Autumn Term Knowledge Organisers Year 3 / 4
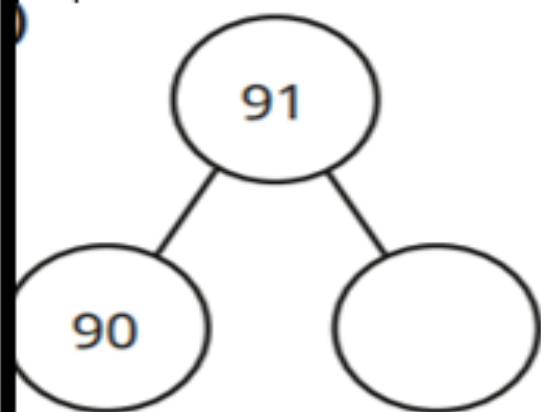
Place value is the value of each digit in a number.

356

100 less

456

100 more

556

256

two hundred	fifty	six
200	50	6

91

90

91 has ☐ tens and ☐ ones.

91 = ☐ + ☐

| 0 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |

| 0 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |

Hundreds	Tens	Ones
100 100 100 100 100	10 10 10 10 10 10 10 10	1 1 1 1 1 1 1
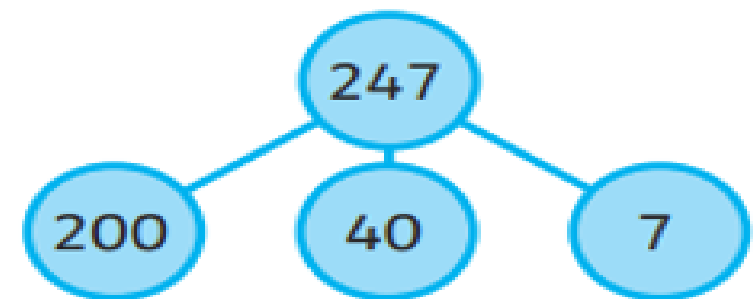
247
200   40   7

How do you know this?

I think this because …
The strategy I used was …
I agree with the answer because …
I disagree with the answer because …

I can prove it by …
I can model it by …
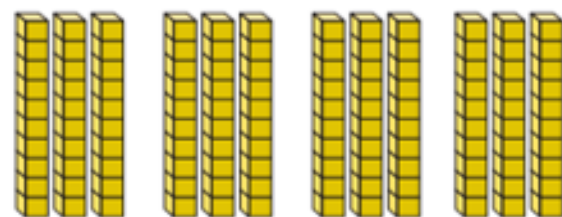If the numbers were larger then …
I decided on this strategy because …

Multiplication is combining multiple groups of a number. Division is the process of breaking a number up into equal parts,

White Rose Maths

3 × 4 = 12

30 × 4 = 120

How many different arrays can you make with 12 counters?

1 × 12
12 × 1
2 × 6
6 × 2
3 × 4
4 × 3

20 pencils are shared equally between 5 people.

20
| 4 | 4 | 4 | 4 | 4 |
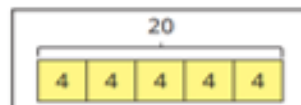
20 pencils are grouped into packs of 5

20
| 5 | 5 | 5 | 5 |

36		
12	12	12
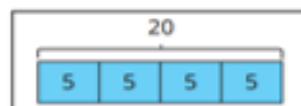
36 ÷ 12 = 3

Tiny uses the place value chart to work out 54 ÷ 3

Tens	Ones
10 10	1 1
10 10	1
10	1

Vocabulary

represents	equal
equivalent	altogether
multiple	group
greater	array
sharing	columns
total	divided
partition	rows
product	times

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
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Mo uses a part-whole model to work out 24×8

24

20   4

$\times 8$ $\times 8$
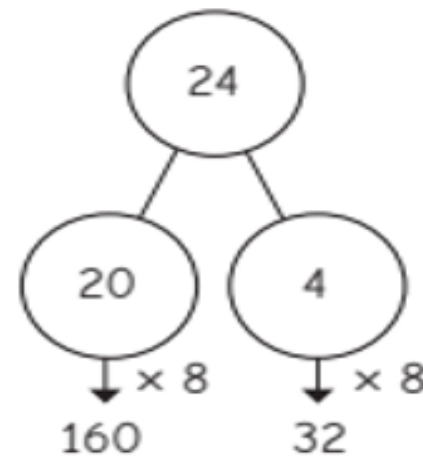
160   32

$160 + 32 = 192$
$24 \times 8 = 192$

How do you know this?

