Welcome to our Maths Information Workshop for Parents

How maths is taught today… What are all those strange bits of equipment?
How you can help…

Have a go at some of our activities whilst you are waiting!

Upper Key Stage 2

Years 5 and 6

March 2019

Maths

How did you get on with your starting activities?

How did you feel when we asked you to do this?

This is how the children feel!

Activity 1

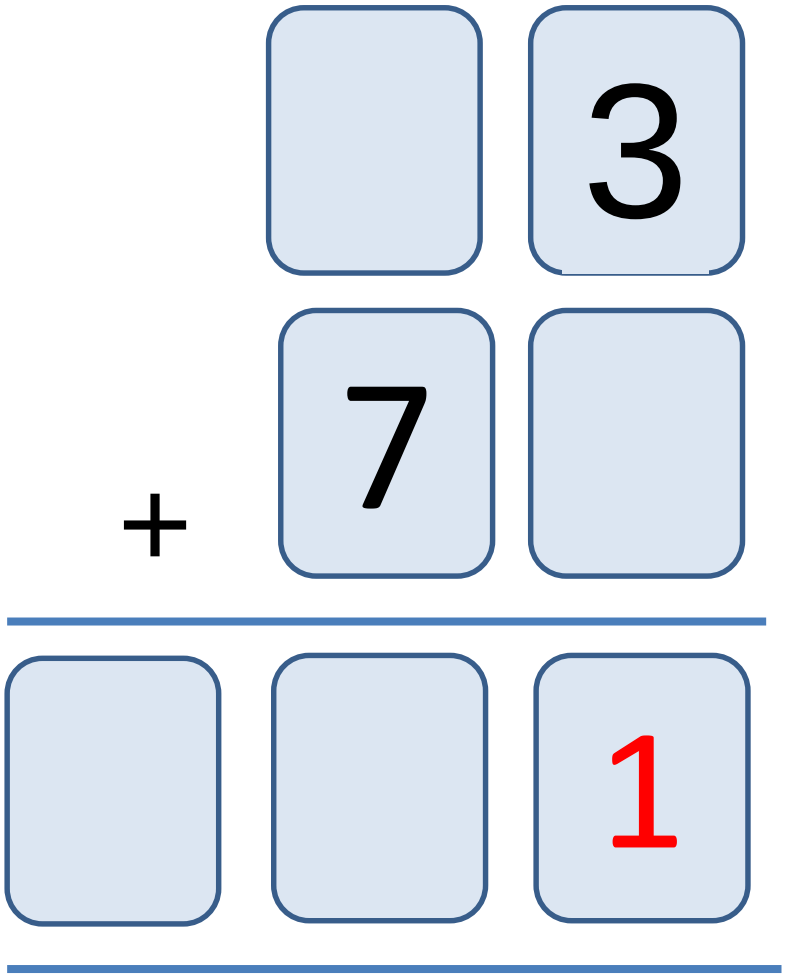
Here are 4 numbers:

8 16 15 23

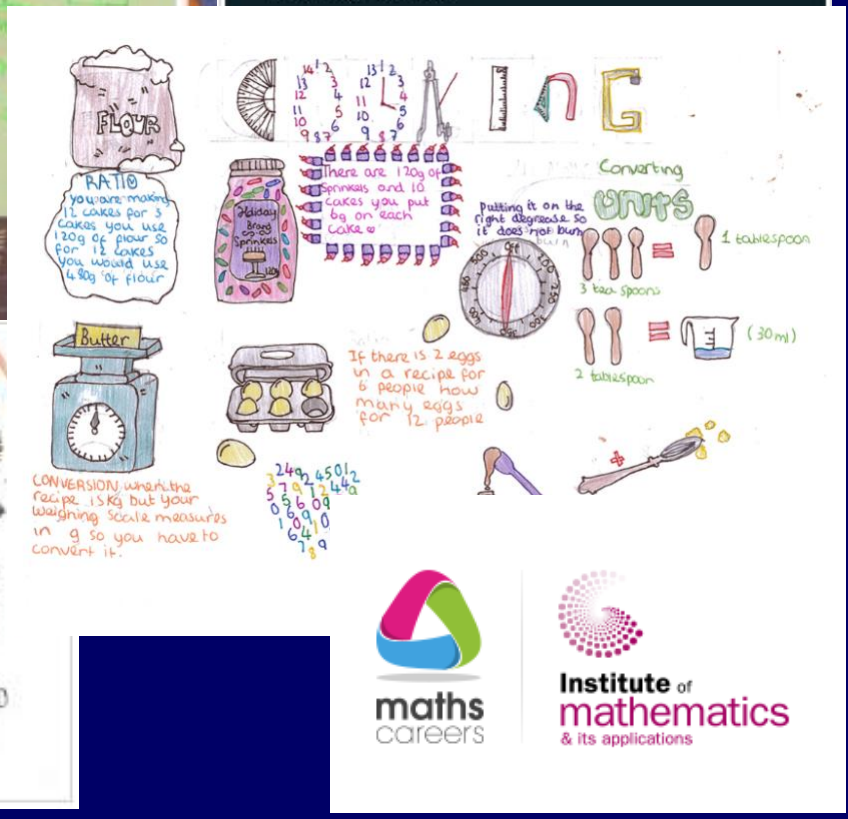
Which is the odd one out and why?

Activity 2

A puzzle!

