

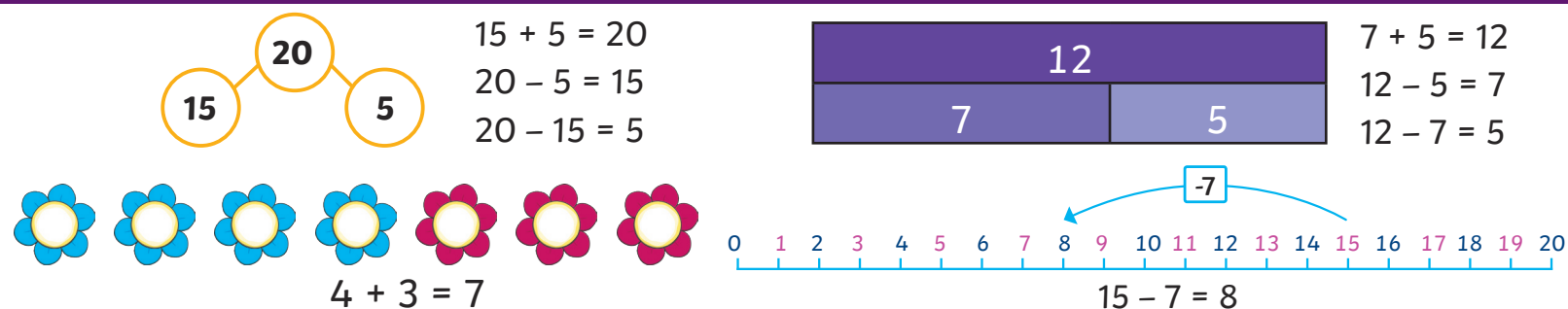
Addition and Subtraction

Knowledge Organiser

Key Vocabulary

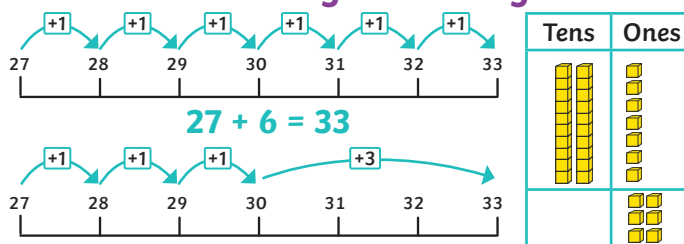
Add
Total
Make
Plus
Sum
More
Altogether
Difference
Leave
Subtract
Difference between
Less
Minus
Take away
Mentally, Orally
Column Addition
Column Subtraction
Estimate
Inverse operation
Solve problems
Number facts
Place Value

Addition and Subtraction Bonds to 20

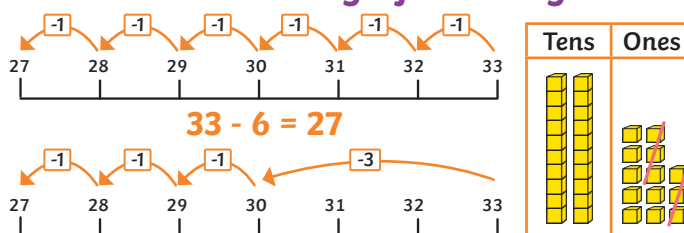


Methods

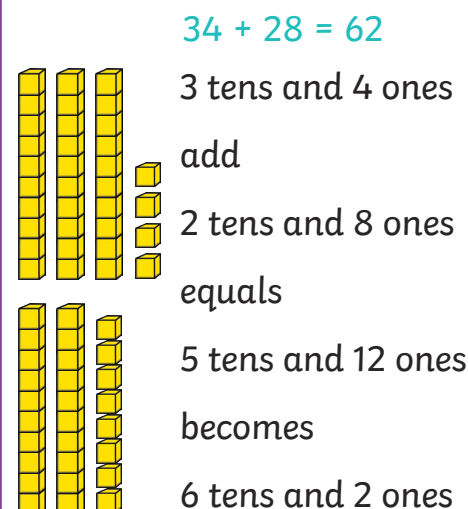
Add 2-digit and 1-digit



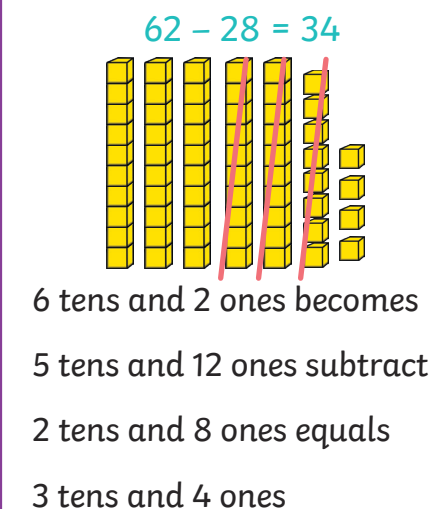
Subtract 1-digit from 2 digit



Add 2-digit numbers

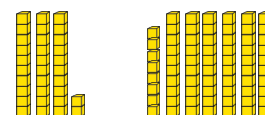
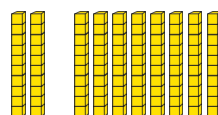


Subtract 2-digit numbers



Addition and Subtraction Bonds to 100

$2 + 8 = 10$
so $20 + 80 = 100$



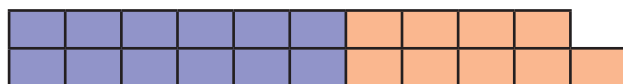
$32 + 68 = 100$
3 tens and 2 ones + 6 tens and 8 ones
= 9 tens and 10 ones = 10 tens = one hundred

Addition and Subtraction

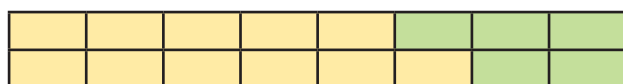
Knowledge Organiser

Mental Methods

Compare Number Sentences



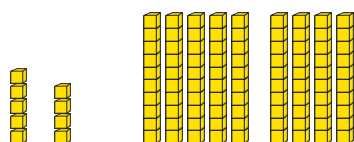
$$6 + 4 < 6 + 5$$



$$5 + 3 = 6 + 2$$

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

$$24 + 1 = 25$$

$$24 + 2 = 26$$

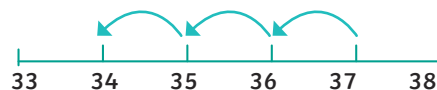
$$24 + 3 = 27$$



$$37 - 1 = 36$$

$$37 - 2 = 35$$

$$37 - 3 = 34$$



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 $8 + 11 = 19$

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

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

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

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

Key Vocabulary

Recognising Unit Fractions

fraction

part

whole

equal

share

half

quarter

third

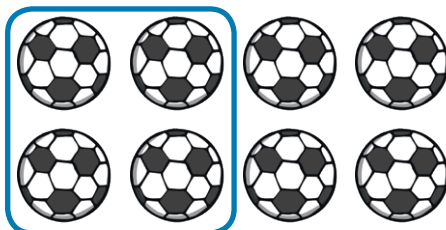
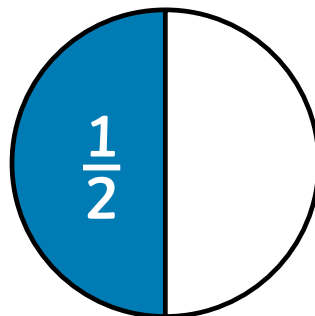
equivalent