I think this because …
The strategy I used was …
I agree with the answer because …
I disagree with the answer because …

___ has been shared equally into ___ equal groups
The question is sharing/grouping because…

Year 3 – Spring- Length and Perimeter

5mm   5cm

CM

Inches

10mm = 1cm

4cm 6mm

Perimeter

········· = perimeter

5cm

2cm   2cm

5cm

5cm + 2cm + 5cm + 2cm = 14cm

Vocabulary

numerator	equal
denominator	measure
equivalent	calculate
millimetres	centimetres
horizontal	vertical
interval	share
lengths	units
compare	comparisons
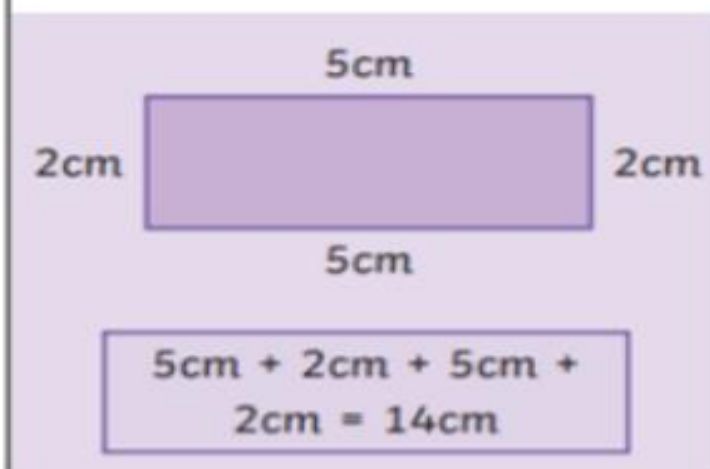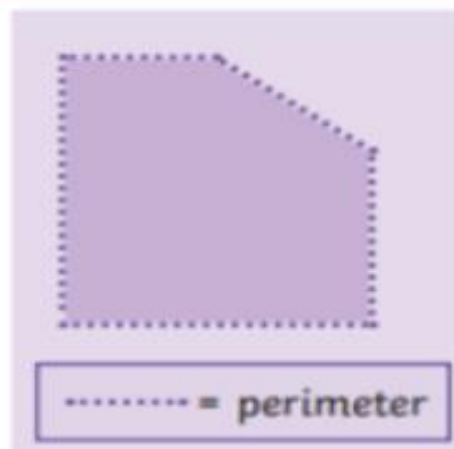
Equivalent Length

100 centimetres = 1 metre	10 millimetres = 1 centimetre

Millimetres (mm) ÷10 → Centimetres (cm) ÷100 → Metres (m)

×10 ← ×100
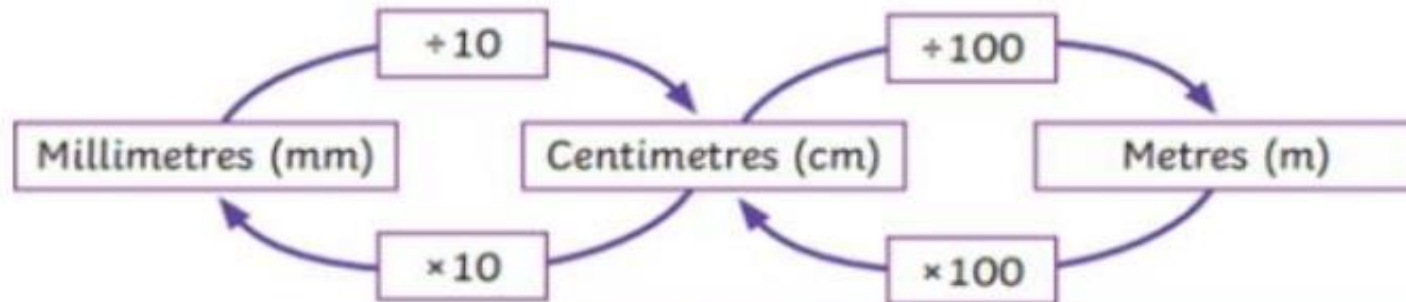
317cm	
300cm	17cm
3m	17cm
3m 17cm	

Add and Subtract Lengths

14cm + 19cm = 33cm
8cm 2mm + 16mm =
98mm or 9cm 8mm

?	
8cm 2mm	16mm
82mm	16mm

6m – 2m 28cm
6m – 2m = 4m
4m – 28cm = 3m 72cm

6m	
2m 28cm	?

How do you know this?
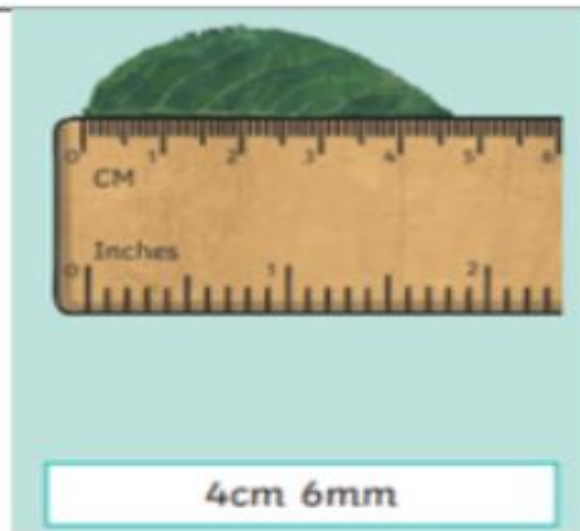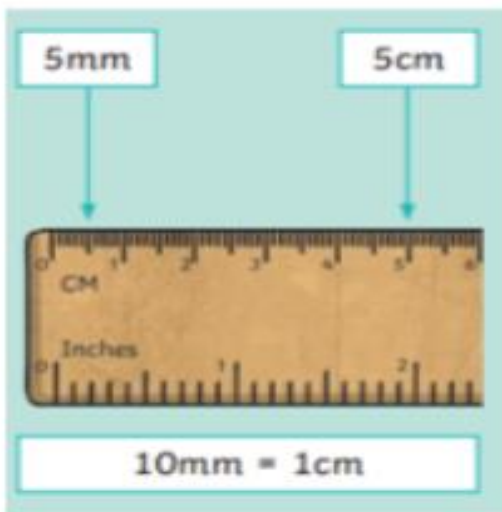
I think this because …
The strategy I used was …
I agree with the answer because …
I disagree with the answer because …

___ has been shared equally into ___ equal groups
The question is sharing/grouping because…

Year 3 – Fractions

$\dfrac{3}{8}$

Numerator — How many equal parts of the whole are needed?

