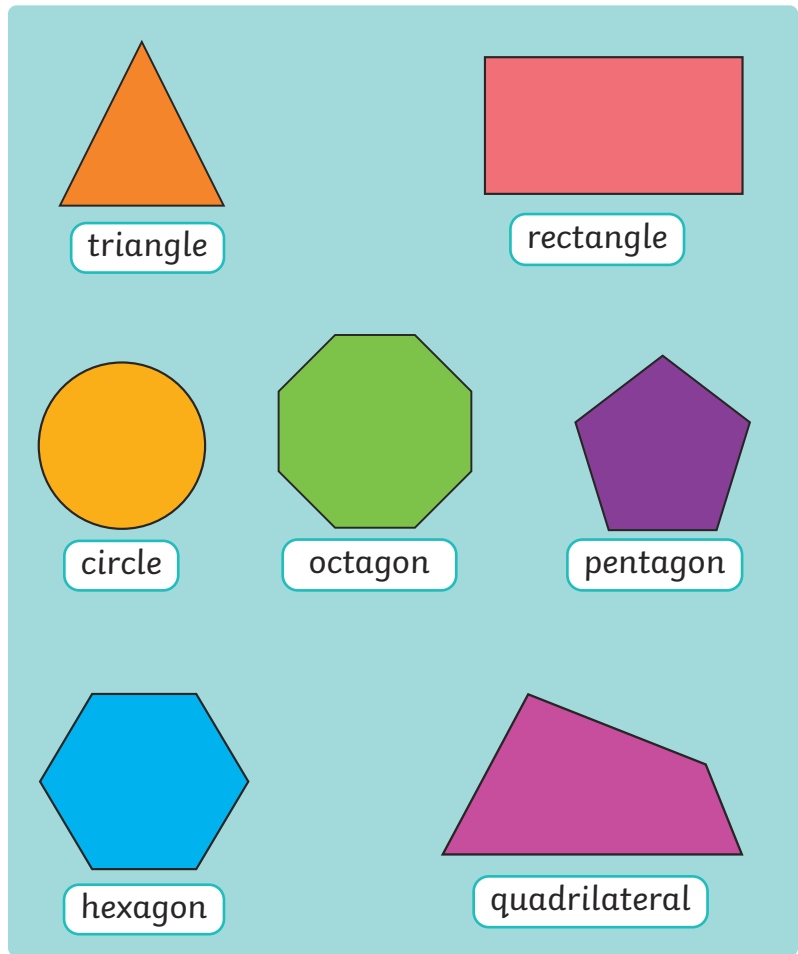
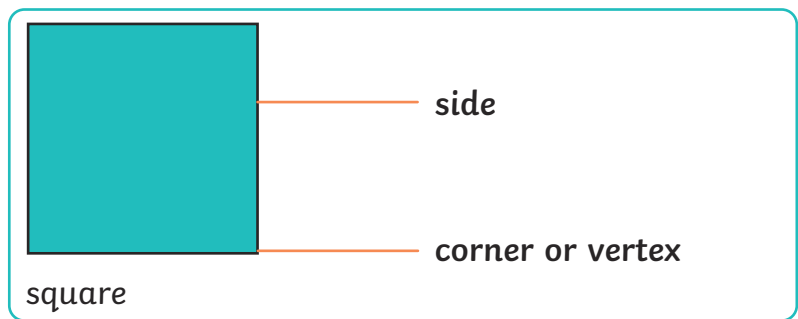


If the turn is in the same direction as the hands of a clock, it is **clockwise**.