numerator

denominator

Half

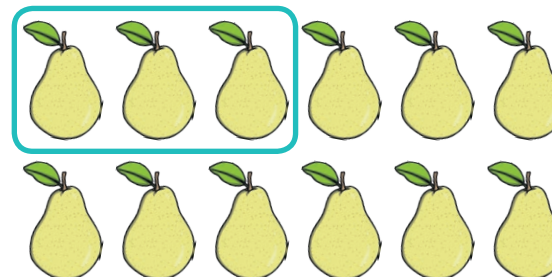
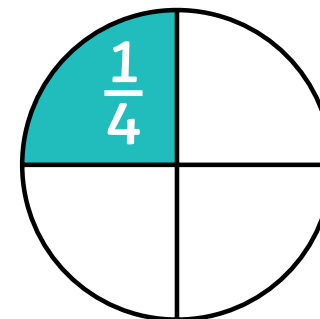
A whole split into two equal parts.



$$\frac{1}{2} \text{ of } 8 = 4$$

Quarter

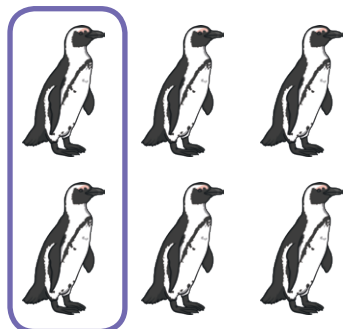
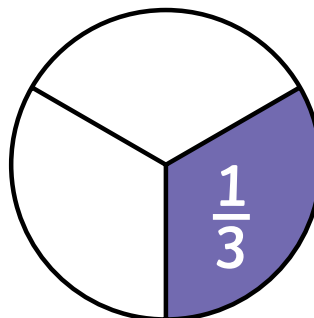
A whole split into four equal parts.



$$\frac{1}{4} \text{ of } 12 = 3$$

Third

A whole split into three equal parts.



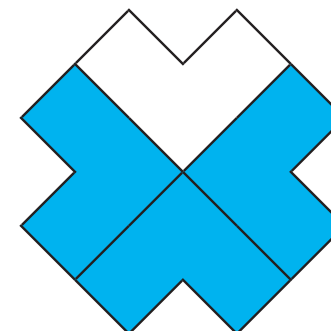
$$\frac{1}{3} \text{ of } 6 = 2$$

Non-unit Fractions

$$\frac{2}{3}$$

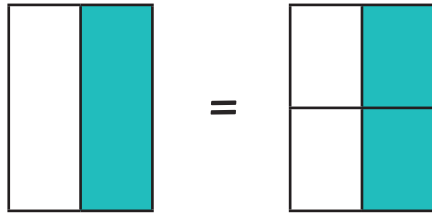


$$\frac{3}{4}$$

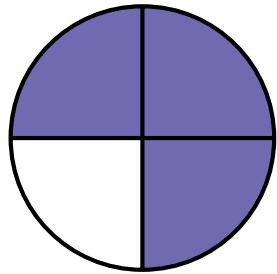


Equivalent Fractions

$$\frac{1}{2} = \frac{2}{4}$$



Numerator and Denominator



$\frac{3}{4}$

Numerator

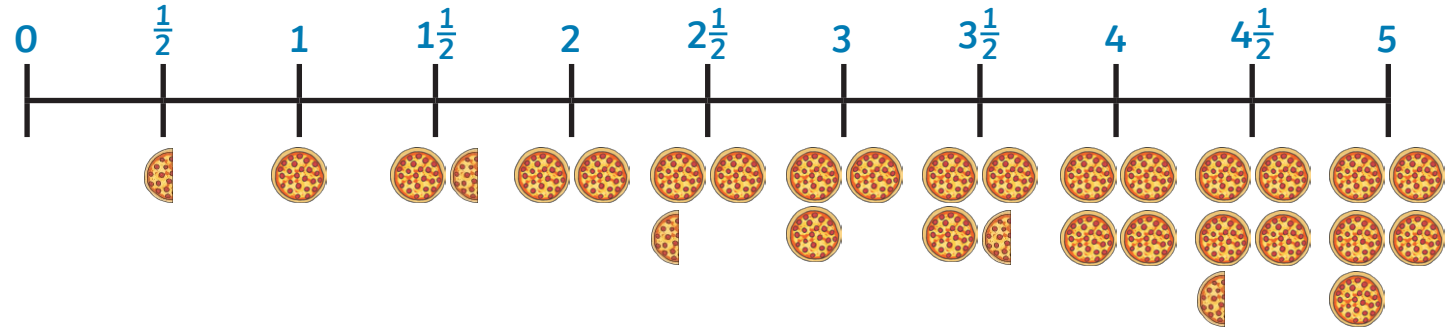
How many equal parts of the whole are needed?

Denominator

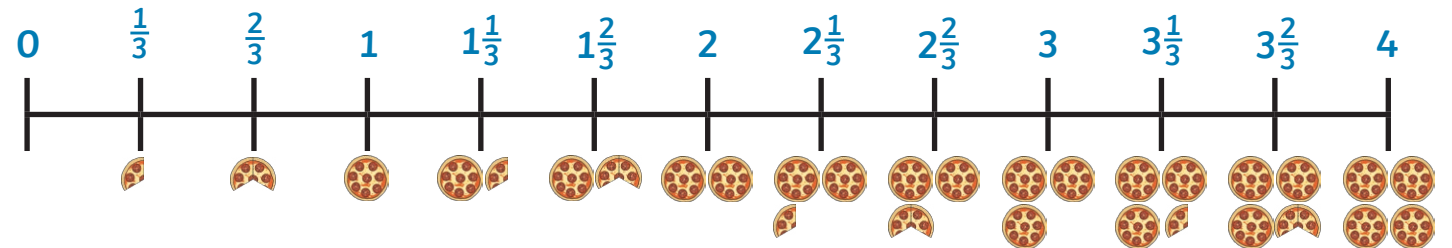
How many equal parts are in the whole?