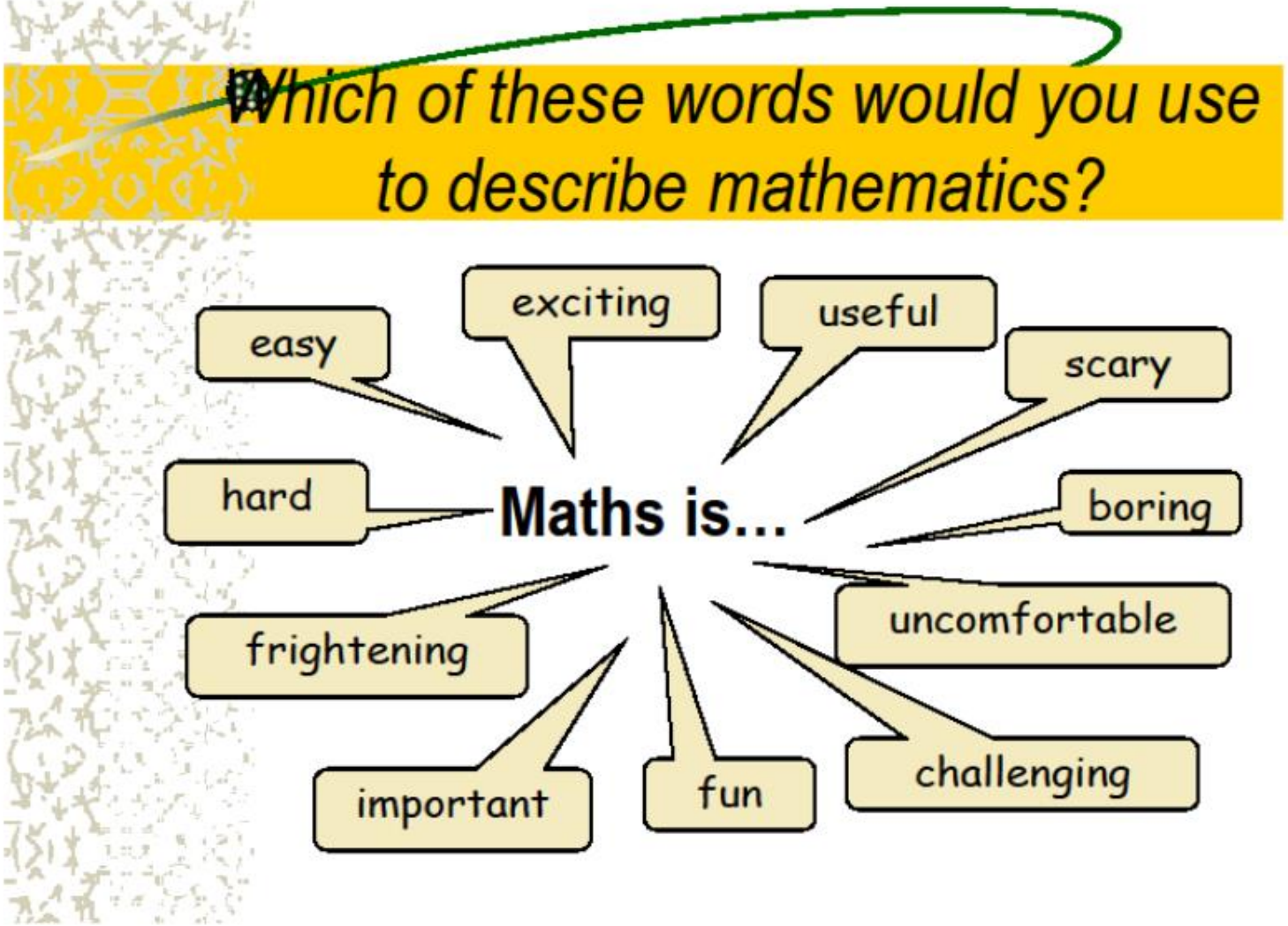


Can you think of a job or everyday task where maths is not used in some way?



How do you feel about maths?

Maths

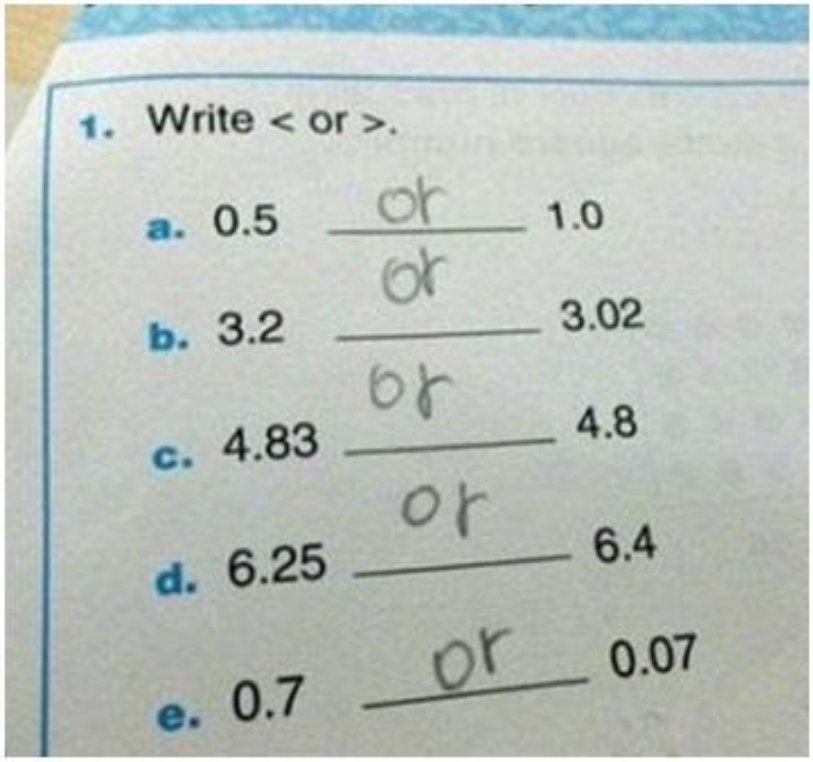


Maths

Maths today is a bit different to how some of us might remember being taught it!

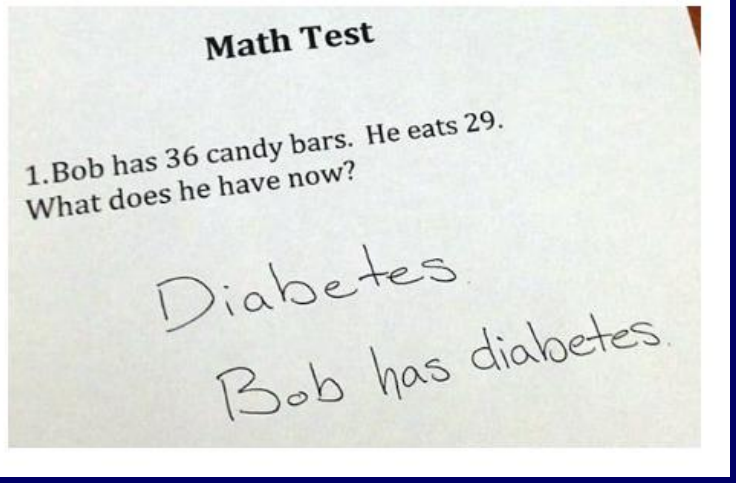
Why we do things differently…

Maths



Q: What's the difference between 9 and 4?

Child's answer: The 9 is curvy and the 4 is all straight!



Maths

How we teach maths: National Curriculum 2014

Aims

Fluency …Sense of playfulness with number, seeing patterns, seeing numbers within numbers….

Reasoning …Making sense of maths and explaining connections…

Problem Solving …Using and applying maths understanding and skills to different contexts/ puzzles …

Equals... equivalence.. balance

Maths

‘Old’ style

8 + 4 = __

4 + 8 = __

7 + 5 = 8 + __

‘New style’ maths

8 + 4 = ☐

12 = ☐ + 4

120 = 80 + ☐

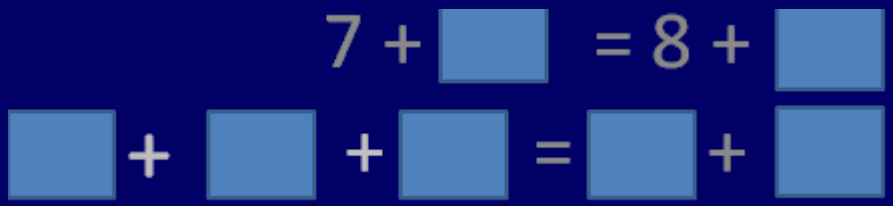
7 + ☐ = 8 + ☐

☐ + ☐ + ☐ = ☐ + ☐

Equals... equivalence.. balance

Maths

New



Greater depth

Is it possible to only use odd numbers for the missing boxes? Or just even numbers?

Using just the digits 1-7?

Can you change the operation + - x ÷ and keep the balance?

UKS2 Can this be completed using prime numbers only?