Denominator — How many equal parts are in the whole?

$\dfrac{1}{3}$ Less than $\dfrac{2}{3}$

$\dfrac{4}{5}$ Greater than $\dfrac{3}{5}$

Equivalent Fractions

$\dfrac{1}{2}$ is equal to...

$\dfrac{1}{2} = \dfrac{2}{4} = \dfrac{3}{6} = \dfrac{4}{8} = \dfrac{5}{10} = \dfrac{6}{12}$
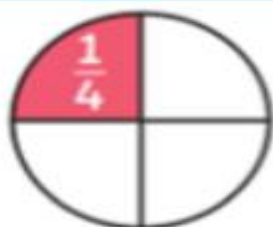
$\dfrac{1}{4}$ is equal to...

$\dfrac{1}{4} = \dfrac{2}{8} = \dfrac{3}{12} = \dfrac{4}{16} = \dfrac{5}{20}$

Vocabulary

numerator	denominator
equivalent	unit
Non-unit	scales
order	equal
ascending	descending
quarters	halves
diagram	diagonal

Scales can be used to measure grams.

A gram is a unit of measurement that is used to measure the mass of something.

Grams can be written as **g**.

$$1000g = 1kg$$

$$1000ml = 1l$$

Capacity is the amount of liquid a container can hold.

Volume is how much liquid is in the container.

To compare capacities, we can use the word 'full'.

Vocabulary

equal	equivalent
measure	mass
volume	compare
capacity	volume
value	interval
comparison	kilograms
grams	group

Add and Subtract Mass

$600g + 500g = 1100g = $ **1kg 100g**

$1kg - 300g = 1000g - 300g = $ **700g**

A kilogram is a unit of measurement that is greater than a gram. It is also used to measure the mass of something.

Kilograms can be written as **kg**.

Add and Subtract Capacities

$800ml + 400ml = 1200ml = $ **1l 200ml**

$1l\ 300ml - 200ml = $ **1l 100ml**

Measuring containers all have different capacities.

How do you know this?

I think this because ...
The strategy I used was ...
I agree with the answer because ...
I disagree with the answer because ...

___ has been shared equally into ___ equal groups
The question is sharing/grouping because...

Multiplication and Division (A and B)

White Rose Maths

Factor Pairs

20

$5 \times 4 = 20$

$4 \times 5 = 20$

1 2 4 5 10 20

The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:

| 1 and 20 | 2 and 10 | 4 and 5 |

Using Place Value to Multiply and Divide Mentally

$5 \times 1 = 5$
$5 \div 1 = 5$

$5 \times 10 = 50$
$50 \div 10 = 5$

$5 \times 100 = 500$
$500 \div 100 = 5$

Vocabulary

multiply	divide
groups of	lots of
times	share
remainder	factor
multiple	product

Formal Multiplication Method

Th	H	T	O	
	5	4	3	
×			4	
		1	2	(4 × 3)
	1	6	0	(4 × 40)
2	0	0	0	(4 × 500)
2	1	7	2	

Th	H	T	O
	5	4	3
×			4
2	1	7	2
	1	1	

Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

How do you know this?

I think this because …
The strategy I used was …
I agree with the answer because …
I disagree with the answer because …
I can prove it by …
I can model it by …
If the numbers were larger then …
I decided on this strategy because …

Short Division

$69 \div 3 = 23$

23
3 | 69

69		
23	23	23

Length and Perimeter

Measure Lengths

5mm 5cm		
10mm = 1cm	4cm 6mm	38mm

Vocabulary

meter (m)	centimetre (cm)
millimetre (mm)	height
length	width
perimeter	

Equivalent Lengths

100 centimetres = 1 metre

10 millimetres = 1 centimetre

Millimetres (mm) — +10 → Centimetres (cm) — +100 → Metres (m)

Millimetres (mm) ← ×10 — Centimetres (cm) ← ×100 — Metres (m)

317cm	
300cm	17cm
3m	17cm
3m 17cm	
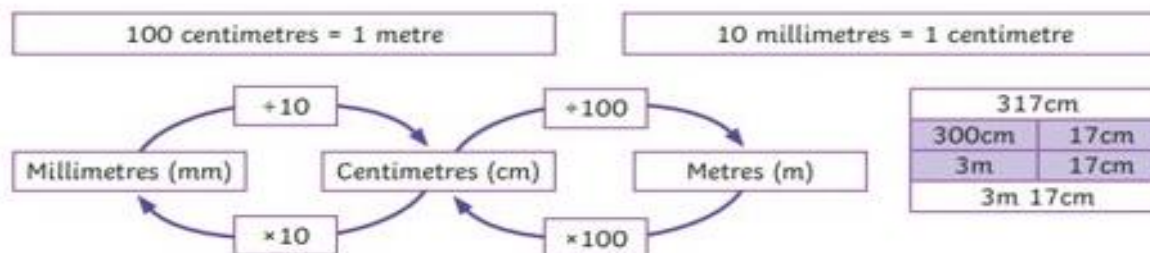
Comparing Lengths