Counting in Fractions

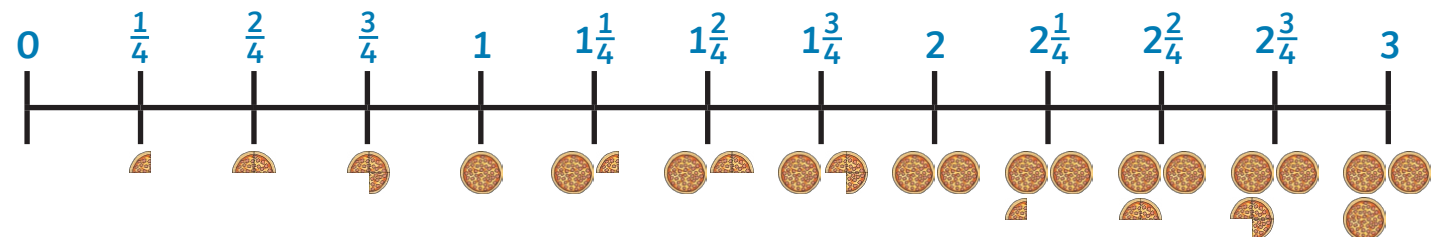
Halves



Thirds



Quarters



**Please make sure that you print this resource at 100% so that all measurements are correct.
To do this, follow the relevant steps below.**

Adobe Reader or Adobe Acrobat

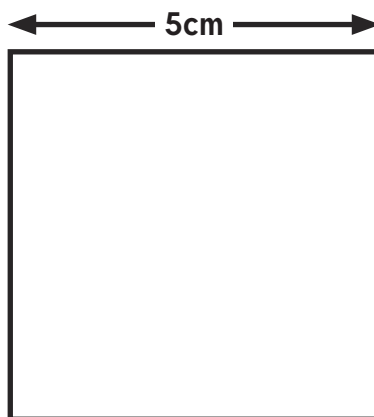
- Adobe Reader is a free PDF viewer, from Adobe. To install a copy of Adobe Reader, go to <https://get.adobe.com/uk/reader/>.
- Once Adobe Reader is installed, open your PDF.
- Go to File>Print.
- Under 'Page Sizing & Handling', select 'Size'.
- From here, make sure that 'Actual Size' is selected.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.

Foxit Reader

- Go to File>Print.
- Set the 'Scaling' to 'None'.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.

Web Browser

- If printing from a web browser, such as Chrome, Firefox or Microsoft Edge make sure that your printer is set to print at 100%, either by unticking 'Fit to Page' or selecting 'Actual Size'.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.



Key Vocabulary

length

long

short

height

tall

measure

ruler

tape measure

metre stick

centimetre (cm)

metre (m)

compare

order

Measuring in Centimetres

Measure from zero.



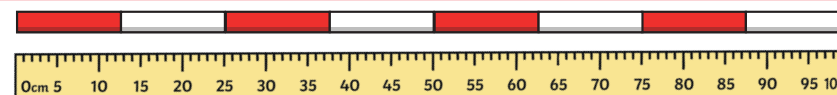
This ruler measures in **centimetres (cm)**. The paintbrush is 8cm long.

This ruler is to scale.

Measuring in Metres



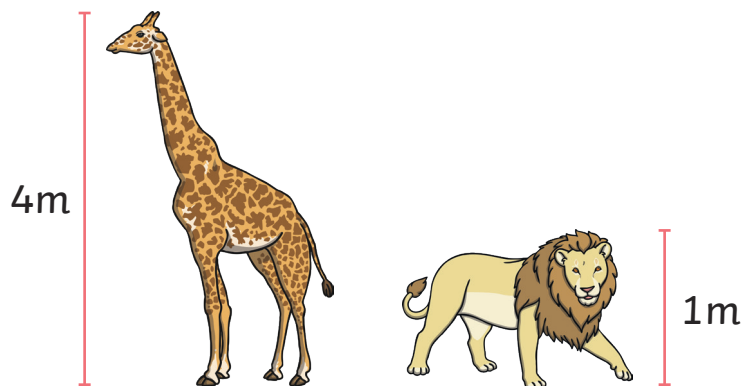
We can measure the length or height of larger objects in **metres (m)**.
The girl is 1m and 20cm tall.



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

Comparing Height

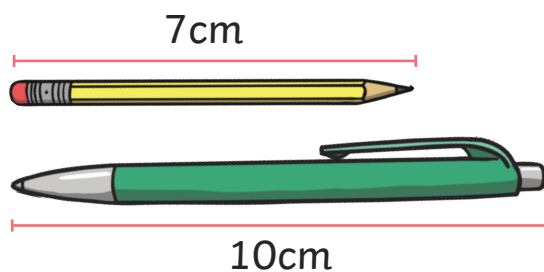
The giraffe is **taller** than the lion.
The lion is **shorter** than the giraffe.



$$4\text{m} > 1\text{m}$$

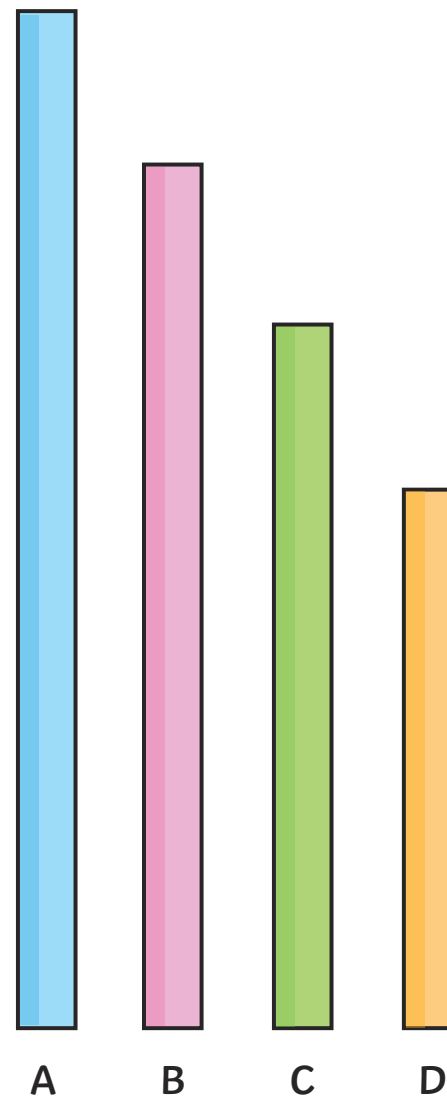
Comparing Length

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



$$7\text{cm} < 10\text{cm}$$

Ordering Length



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

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

Mass, Capacity and Temperature

Knowledge Organiser

Key Vocabulary

mass

gram

kilogram

lighter

heavier

capacity

volume

millilitre

litre

temperature

Celsius

degrees

Mass



We use scales to measure **grams**.

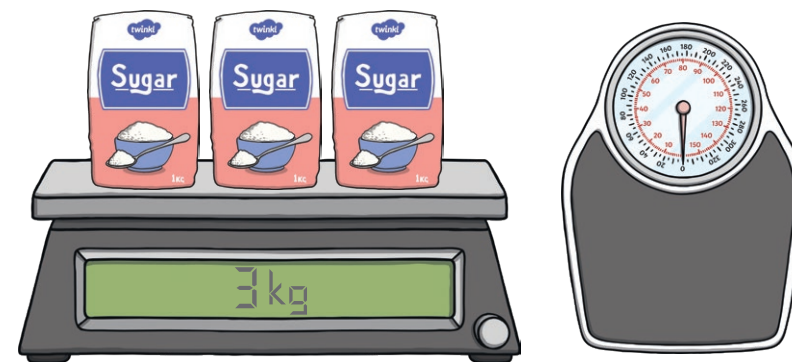
A gram is a small unit of measurement that we use to measure how heavy or light something is.

We can write gram as **g**.

We measure the following using grams:



15g > 10g



We also use scales to measure **kilograms**.

A kilogram is a larger unit of measurement that we use to measure how light or heavy something is.

We can write kilogram as **kg**.

We measure the following using kilograms:



1kg < 3kg

Mass, Capacity and Temperature

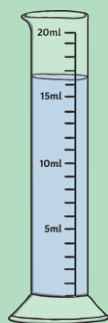
Knowledge Organiser

Capacity

Capacity is the amount of liquid a container can hold.