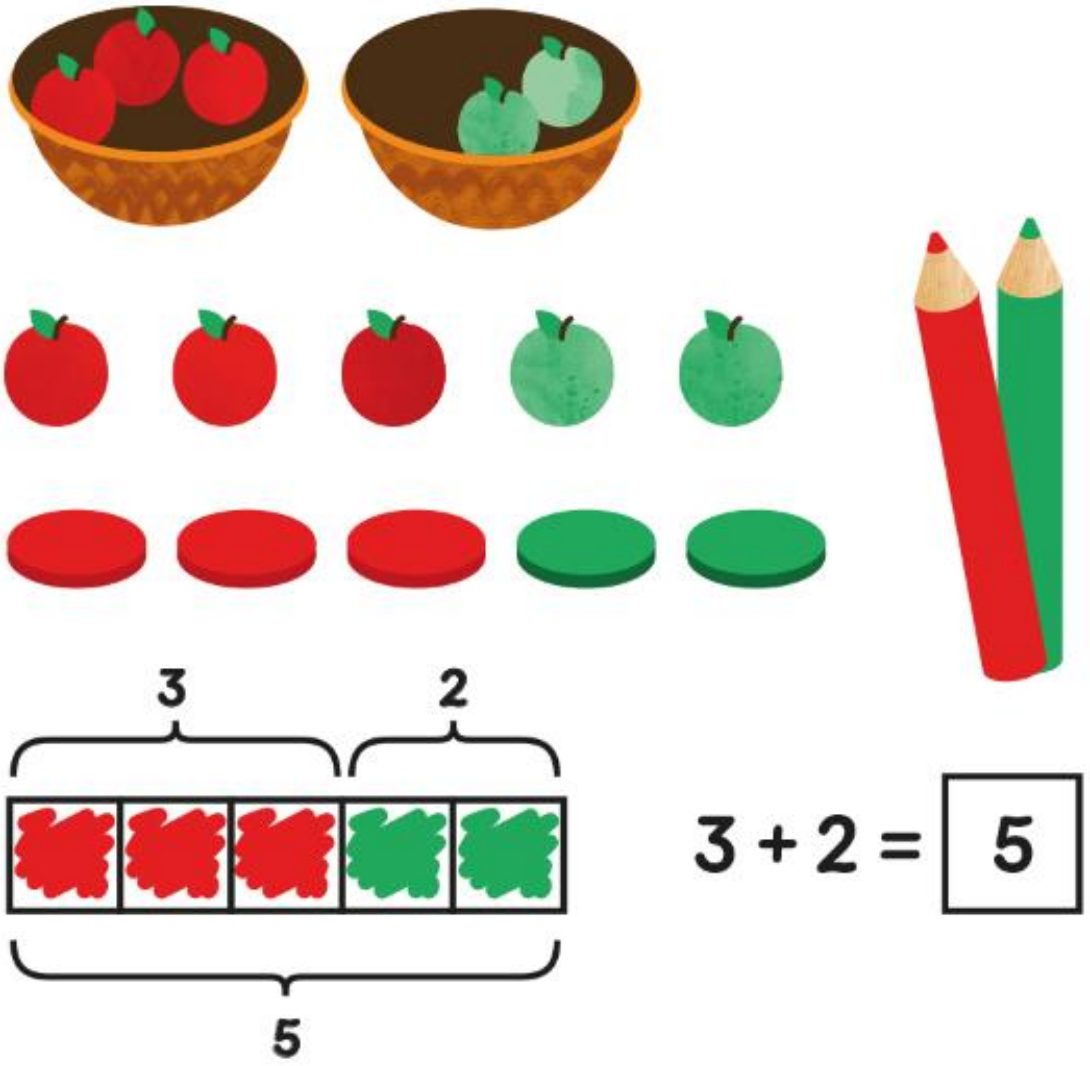
Mastery approach

Maths

- Learning sequences build on each other and help children make connections between mathematical concepts.
- Longer time on key concepts to give secure foundations – not dawdling but deepening
- Time to think deeply about maths - with same focus/pace for most of class but opportunities for broadening and deepening
- An inclusive approach that helps to build self-confidence, with misconceptions tackled as they happen
- Not accelerating onto later year's content or larger numbers – challenge with same concept

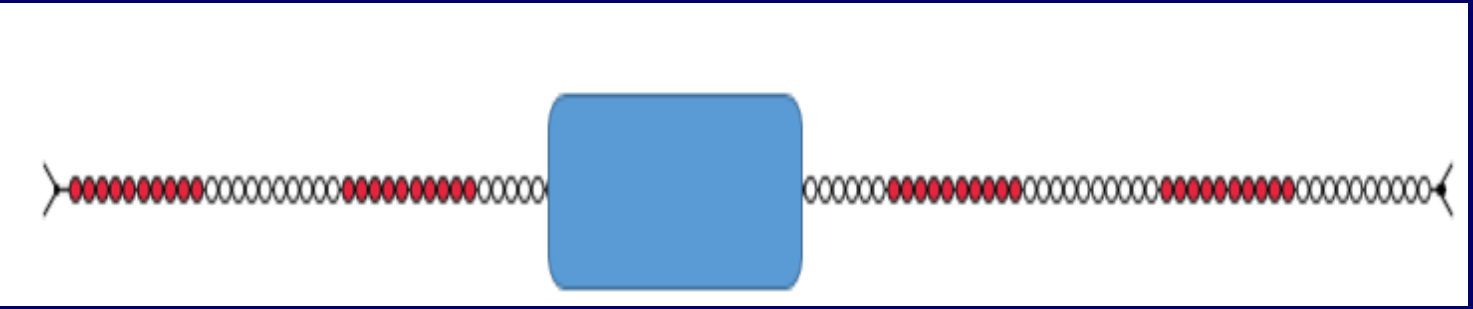
Maths

Concrete… pictorial… abstract



Maths

Concrete manipulatives



I know I have 35 beads on this side and 46 on this side. What will I need to do to find out how many the missing part is equal to?

Maths

Fluency

…Sense of playfulness with number, seeing patterns, seeing numbers within numbers….

8 + 9 =

Children need strategies beyond using concrete apparatus and counting:

Near doubles

Bridging ten

Rounding and adjusting

Maths

Fluency

…Sense of playfulness with number, seeing patterns, seeing numbers within numbers….

Taken from a Year 4 sequence:-

If 185 + 427 = 612

Complete this calculation:

162 + _____ = 612

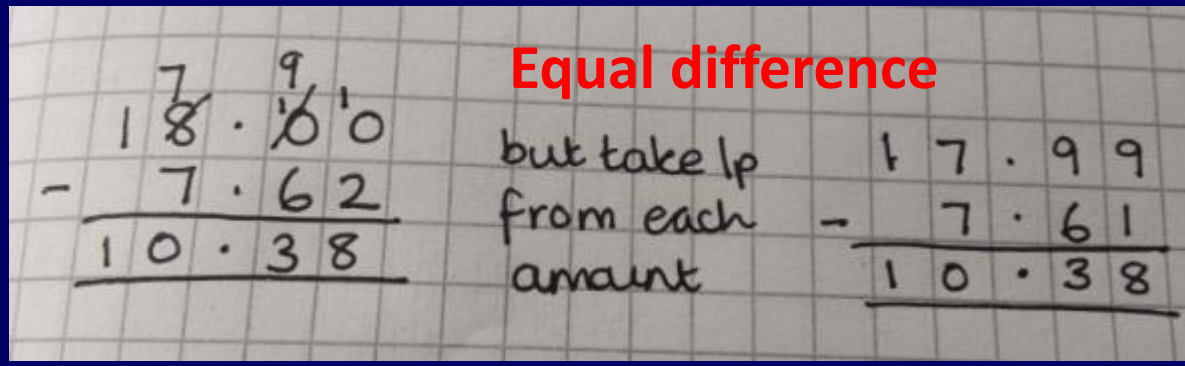
Explain your strategy.

Year 2: Equal difference

21- 16

is the same as

20-15



Equal difference

Maths

Lack of Fluency

Children who leave KS1 counting 3 + 4 on fingers, not secure on doubling, halving and basic number + and - facts face a real problem when learning written methods to add or subtract in Year 3

Children who leave Year 4 not knowing all their times table facts find accessing calculation work, fractions, decimals, area much slower in Years 5 and 6

You can really help support your child at home to develop their fluency (more later)

Maths

Reasoning

If I know 8 + 9 = 17, what else do I know?

80 + 90 =

8 + 9 = 17

17 – 8 = 9

0.8 + 0.9 =

Maths

The same is true for multiplication -

Working from the base fact:

6 x 4 = 24

What else do we know?

4 x 0.6 = 2.4

60 x 40 = 2400

24 ÷ 4 = 6

240 ÷ 6 = 40

Maths

Reasoning

Here are 4 numbers:

What do you notice about these numbers?

8 16 15 23

Which is the odd one out and why?