6mm < 6cm
6cm = 60mm
6mm is shorter than 6cm

320cm > 2m 6cm
320cm > 200cm + 60cm
320cm is longer than 2m 60cm

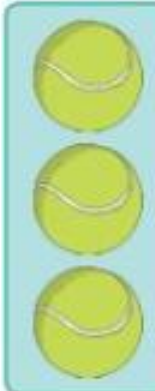98mm < 12cm 3mm
98mm < 120mm + 3mm
98mm is shorter than 12cm 3mm

How do you know this?

I think this because …
The strategy I used was …
I agree with the answer because …
I disagree with the answer because …
I can prove it by …
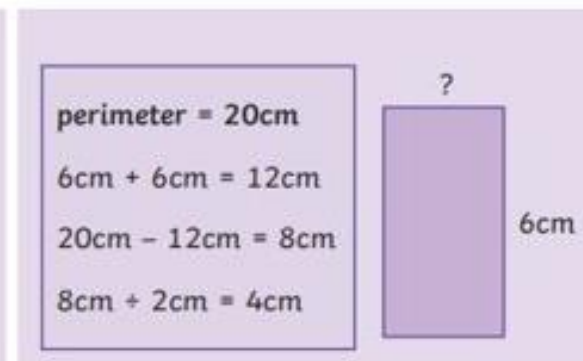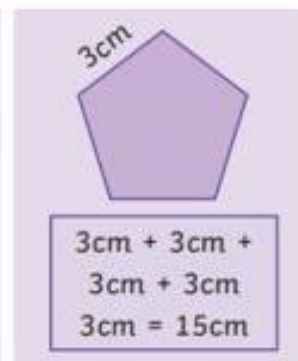I can model it by …
If the numbers were larger then …
I decided on this strategy because …

Perimeter

········· = perimeter

5cm
2cm   2cm
5cm

5cm + 2cm + 5cm + 2cm = 14cm

3cm

3cm + 3cm + 3cm + 3cm + 3cm = 15cm

perimeter = 20cm

6cm + 6cm = 12cm

20cm − 12cm = 8cm

8cm + 2cm = 4cm

?

6cm

Number: Fractions

Fractions can be added when the denominators are the same

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$
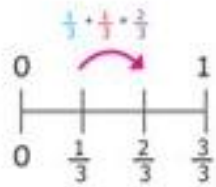
$\frac{2}{8} + \frac{4}{8} + \frac{1}{8} = \frac{7}{8}$
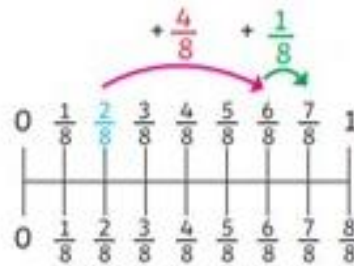
Fractions can be subtracted when the denominators are the same

$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$

$\frac{8}{6} - \frac{5}{6} = \frac{3}{6}$

Vocabulary
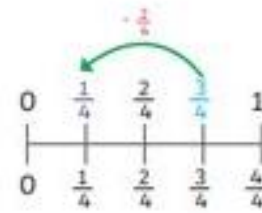
numerator	denominator
Unit fraction	Non-unit fraction
equivalent	Part
whole	Half
Third	Quarter
Fifths	Sixths
Eighths	Tenth
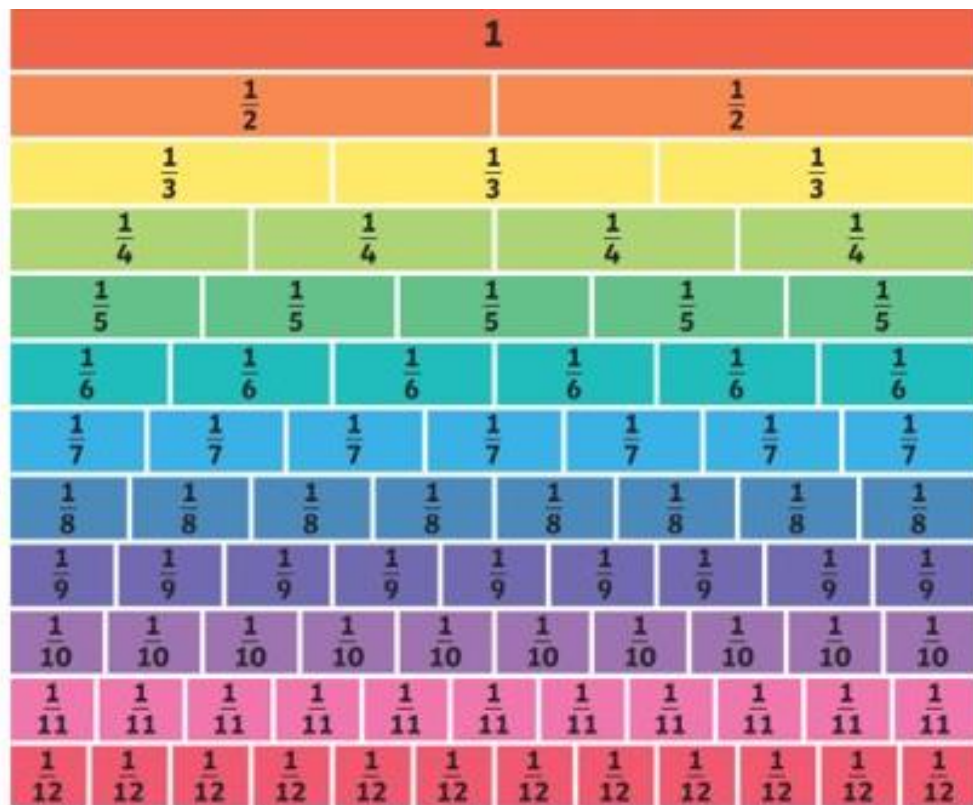
1											