Volume is how much liquid is in the container.

Millilitres



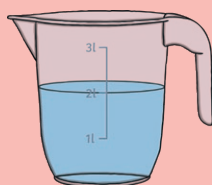
We can use a measuring cylinder to measure very small volumes.

We measure these in millilitres.
We write this as ml.

$$1000\text{ml} = 1\text{l}$$



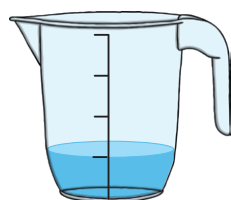
Litres



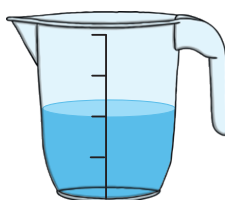
We can use a jug to measure larger volumes.

We measure these in litres.
We write this as l.

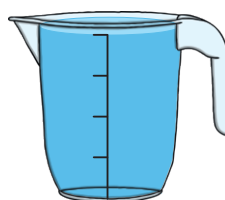
$$1000\text{ml} = 1\text{l}$$



quarter full



half full



full

$$25\text{ml} < 250\text{ml} \quad 10\text{l} > 2\text{l}$$

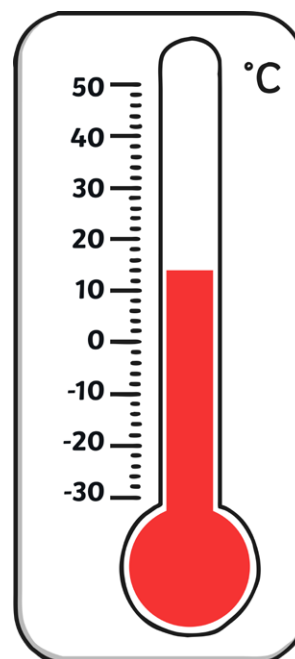
Temperature

Temperature is a measure of heat.

Thermometers are used to measure temperature.

We usually measure temperature in **degrees Celsius ($^{\circ}\text{C}$)** but some parts of the world use degrees Fahrenheit ($^{\circ}\text{F}$).

We can measure the temperature of air, liquids or objects using a thermometer.



Most thermometers have small tubes and a bulb of liquid at the bottom. The hotter the temperature, the higher the liquid from the bulb rises in the tube. There are markings along the side of the glass tube that show the temperature.



Key Vocabulary

O'Clock and Half Past

time

half past twelve

one o'clock

half past one

two o'clock

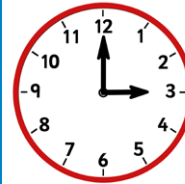
half past two

three o'clock

half past three

four o'clock

clock



hours

minutes

hand

o'clock

half past

quarter past

quarter to

five minutes

half past four

five o'clock

half past five

six o'clock

half past six

seven o'clock

half past seven

eight o'clock



half past eight

nine o'clock

half past nine

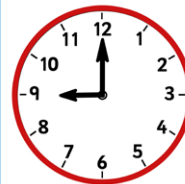
ten o'clock

half past ten

eleven o'clock

half past eleven

twelve o'clock

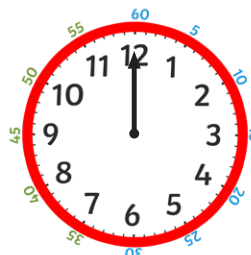


duration

shorter

longer

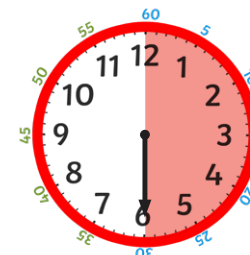
Past and To



o'clock



quarter past



half past

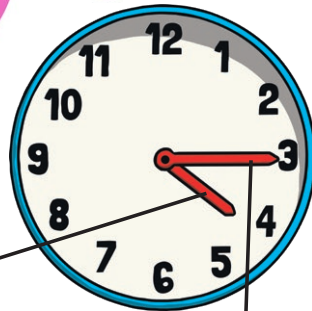
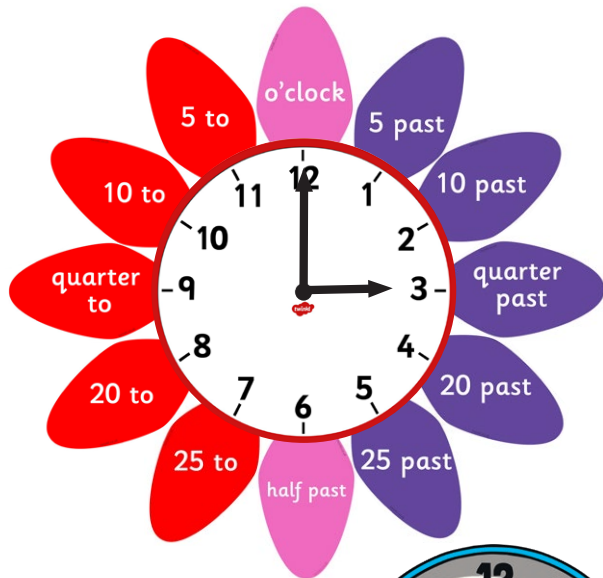


quarter to

Time

Knowledge Organiser

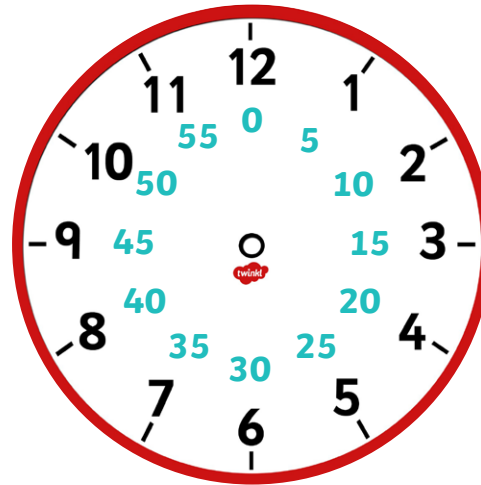
Telling Time to 5 Minutes



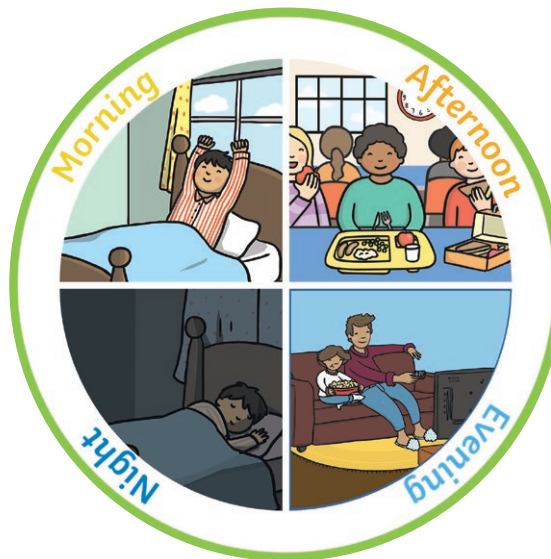
Hour Hand
The short hand points to the hour.
If this hand is pointing between hours, it is either past the earlier hour or to the later hour.