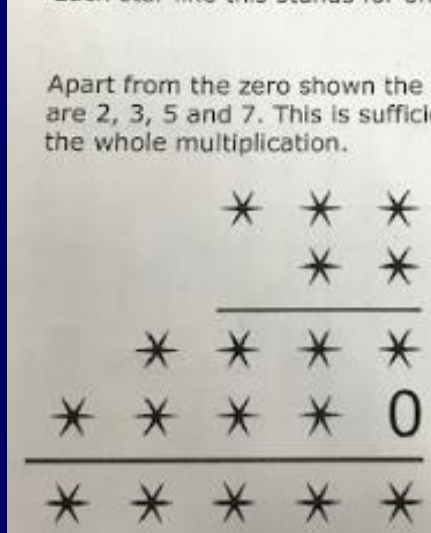
Explain your reasons

Problem solving

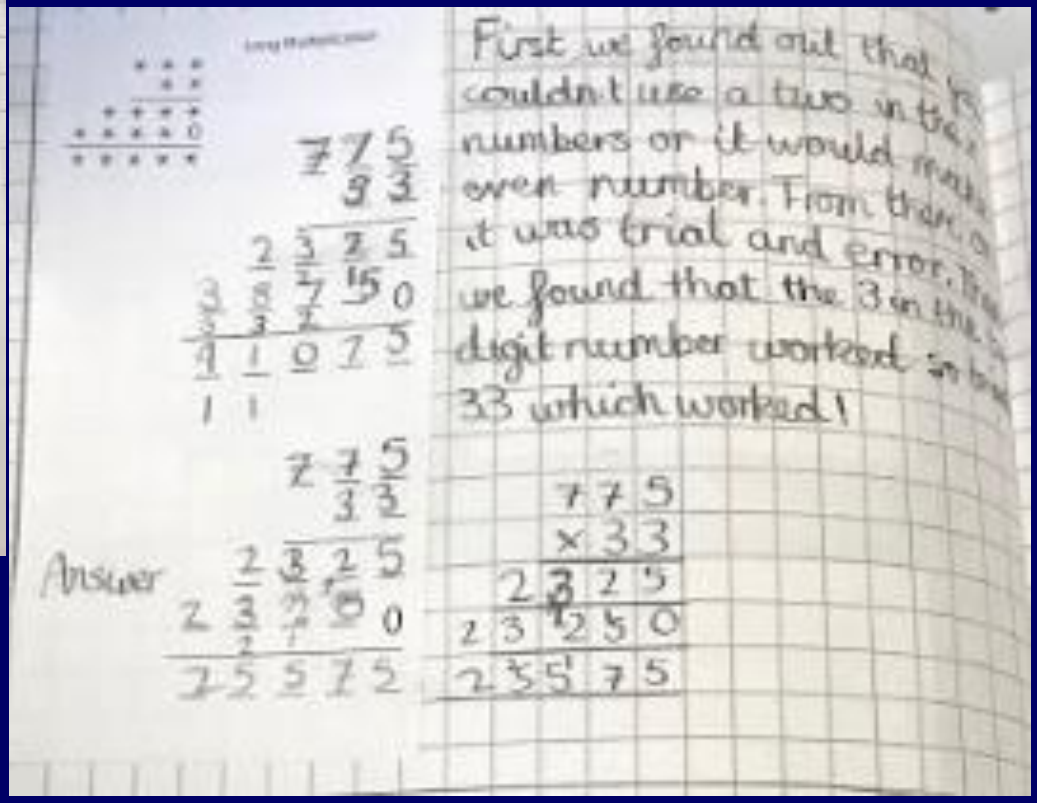
Maths

Multiplication Challenge

A 3 digit number is multiplied by a 2 digit number and thE calculation is written out as shown below. Each star like this stands for one digit.

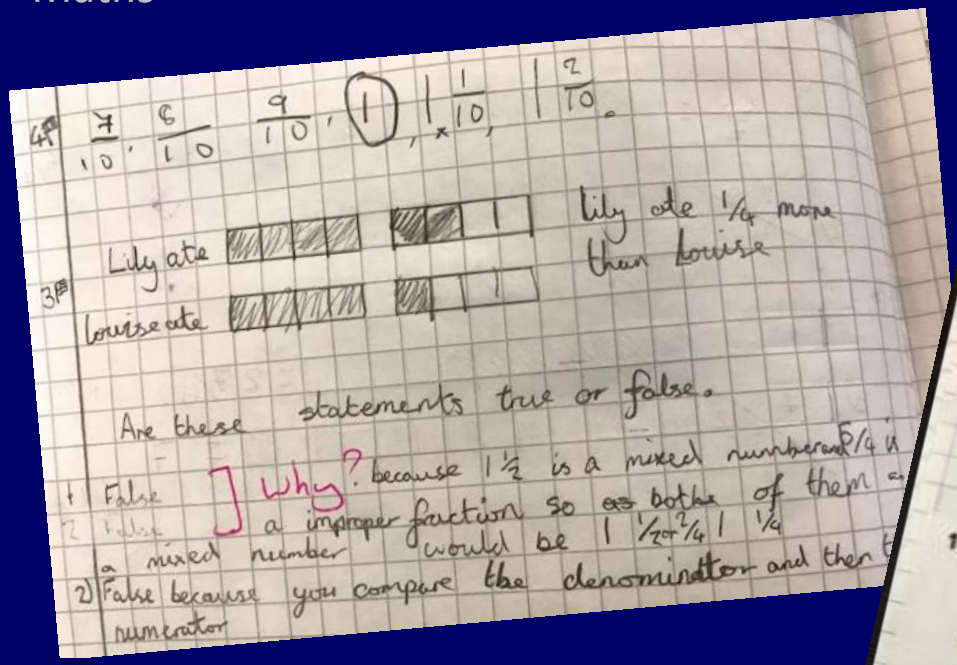


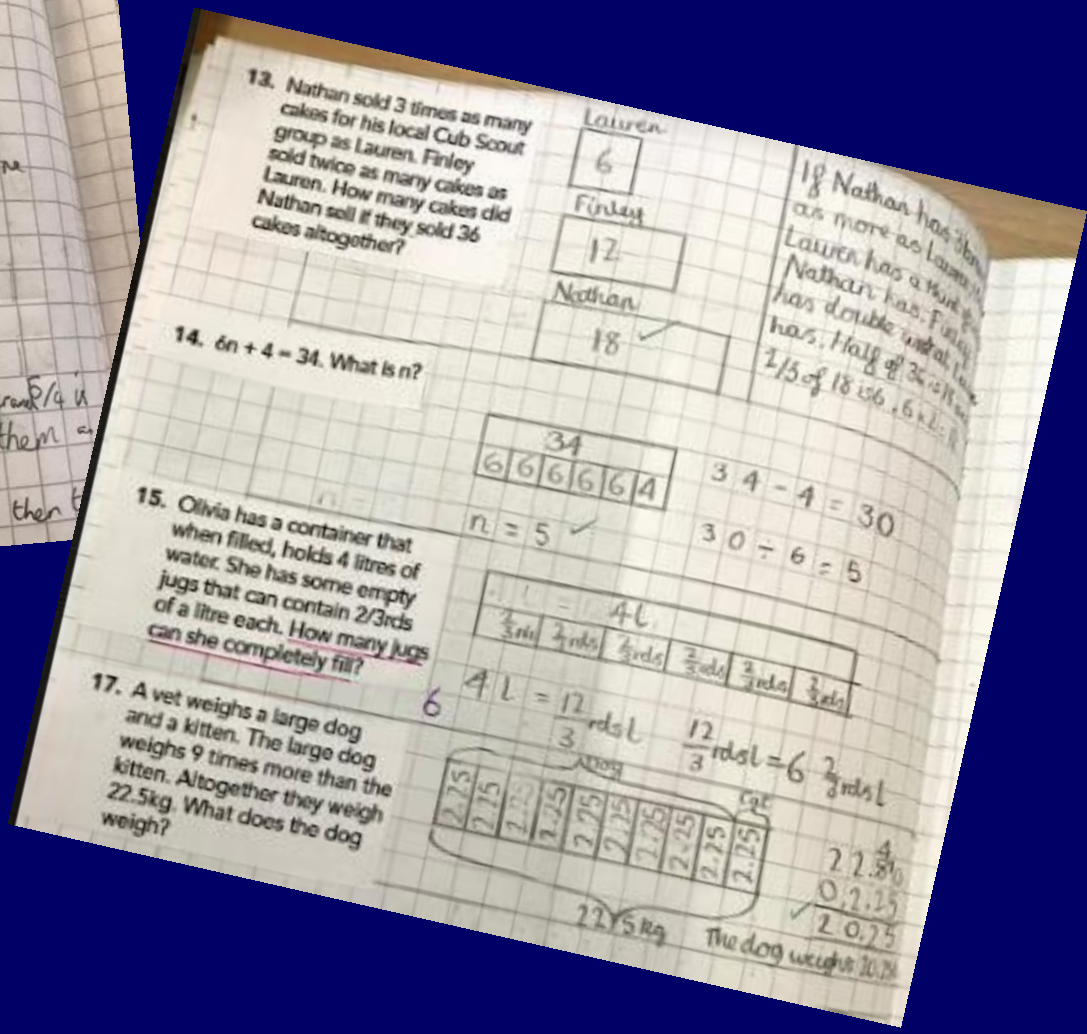
Apart from the zero shown the only digits which occur are 2, 3, 5 and 7. This is sufficient information to complete the whole multiplication.