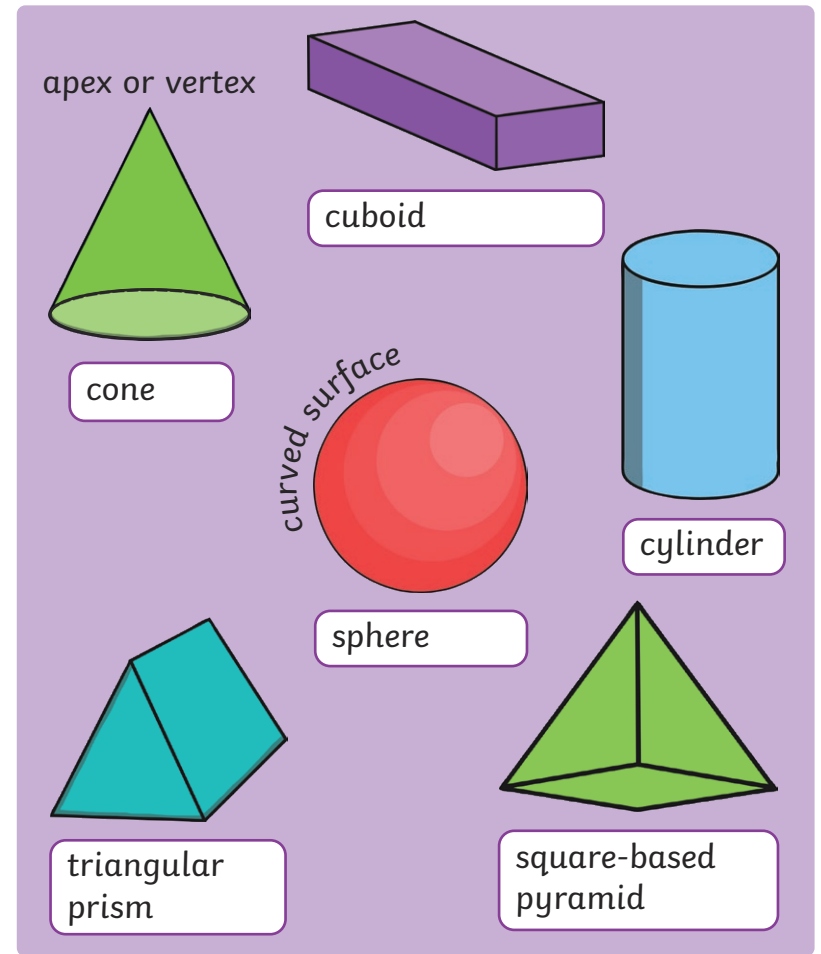
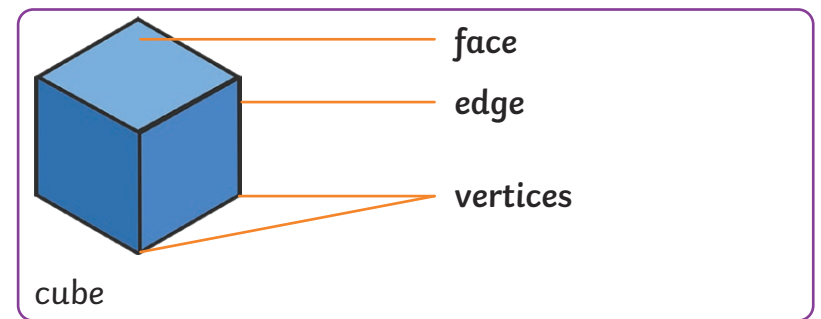
If the turn is in the opposite direction to the hands of a clock, it is **anticlockwise**.

Key Vocabulary
two-dimensional (2D)
three-dimensional (3D)
flat
solid
corner
apex
vertex
vertices
side
edge
face
curved surface
straight
round
line of symmetry
vertical
pattern