Minute Hand
The long hand points to the minutes past or to the hour.

O'Clock and Half Past

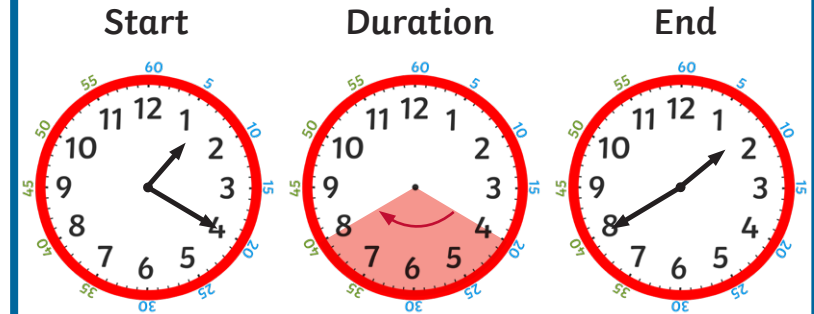


There are **60 minutes** in an hour.



There are **24 hours** in a day.

Find Durations of Time



20 minutes has passed.

Compare Durations of Time

 A swimming lesson	30 minutes	 A visit to the cinema	2 hours
 The time it takes to do 1 star jump	1 second	 A favourite TV programme	20 minutes
 A nice long walk	3 hours	 A week at school	5 days

Compare the time using the vocabulary 'longer' and 'shorter'.

Multiplication and Division

Knowledge Organiser

Key Vocabulary

Recognise Equal Groups

Make Equal Groups

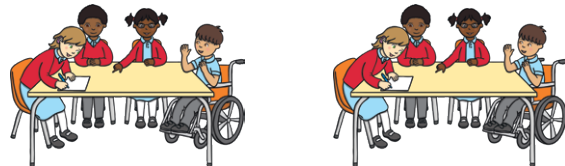
groups



5 equal groups with 3 in each group

equal groups

lots of



arrays

2 equal groups with 4 in each group

repeated addition



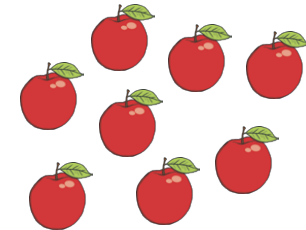
4 equal groups of 10

multiplication

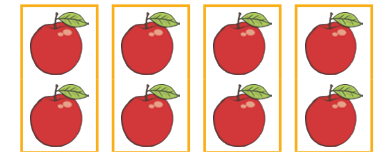
times tables



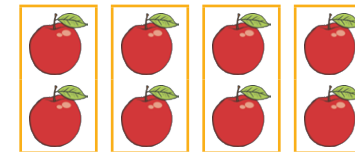
6 equal amounts of 5 pence



Make 4 equal groups.

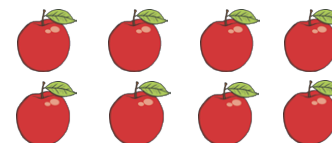


Add Equal Groups



$$2 + 2 + 2 + 2 = 8 \text{ apples}$$

The Multiplication Symbol



$$4 \times 2 = 8$$

$$2 \times 4 = 8$$

8 apples

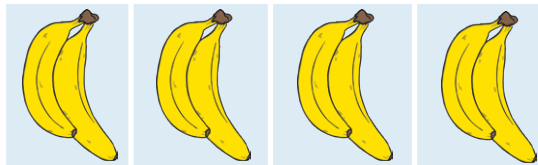


$$2 \times 5 = 10$$

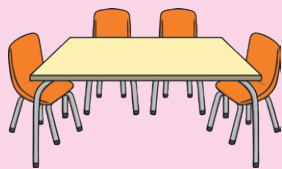
$$5 \times 2 = 10$$

10 cookies

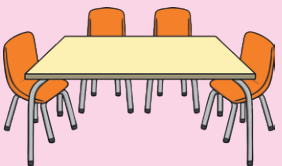
Multiplication from Pictures



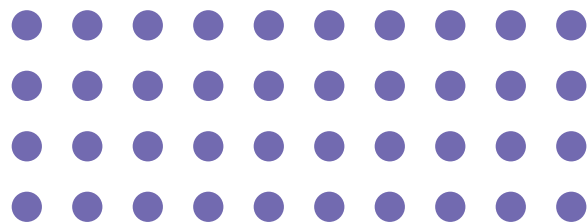
$$4 \text{ lots of } 2 = 8$$



$$2 \text{ lots of } 4 = 8$$



Use Arrays



$$4 \text{ rows of } 10 = 40$$

$$10 \text{ columns of } 4 = 40$$

The 2 Times Table



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

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

The 5 Times Table



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

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

The 10 Times Table



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

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

Number and Place Value

Knowledge Organiser

Key Vocabulary

hundreds

tens

ones

zero

place value

greater than

less than

order

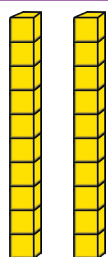
partition

digit

2-Digit Numbers

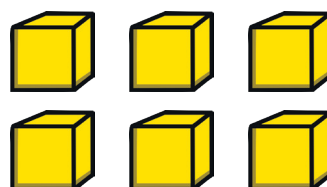
26

twenty



20

six



6

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

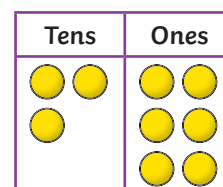
Counting in 5s

0 5 10 15 20 25 30 35 40 45 50

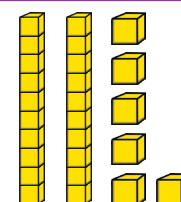
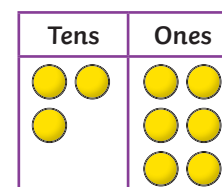
Counting in 10s

0 10 20 30 40 50 60 70 80 90 100

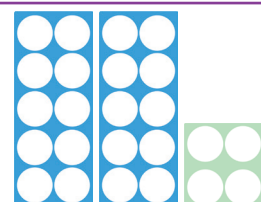
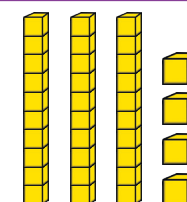
Compare Numbers