Problem solving

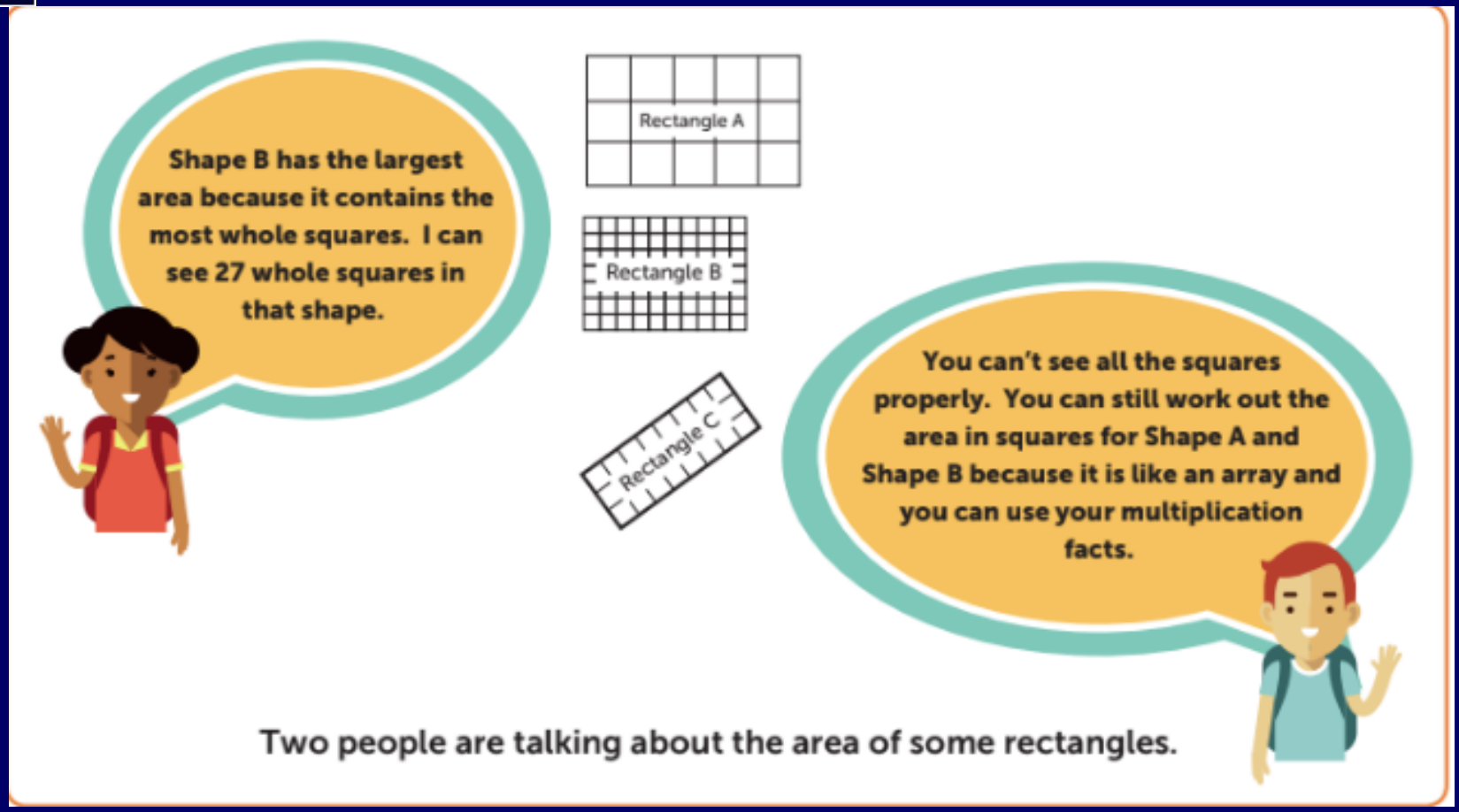
Maths





Maths

Conversation cartoons



Who is right? Prove it!

Talk frames

Maths

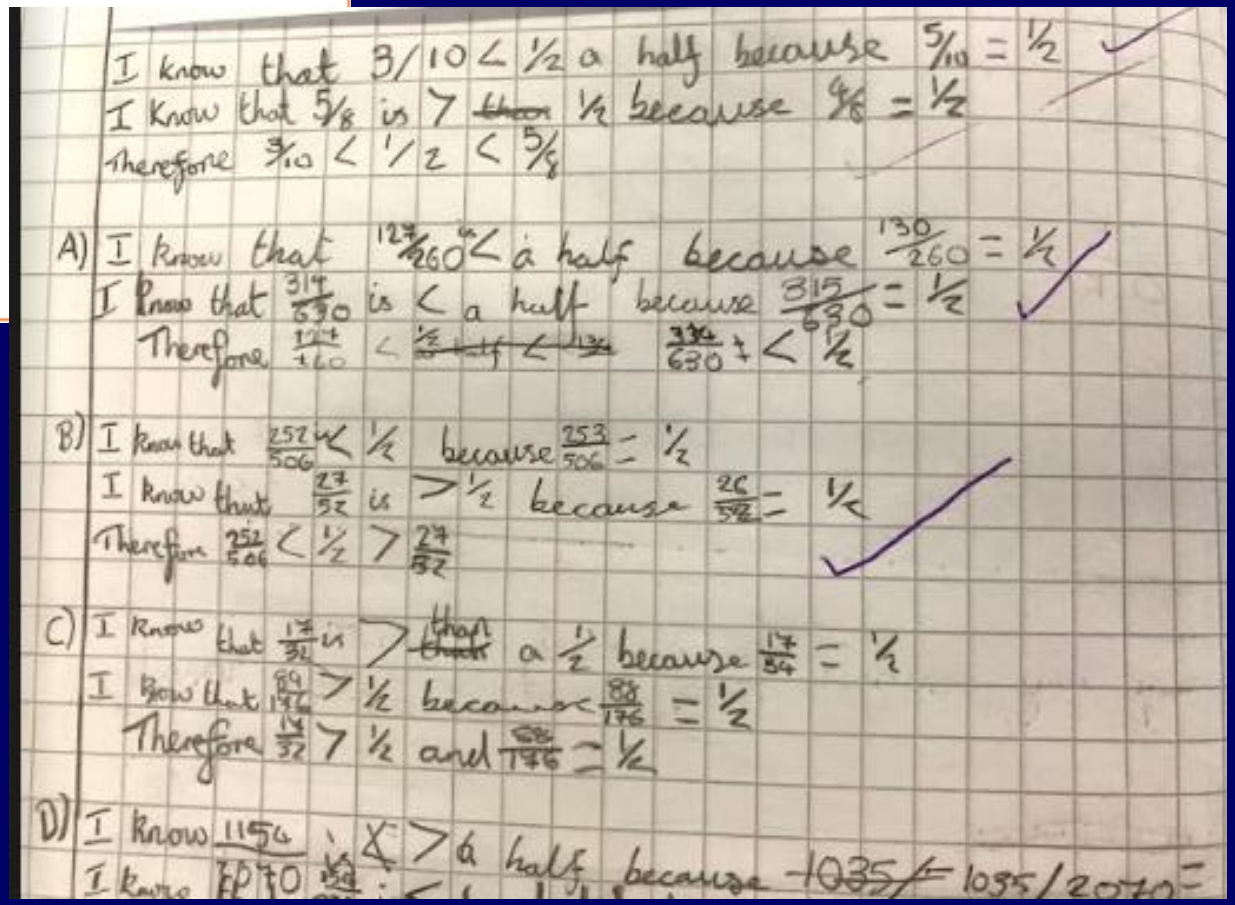
Reasoning Speaking Frame

I notice ...