Recognise and Describe 2D Shapes

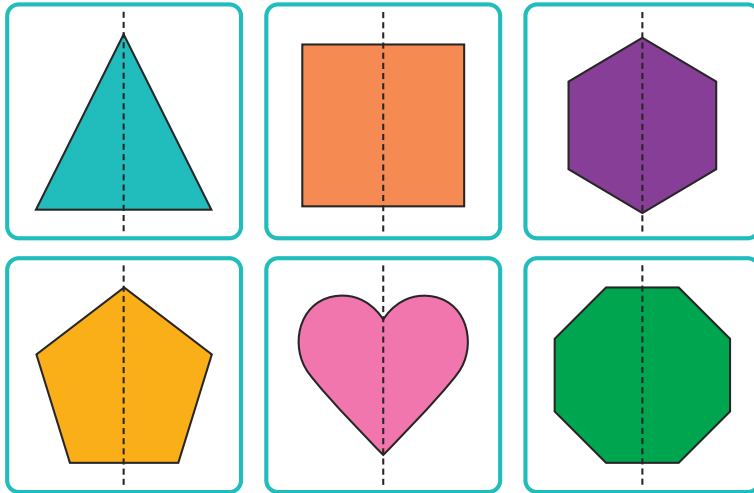


Recognise and Describe 3D Shapes

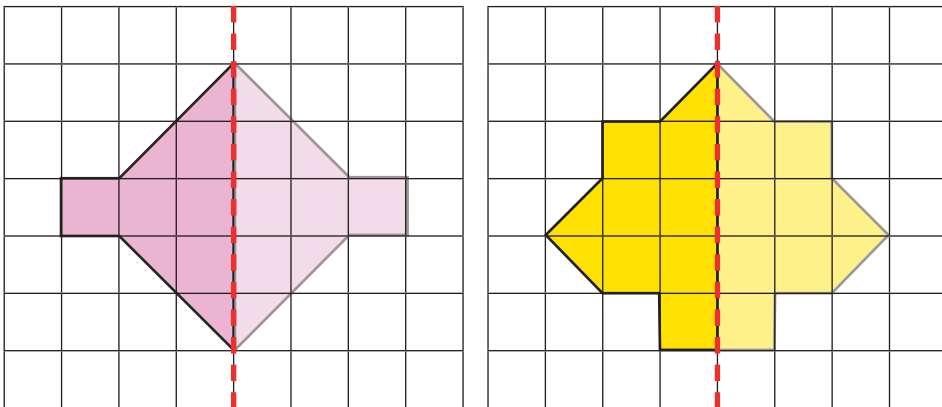


Lines of Symmetry

These 2D shapes have a vertical line of symmetry.

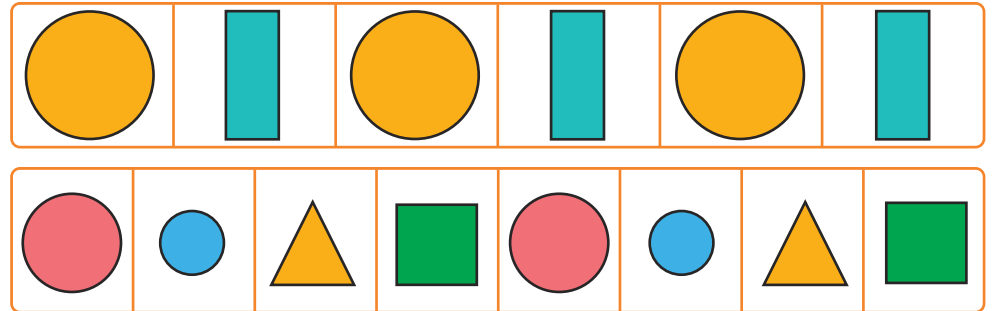


Using symmetry to complete a picture.

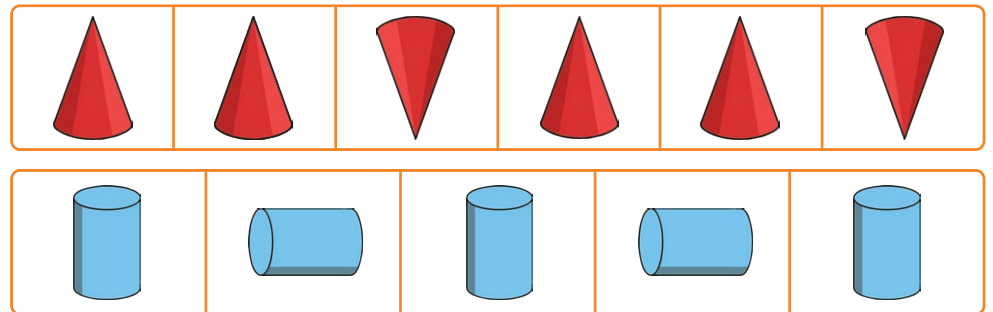


Repeating Shape Patterns

2D Patterns



3D Patterns



Symmetrical Shape Patterns