36 = 36
equals



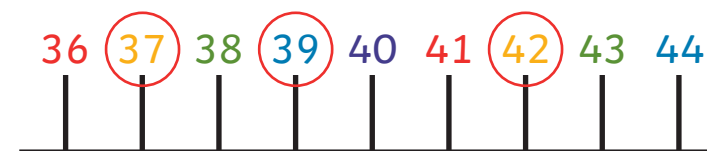
26 < 34
less than



24 > 19
greater than



Order Numbers



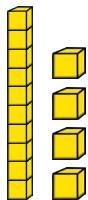
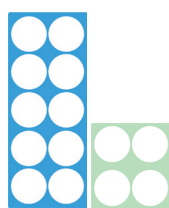
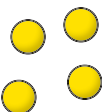
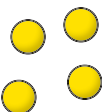
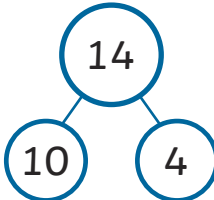
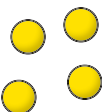
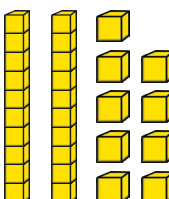
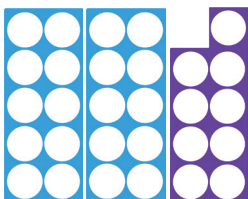
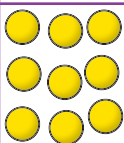
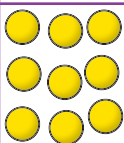
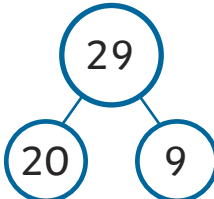
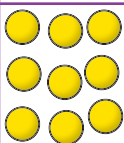
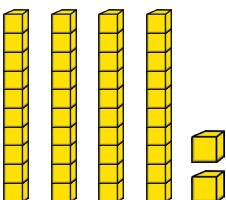
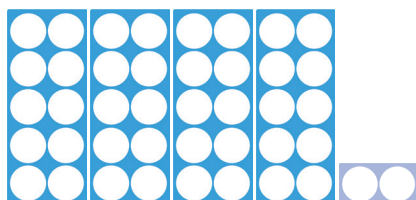
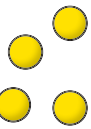
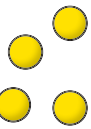
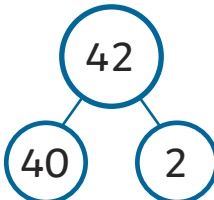
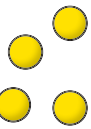
37 < 39 < 42

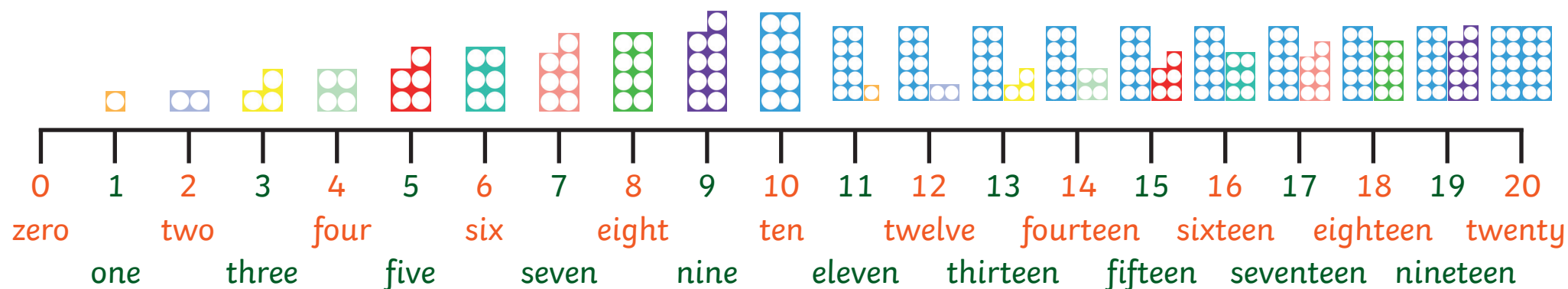


Number and Place Value

Knowledge Organiser

Read, Write and Represent Numbers to 100

14	fourteen	one ten four ones			<table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr></table>	Tens	Ones			
Tens	Ones									
										
29	twenty-nine	two tens nine ones			<table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr></table>	Tens	Ones			
Tens	Ones									
										
42	forty-two	four tens two ones			<table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr></table>	Tens	Ones			
Tens	Ones									
										



Key Vocabulary

forwards

backwards

left

right

north

south

east

west

quarter turn

half turn

three-quarter turn

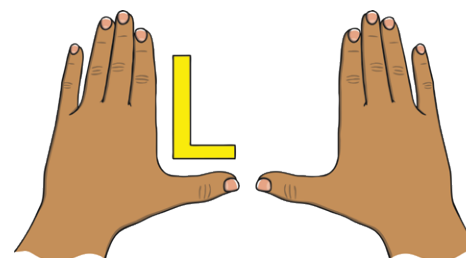
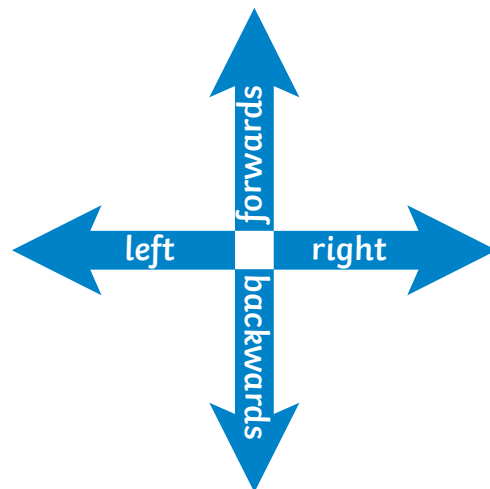
clockwise

anticlockwise

pattern

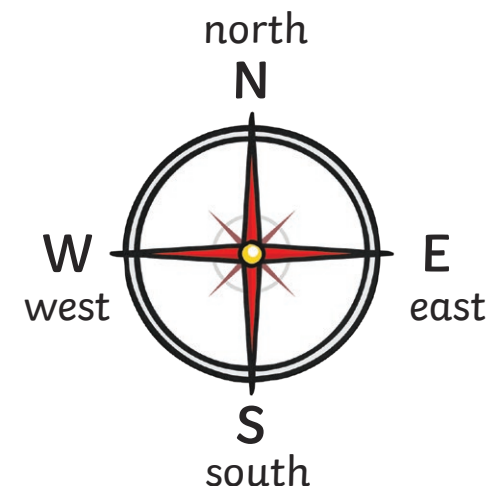
sequence

Describing Straight-Line Movement

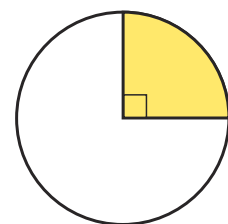


Left and Right

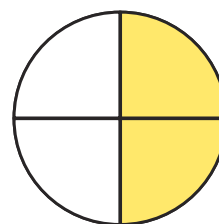
The hand that makes an **L** shape is the **left hand**.