I know ... because ...

If ... then ...

I can work out ...



Maths

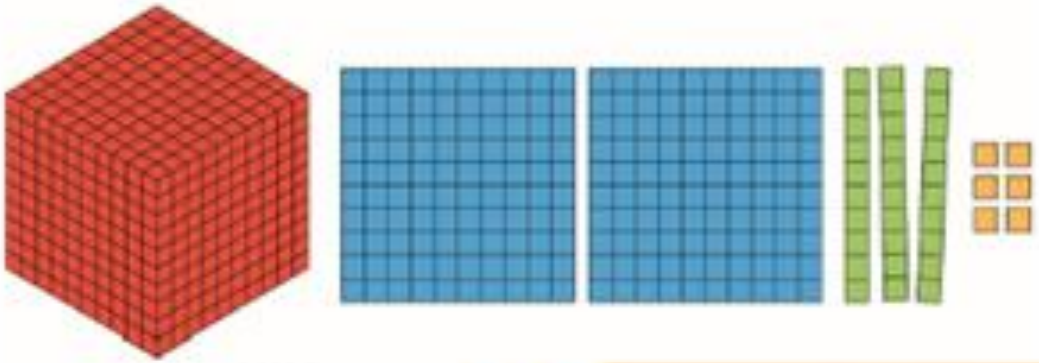
Importance of Mathematical Talk

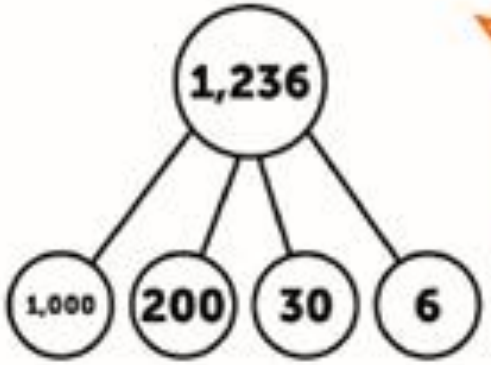
1024 - 512	754 - 149
812 - 562	1003 - 997

I noticed that... so I chose this strategy because ...

CPA and talk together

Maths





I can see 1 thousand, 2 hundreds, 3 tens and 6 ones.

1000 + 200 + 30 + 6

It is thirty six more than one thousand, two hundred.

☐ thousands, ☐ hundreds, ☐ tens and ☐ ones.

☐☐☐☐ + ☐☐☐ + ☐☐ + ☐ = ☐☐☐☐

Our maths week:

Maths

Core Learning (5 sessions) Herts for Learning Essentials Maths
Customised to our learners by additional challenge and carefully crafted practise opportunities sourced by teachers. Includes scaffolds to support the closing of gaps and ARE questions to help assessment.

Fluency Skills - discrete teaching sessions focusing on fluency to keep new skills live, often using games. Weekly arithmetic and number fact practise. E-learning e.g. using *Numbergym*.

Additional pre-teaching and intervention to support children as needed. Cross curricular opportunities to give maths meaning and purpose – science/ topic/ PE etc!

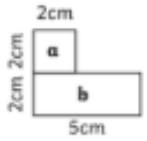
Homework - overlearning number facts, practising of key concepts, topic opportunities (e.g. recipes, statistics).

Ways we approach maths learning in class:

Maths

Calculate the area of each rectangle, then calculate the area of the whole compound shape.

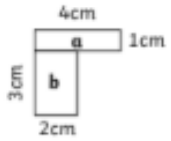
1.



Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

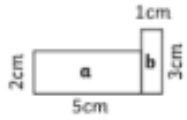
2.



Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

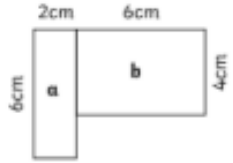
3.



Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

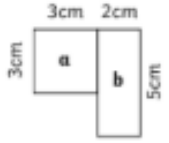
4.



Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

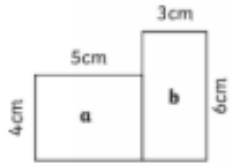
5.



Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

6.

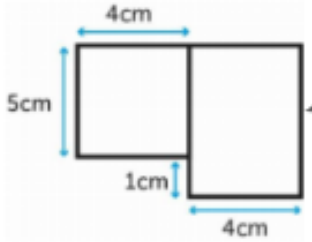


Area a: _____ cm²

Area b: _____ cm² Total: _____ cm²

Destination question:

9



What is this measurement? What clues are there?

What is the combined area of the rectangles?

Investigate…

Can you draw a **compound shape** of your own in your maths book and then calculate the total area?

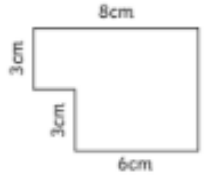
Try calculating one by counting the squares inside the shape.
Try a different one by writing the measurements along the lines (like the diagrams)!

Ways we approach maths learning in class:

Maths

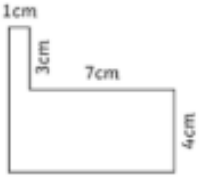
Identify the shapes where the area can be calculated. Calculate the area of each compound shape.

1.



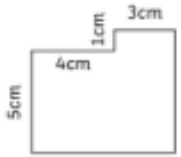
Total: _____

2.



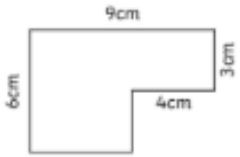
Total: _____

3.



Total: _____

4.



Total: _____

5.

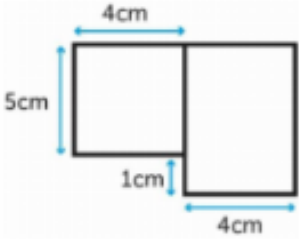
Total: _____

6.

Total: _____

Destination question:

9



What is the combined area of the rectangles?

Investigate…

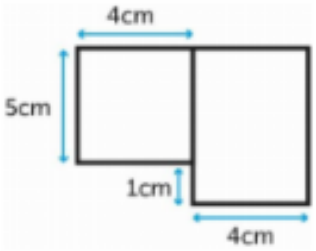
Can you draw a compound shape in your maths book with an area of 32cm2? Is there more than one way of doing it?