Fraction wall:

- 1
- $\frac{1}{2}$ $\frac{1}{2}$
- $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$
- $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$
- $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$
- $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$
- $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$
- $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$
- $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$
- $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$
- $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$ $\frac{1}{11}$
- $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$

How do you know this?

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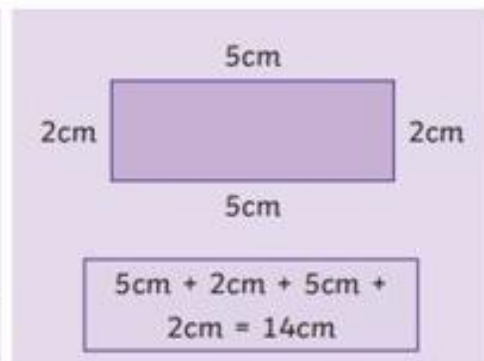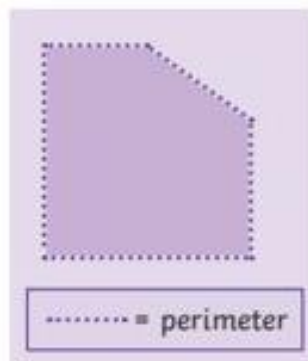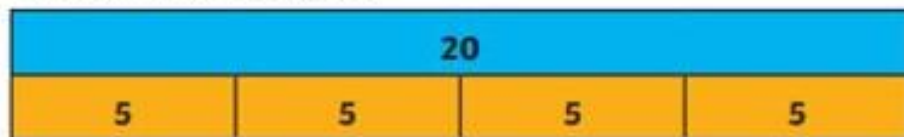If the numbers were larger then …
I decided on this strategy because …

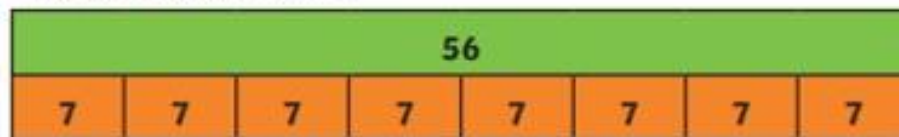**To find a fraction of a number, divide by the denominator and multiply by numerator.**

To find quarters of 20:

20			
5	5	5	5

$\frac{1}{4}$ of 20 = 5 $\frac{2}{4}$ of 20 = 10 $\frac{3}{4}$ of 20 = 15 $\frac{4}{4}$ of 20 = 20

To find eighths of 56:

56							
7	7	7	7	7	7	7	7

$\frac{1}{8}$ of 56 = 7 $\frac{2}{8}$ of 56 = 14 $\frac{3}{8}$ of 56 = 21 $\frac{4}{8}$ of 56 = 28

$\frac{5}{8}$ of 56 = 35 $\frac{6}{8}$ of 56 = 42 $\frac{7}{8}$ of 56 = 49 $\frac{8}{8}$ of 56 = 56

Year 3 /4— Why do we have cities?

Name of the City	Number of people living in the city
London	7.2 Million
Birmingham	992, 000
Glasgow	560, 000
Newcastle upon Tyne	259, 000
Plymouth	240, 000
York	182, 000
Durham	8,7000
St David's	2, 000

settlement	city	factory	office	function
urban	population	land use	rural	environment
Satellite image	OS map	symbol	inhabitant	environmental

Name of the city	What happens in this city?
London	London is the capital city of the UK and is located on the River Thames. It was founded by the Ancient Romans who wanted a port. London is where the UK Parliament is located and where the offices of the Government can be found. It is also where the Queen has her home. London is the world's most-visited city. London has more banks than anywhere else in the world as well as many offices and shops.
Birmingham	Birmingham began as a camp for Roman soldiers and then is grew into a market town. Birmingham became a city because it was a very important place for making things from iron and steel. Birmingham was famous as the place where many cars and Cadbury's chocolate was made. Today it is a busy city with many restaurants and offices.
Glasgow	Glasgow used to be a port where many goods left or came into the UK. It is located on the River Clyde. It was theplace where hundreds of ships were built and repaired each year. Now it is well known for its music, art and science.
Newcastle upon Tyne	Newcastle-upon-Tyne began its history as a Roman fort defending Hadrian's Wall. It is located on the River Tyne. Newcastle is now a University City. It is a very important city for making computer software and renewable energy. It used to be an important port and place where ships were made.
Plymouth	Plymouth began as a Bronze Age settlement. It is located on the River Tamar and the River Plym. It has a busy port and the Royal Navy has many ships in the docks in Plymouth.
York	York was first settled by the Ancient Romans in 71AD as a place for the army to have a fort. It is located on the River Ouse. It has a famous church called the Minster and a big University. It is a very popular place for tourists to visit and has many offices and shops.
Durham	Durham was first settled by the Anglo Saxons for farming. It is located on the River Wear. It has a world famous Cathedral and University. It used to be a place for pilgrims to visit and was an important market town. Today it is important for science and learning and is popular with tourists.
St David's	St David's is the UK's smallest city. It is located on the River Alun. It has a famous cathedral and used to be a place that pilgrims visited. Today is popular with tourists.