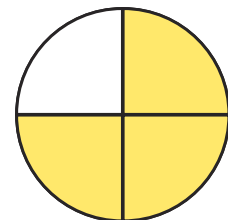
Describing Turns



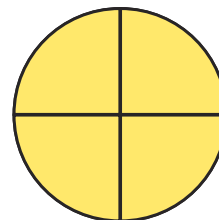
quarter turn



half turn

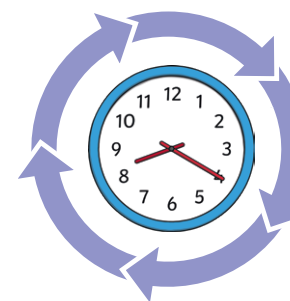


three-quarter turn



full turn

clockwise



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

anticlockwise



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

straight

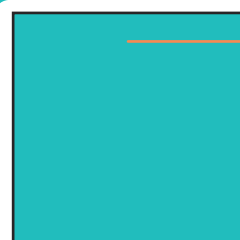
round

line of symmetry

vertical

pattern

Recognise and Describe 2D Shapes

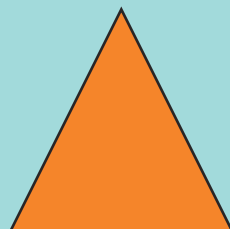


flat

side

corner or vertex

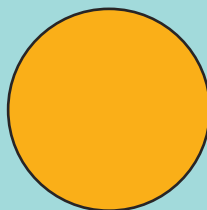
square



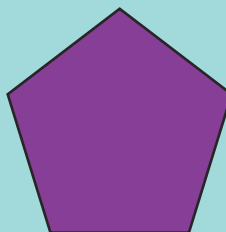
triangle



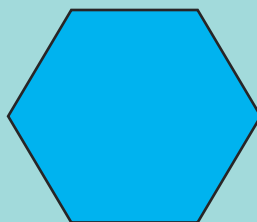
rectangle



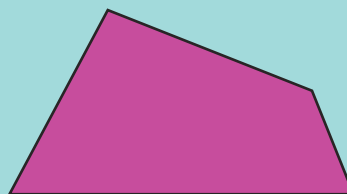
circle



pentagon

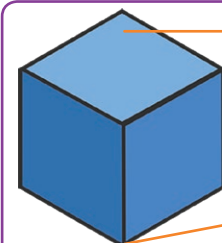


hexagon



quadrilateral

Recognise and Describe 3D Shapes



face

edge

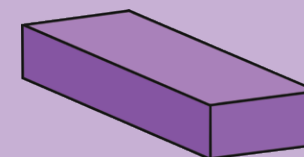
vertices

cube

apex or vertex

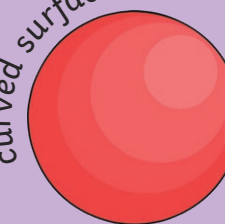


cone

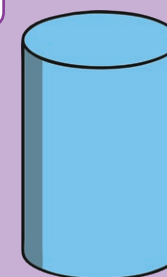


cuboid

curved surface



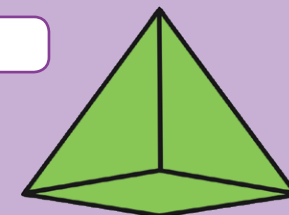
sphere



cylinder



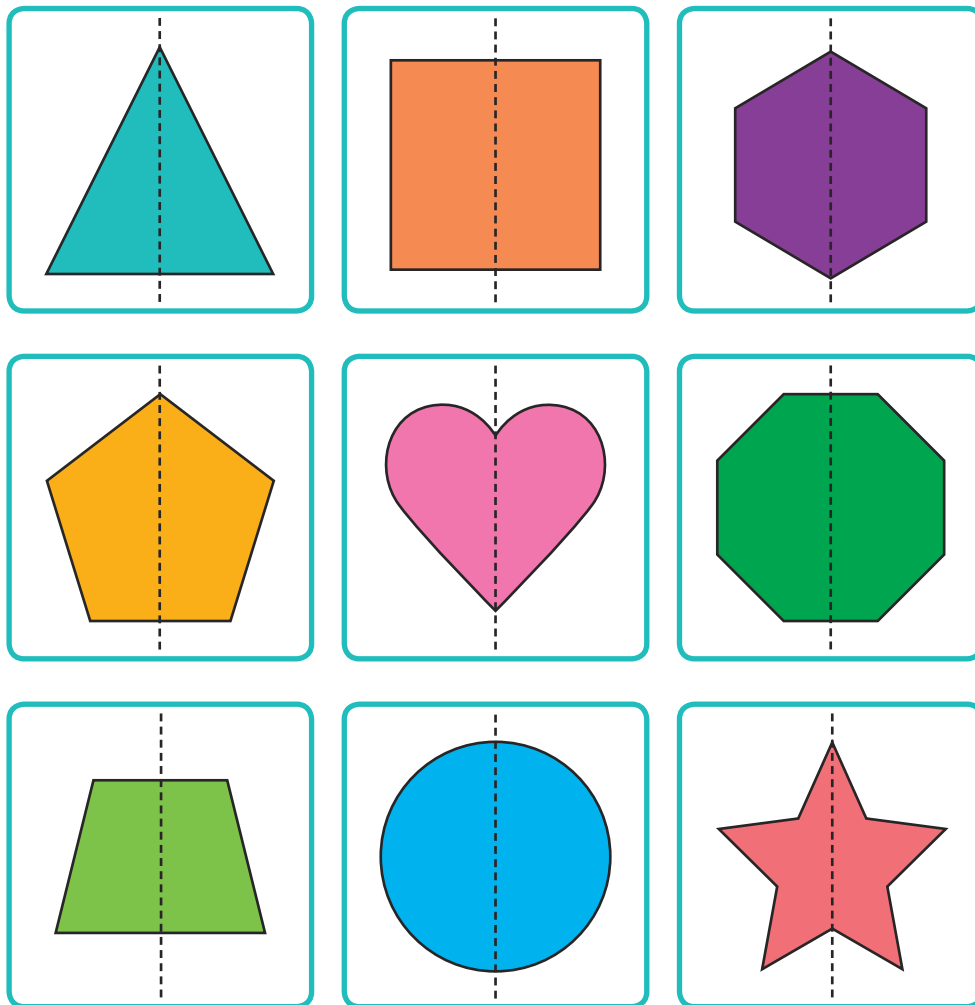
triangular prism



square-based pyramid

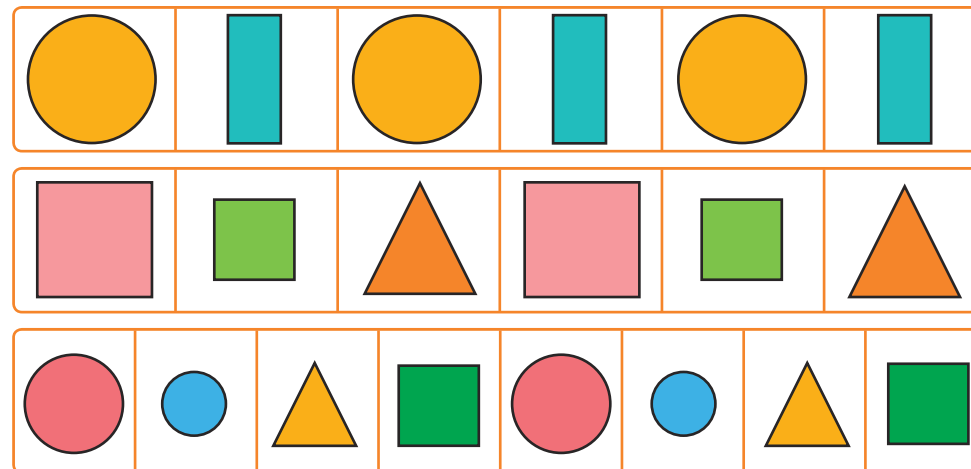
Lines of Symmetry

These 2D shapes have a vertical line of symmetry.