Ways we approach maths learning in class:

Maths

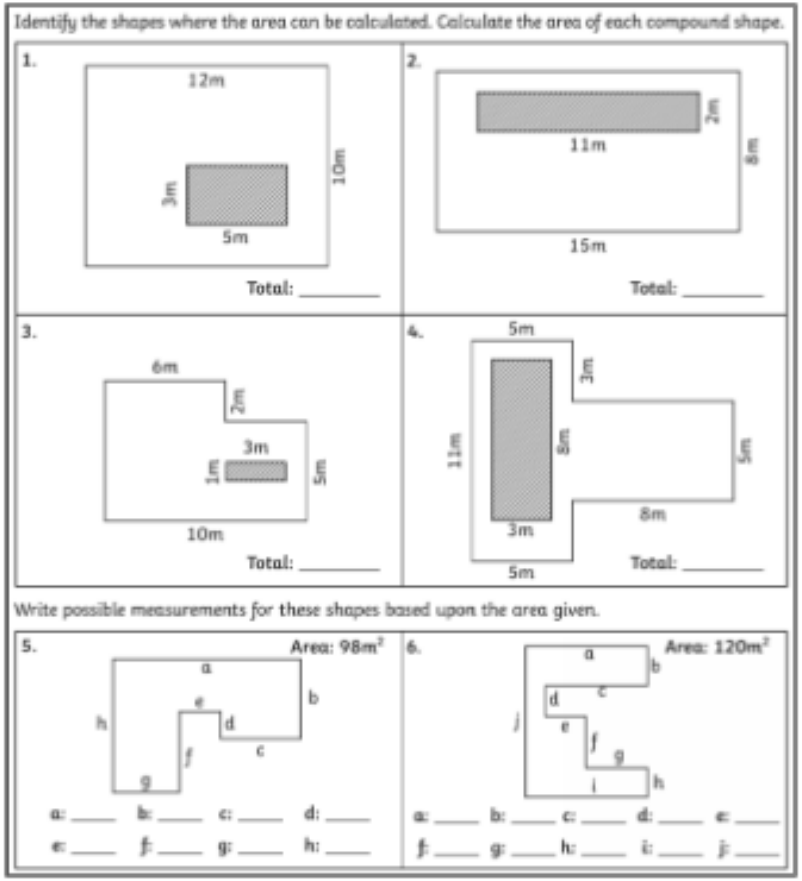
Destination question:

9



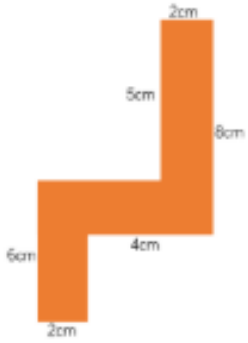
What is the combined area of the rectangles?

Investigate: Can you demonstrate three different ways of calculating this?



Challenge:

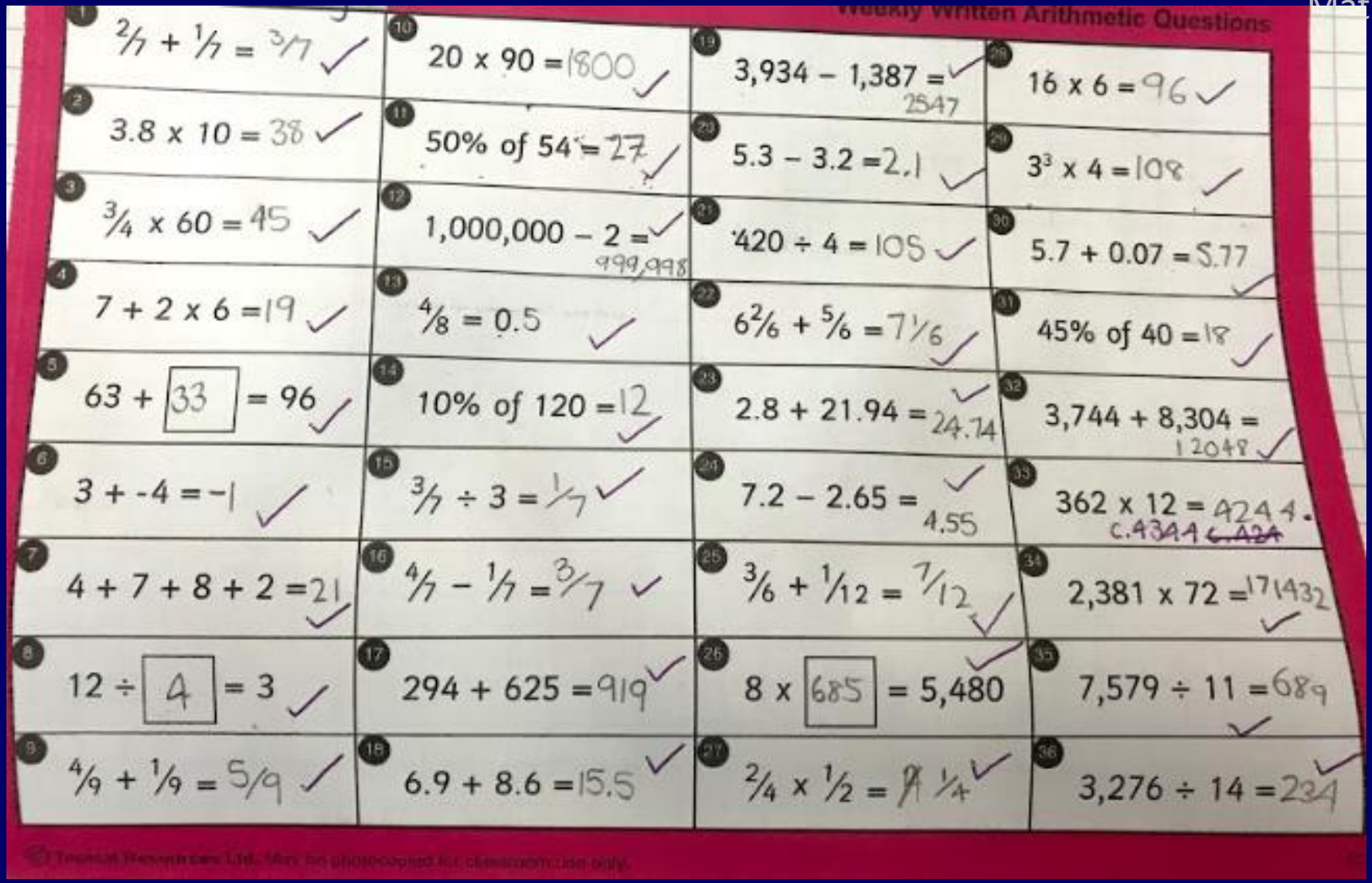
Jack has a shape with an area of 34 cm².



Find 3 possible compound shapes that have an area of 34 cm².