Year 3 Science Knowledge Organiser
Physics – Light

What should I already know?

- Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights)
- Shiny materials do not make light but do reflect it.
- Shadows are caused when certain materials block light.

Key Vocabulary

|	
light	A form of energy that travels in a wave from a source.
light source	An object that makes its own light.
dark	Dark is the absence of light.
reflection	The process where light hits the surface of an object and bounces back into our eyes.
reflect	To bounce off.
reflective	A word to describe something which reflects light well.
ray	Waves of light are called light rays. They can also be called beams.

Key Knowledge

We need light to be able to see things. Light travels in a straight line. When light hits an object, it is reflected (bounces off). If the reflected light hits our eyes, we can see the object. Some surfaces and materials reflect light well. Other materials do not reflect light well. Reflective surfaces and materials can be very useful...

hi-vis jacket

cat's eyes

The light is reflected from the object.

Light from the torch hits the object.

Mirrors reflect light very well, so they create a clear image. An image in a mirror appears to be reversed. For example, if you look in a mirror and raise your right hand, the mirror image appears to raise its left hand.
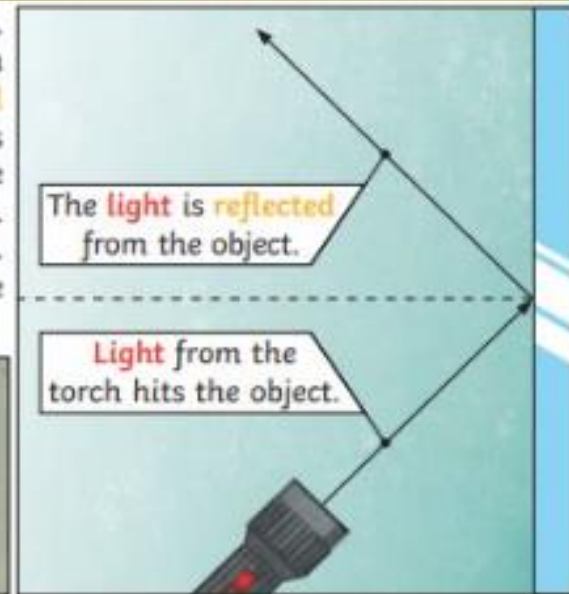
The surfaces that reflect light best are smooth, shiny and flat.

A smooth, shiny, flat surface.

A rough and uneven surface.
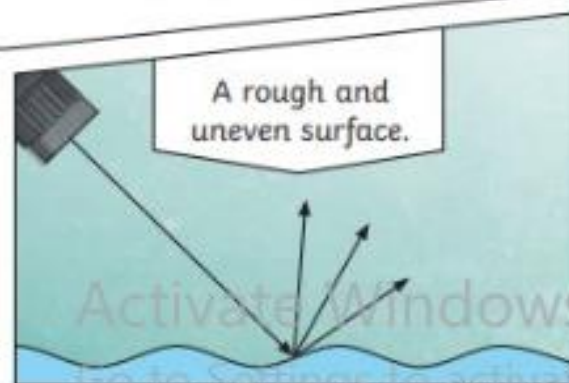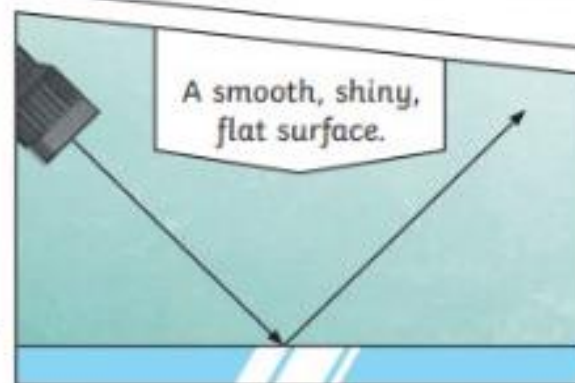
Key Vocabulary

pupil	The black part of the eye which lets light in.
retina	A layer at the very back of the eye. The retina takes the light the eye receives. It then changes it into nerve signals to send to the brain.
shadow	An area of darkness where light has been blocked.
opaque	Describes objects that do not let any light pass through them.
translucent	Describes objects that let some light through, but scatter the light so we can't see through them properly.
transparent	Describes objects that let light travel through them easily, meaning that you can see through the object.