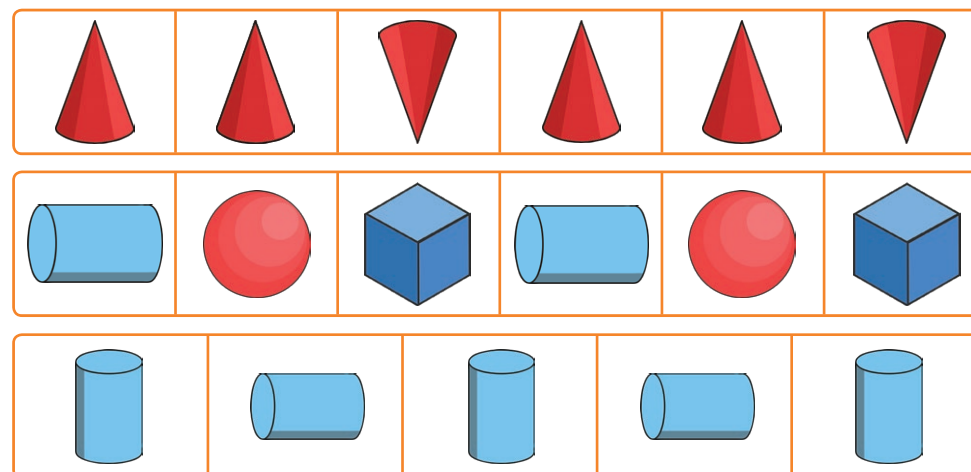


Repeating Shape Patterns

2D Patterns



3D Patterns



Key Vocabulary

Tally Charts

Block Diagram

data

interpret

key

tally chart

pictogram

block diagram

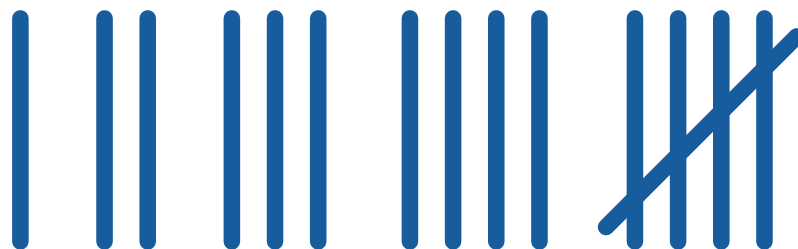
table

total

compare

symbol

Tally marks look like this:

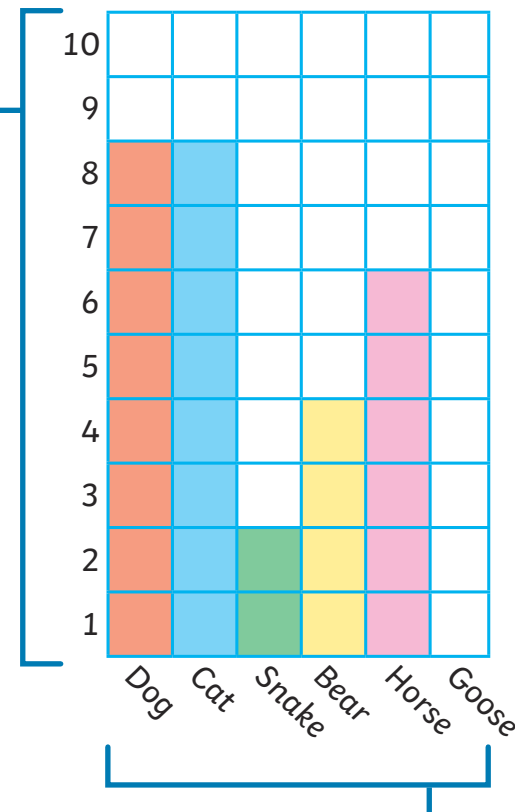


The fifth mark goes across diagonally, like a gate.

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

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

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

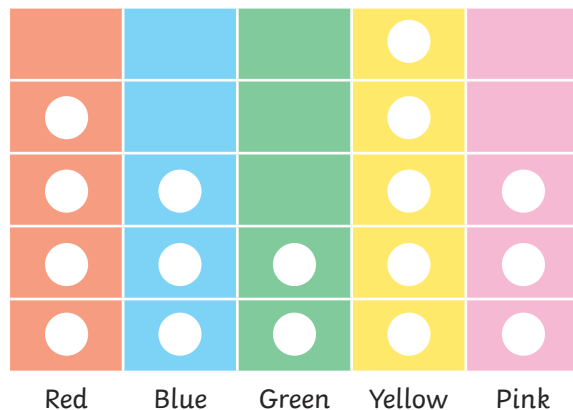
In this block diagram, the **y-axis**, which is vertical, shows the number of items.In this block diagram, the **x-axis**, which is horizontal, shows the types of items.

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

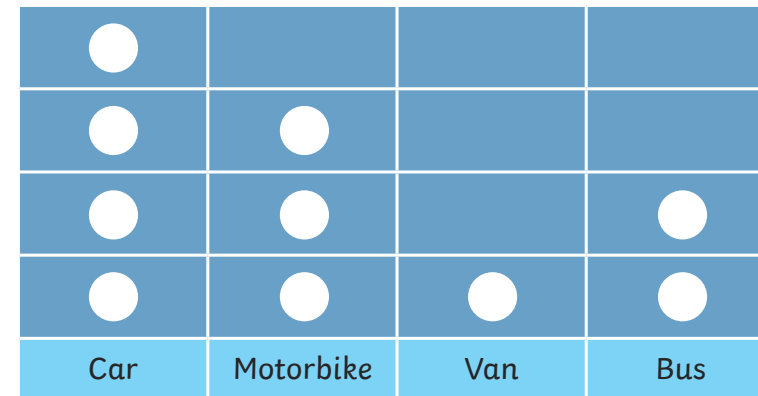


Key

● = 1 child

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

Traffic Survey

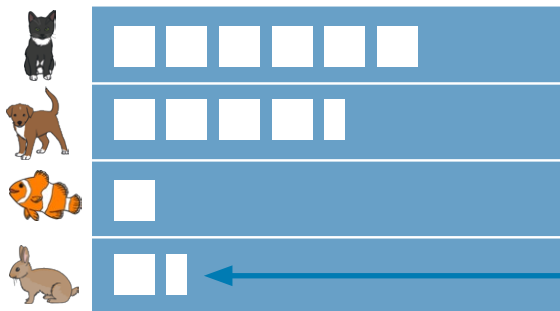


Key

● = 5 vehicles

This pictogram uses one symbol to represent 2 pets.

Class 1's Pets



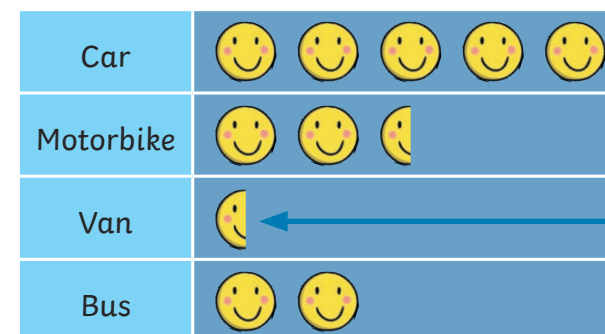
Key

□ = 2 pets

To represent 1 pet, a picture of half a square is used.

This pictogram has one symbol to represent 10 children.

Ways of Travelling to School



Key

😊 = 10 children

To represent 5 children, a picture of half a face is used.