opaque   translucent   transparent
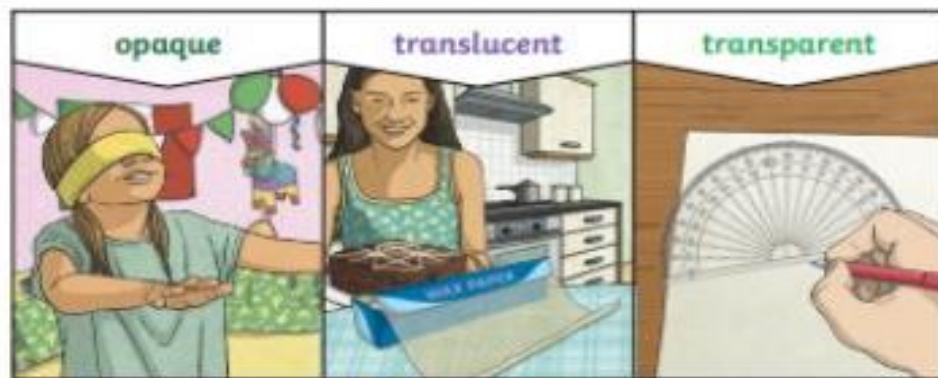
Key Knowledge
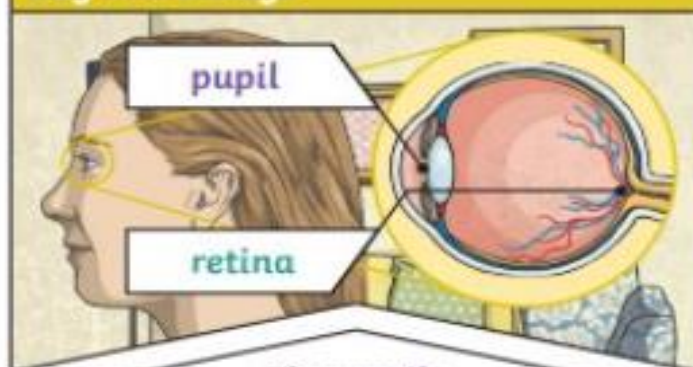
pupil

retina

The pupils control the amount of light entering the eyes. If too much light enters, then it can damage the retina. To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.

When the light source is directly above the object, the shadow will be directly underneath.

midday

A shadow is caused when light is blocked by an opaque object. A shadow is larger when an object is closer to the light source. This is because it blocks more of the light.

When a light source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer.
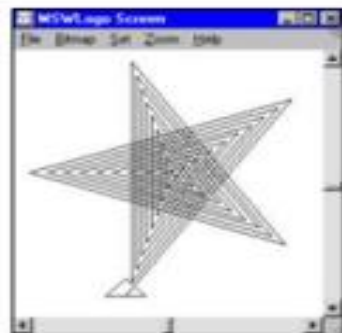
sunset

COMPUTING: PROGRAMMING

KNOWLEDGE ORGANISER

Overview

Repetition in Shapes

- Programming is when we make a set of instructions for computers to follow.

- Logo is a text-based program that we can use in order to create shapes and patterns.

- We use algorithms (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative shapes and patterns.

Programming Patterns

-**Patterns:** Patterns are things that repeat in a logical way. In everyday life, patterns are everywhere!

-**Patterns in Logo:** Instead of typing in the code to create each individual shape, we can save time by repeating a sequence of instructions. We use the 'repeat' function.

-**Repeat:** Type the command 'repeat' — this repeats commands a set number of times. The number following repeat is the number of times to repeat the code, and the code to be repeated is in square brackets, e.g. repeat 4 [FD 100 LT 90]

The above code will repeat FD 100 LT 90 four times.

-**Creating Shapes and Loops:** To make shapes, we need to know the angles of corners of different shapes (see right). Using the repeat function with shapes can help us to make spirals.
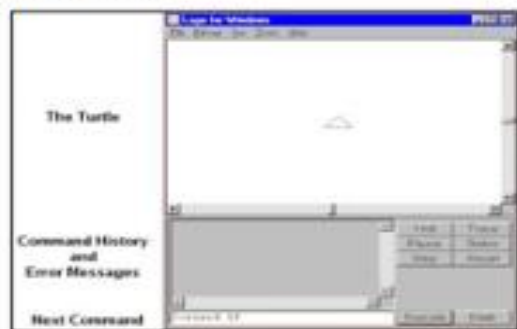
The Basics of FMS Logo

-**What is FMS Logo?** Logo is a text-based programming language, where we can type commands which are then drawn on the screen.
-Logo helps us to learn how to use programming language, whilst also being creative and using problem-solving skills.

The Display:

The Turtle

Command History and Error Messages

Next Command

Basic Commands:

-**FD:** Forwards. Always followed by a space and the number of steps, e.g. FD 50
-**BK:** Backwards. As above, e.g. BK 50
-**LT:** Left turn. Always followed by a space and then the degrees to turn, e.g. LT 90
-**RT:** Right turn. As above, e.g. RT 90
-**CS:** Clears any pen marks on your screen and gets the turtle back to the centre.
-**PU:** Stops turtle from leaving a pen trail.
-**PD:** Makes turtle leave a pen trail again.

Sequencing and Algorithms

-A **sequence** is a pattern or process in which one thing follows another.

-We design **algorithms** (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.

-**Programming** is the process of keying in the code recognized by the computer (using your algorithm).

Trialling and Debugging

-Programmers do not put their computer programs straight to work. They **trial** them first to find any errors:

-**Sequence errors:** An instruction in the sequence is wrong or in the wrong place.
-**Keying errors:** Typing in the wrong code.
-**Logical errors:** Mistakes in plan/thinking.

-If your algorithm does not work correctly the first time, remember to **debug** it.

Important Vocabulary

Programming   Logo   Turtle   Commands   Code   Cursor   Algorithm   Pattern   Sequence   Debugging

LKS2 Online Safety

What should I already know about privacy?

- ✗ Remember: we **never** share our full name with anyone online.
- ✗ Things like where we live or where we go to school should **never** be shared with strangers.
- ✗ Never share your passwords with other people.

3 Keep your personal information private.

What should I already know about age restrictions?

Use Net Aware to check the age restrictions

App aware | **Net Aware**

13+

16+

Privacy: Stay Safe. Be SMART!

- Be careful. Information you put online may be seen and used by others.
- Rather than use your name, use an alias (maybe your favourite cartoon character) for public profiles.

- Be careful. Never share your home address. This is because people online may not be who they say they are.
- Ask a trusted adult to ensure your privacy settings are on so your location and profile are not public.
- NEVER meet up with someone you've be in contact with online

Lola Smith

lola@thesmiths.com
All about Me:
I'm 10 and I love horses and playing football. I play for my school team – All Saints' in Matlock.

SMART

S Stay Safe
Don't give out your personal information to people / places you don't know.

M Don't Meet Up
Meeting someone you have only been in touch with online can be dangerous. Always check with an adult you trust.

A Accepting Files
Accepting emails, files, pictures or texts from people you don't know can cause problems.

R Reliable?
Check information before you believe it. Is the person or website telling the truth?

T Tell Someone
Tell an adult if someone or something makes you feel worried or uncomfortable.

Follow these SMART tips to keep yourself safe online!

Has Lola been SMART and stayed safe? What advice would you give and why?

Be SMART: make sure you're safe with privacy settings ON and tell a trusted adult if you are worried..

Knowledge Organiser — Let Your Spirit Fly — Year 3, Unit 1

1 – Listen & Appraise: Let Your Spirit Fly (RnB)

Structure: Introduction, verse, chorus.

Instruments/voices you can hear: Male and female voices, bass, drums, guitar, keyboard, synthesizer.

Find the pulse as you are listening: Dance, clap, sway, march, be an animal or a pop star.

2 – Musical Activities using glocks and/or recorders

Warm-up games play and copy back using up to 2 notes – C + D.
Bronze: no notes | Silver: C, sometimes D | Gold: C + D challenge.
Which challenge did you get to?

Singing in 2 parts.

Play instrumental parts with the song by ear and/or from notation using the easy or medium part. You will be using up to 3 notes – C, D + E.
Which part did you play?

Improvise using up to 3 notes – C, D + E.
Bronze: C | Silver: C, sometimes D | Gold: C, D + E challenge.
Which challenge did you get to?

Compose a simple melody using simple rhythms choosing from the notes C, D + E or C, D, E, F + G.

3 — Perform & Share

Decide how your class will introduce the performance. Perhaps add some funky dance moves? Tell your audience how you learnt this song and why. Record the performance and talk about it afterwards.

The performance will include one or more of the following:

Improvisations • Instrumental performances • Compositions

Let Your Spirit Fly

About this Unit

Theme: RnB and other musical styles.

Facts/info: RnB is a mixture of Soul, Hip Hop and Gospel music. Other RnB singers include Beyoncé, Usher, Rihanna and Stevie Wonder.

Listen to 4 other songs/pieces:
- Colonel Bogey March by Kenneth Alford (Film)
- Consider Yourself from the musical 'Oliver!' (Musicals)
- Ain't No Mountain High Enough by Marvin Gaye (Motown)
- You're The First, The Last, My Everything by Barry White (Soul)

Vocabulary: Structure, introduction, verse, chorus, improvise, compose, pulse, rhythm, pitch, tempo, dynamics bass, drums, guitar, keyboard, synthesizer, hook, melody

Reflection

What did you like best about this Unit? Why? Was there anything you didn't enjoy about it? Why?

Did you have any strong feelings about it? Were you proud of yourself, happy or annoyed?

What are the 'style indicators' of RnB music?
How do you know this is RnB music?

Stone Age to Iron Age

Many things have changed in Britain in history including the materials we use. Starting with stone, then bronze and then iron, tools and technologies have changed. This is why we live the way we do now.

Stone Age tools

Iron Age tools

Skara Brae

13,000 B.C.	Cave paintings begin to be made.
4,500 – 3,500 B.C.	Farming starts and begins to spread.
4,500 – 3,500 B.C.	The first pottery is made and used.
4,000 – 3,000 B.C.	People start to ride and use horses for work.
2,500 B.C.	Metal starts to be used
1,800 B.C.	The first copper mines are dug.
1,200 – 800 B.C.	Tribal kingdoms begin to appear.
1,200 – 800 B.C.	Metal tools are made and used.
800 – 700 B.C.	The first hill forts are made.
700 – 500 B.C.	Iron becomes a popular material.
100 B.C.	Coins are made and used for the first time.
A.D. 43	The Romans invade Britain which ends the Iron Age.