Arithmetic

Maths



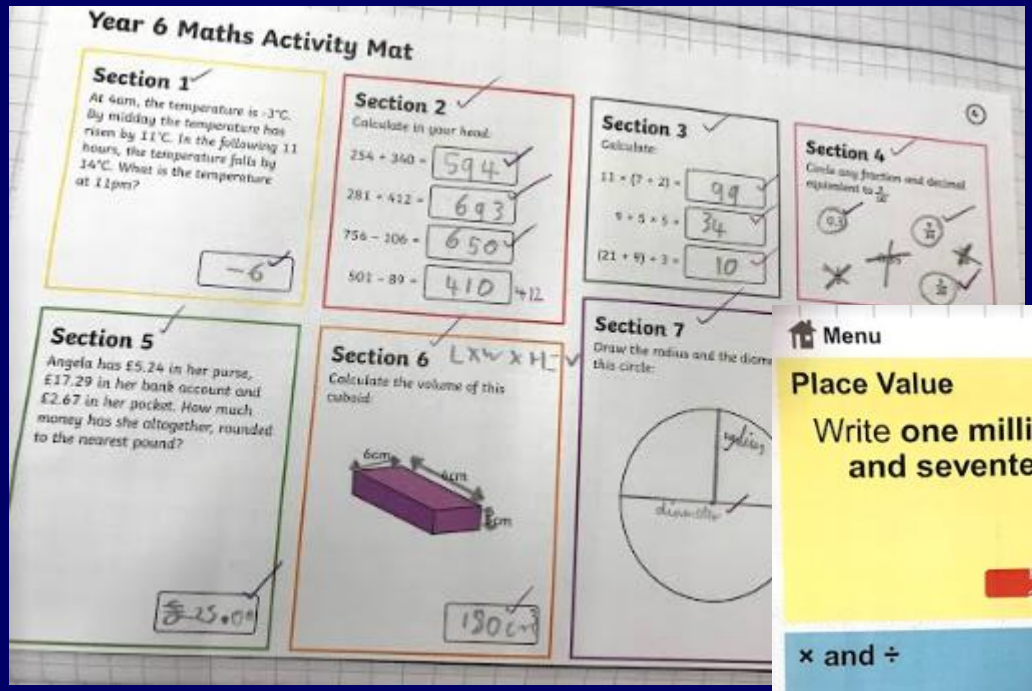
Weekly Written Arithmetic Questions

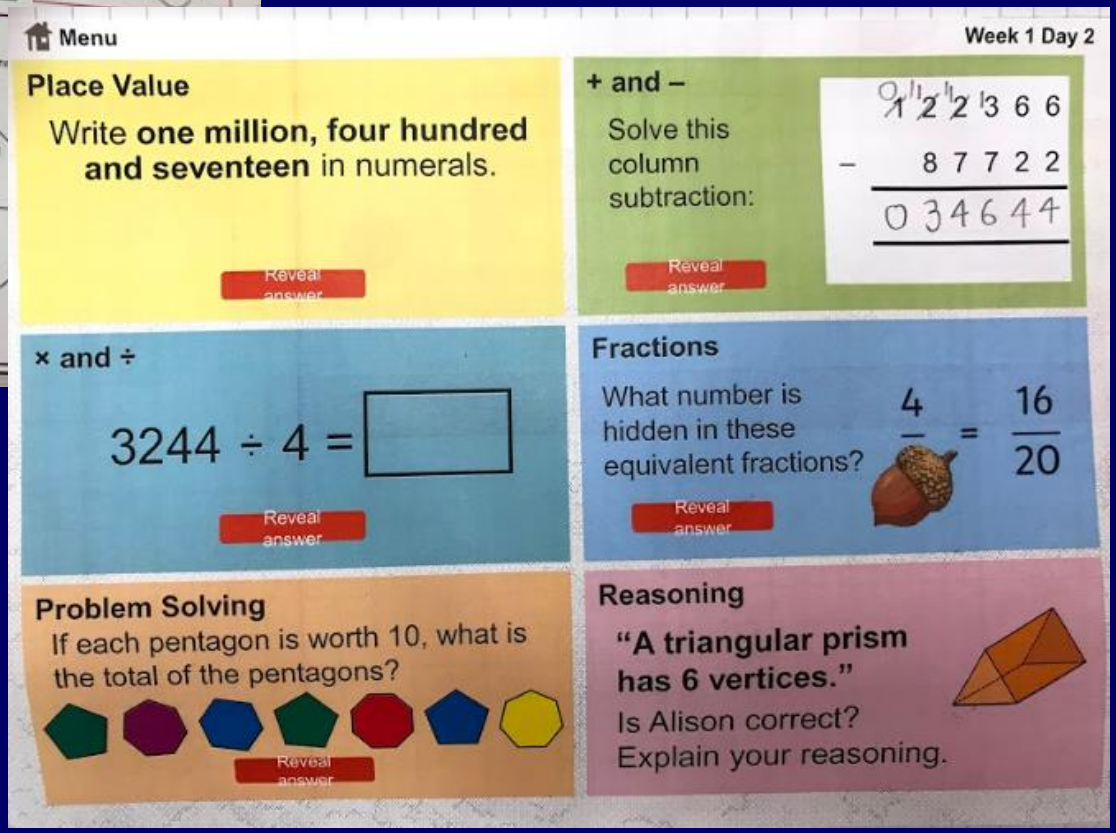
1 $\frac{2}{7} + \frac{1}{7} = \frac{3}{7}$ ✓	10 $20 \times 90 = 1800$ ✓	19 $3{,}934 - 1{,}387 = 2547$ ✓	28 $16 \times 6 = 96$ ✓
2 $3.8 \times 10 = 38$ ✓	11 50% of $54 = 27$ ✓	29 $5.3 - 3.2 = 2.1$ ✓	29 $3^3 \times 4 = 108$ ✓
3 $\frac{3}{4} \times 60 = 45$ ✓	12 $1{,}000{,}000 - 2 = 999{,}998$ ✓	21 $420 \div 4 = 105$ ✓	30 $5.7 + 0.07 = 5.77$ ✓
4 $7 + 2 \times 6 = 19$ ✓	13 $\frac{4}{8} = 0.5$ ✓	22 $6\frac{2}{6} + \frac{5}{6} = 7\frac{1}{6}$ ✓	31 45% of $40 = 18$ ✓
5 $63 + \boxed{33} = 96$ ✓	14 10% of $120 = 12$ ✓	33 $2.8 + 21.94 = 24.74$ ✓	32 $3{,}744 + 8{,}304 = 12048$ ✓
6 $3 + -4 = -1$ ✓	15 $\frac{3}{7} \div 3 = \frac{1}{7}$ ✓	24 $7.2 - 2.65 = 4.55$ ✓	33 $362 \times 12 = 4244$ ~~4324~~
7 $4 + 7 + 8 + 2 = 21$ ✓	16 $\frac{4}{7} - \frac{1}{7} = \frac{3}{7}$ ✓	25 $\frac{3}{6} + \frac{1}{12} = \frac{7}{12}$ ✓	34 $2{,}381 \times 72 = 171432$ ✓
8 $12 \div \boxed{4} = 3$ ✓	17 $294 + 625 = 919$ ✓	26 $8 \times \boxed{685} = 5{,}480$ ✓	35 $7{,}579 \div 11 = 689$ ✓
9 $\frac{4}{9} + \frac{1}{9} = \frac{5}{9}$ ✓	18 $6.9 + 8.6 = 15.5$ ✓	27 $\frac{2}{4} \times \frac{1}{2} = \frac{1}{4}$ ✓	36 $3{,}276 \div 14 = 234$ ✓

© Topical Resources Ltd. May be photocopied for classroom use only.

Additional fluency in class

Maths





Programme of Study: See Y5 and Y6 Year on a page document

Maths

Year 5 programme of study (statutory requirements)

Number and place value	Addition and subtraction	Multiplication and division	Fractions (including decimals and percentages)	Measurement	Geometry: properties of shapes	Geometry: position and direction	Statistics
Pupils should be taught to: • read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above • read Roman numerals to 1000 (M) and recognise years written in Roman numerals	Pupils should be taught to: • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • add and subtract numbers mentally with increasingly large numbers • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Pupils should be taught to: • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • multiply and divide numbers mentally drawing upon known facts • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) • solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	Pupils should be taught to: • compare and order fractions whose denominators are all multiples of the same number • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$] • add and subtract fractions with the same denominator and multiples of the same number • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • read and write decimal numbers as fractions [for example, 0.71 = $^{71}/_{100}$] • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimals with two decimal places to the nearest whole number and to one decimal place • read, write, order and compare numbers with up to three decimal places • solve problems involving number up to three decimal places • recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal • solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25	Pupils should be taught to: • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes • estimate volume [for example, using 1 cm^3 blocks to build cuboids(including cubes)] and capacity[for example, using water] • solve problems involving converting between units of time • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling	Pupils should be taught to: • identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees ($^\circ$) • identify: - angles at a point and one whole turn (total 360°) - angles at a point on a straight line and ½ a turn (total 180°) - other multiples of 90° • use the properties of rectangles to deduce related facts and find missing lengths and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Pupils should be taught to: • identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	Pupils should be taught to: • solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables

Teaching and Learning

Year 5 and 6 Learning in Action!

Maths

Year 5 – Spring term

The National Curriculum, detailed Programmes of Study, and Year group learner documents are all on the school website. You can also find information about what's coming up in maths on our termly class newsletter.

Maths

Term 2		
Week One	5LS16	Problem Solving – All Four Operations
Week two	5LS17	Multiply Fractions by Whole Numbers
	5LS18	Fraction Problem Solving
Week three	5LS19	Measure: Converting Units of Measure
Week four - five	5LS20	Area
	5LS21	Volume and Capacity
Week six - seven	5LS22	Percentages
	5LS23	Problem Solving - Percentages
Week eight	5LS24	3-D Shapes from 2-D Representations
	5LS25	Reflection and Translation
Week nine - ten	5LS26	Perimeter
	5LS27	Estimate, Compare, Measure and Draw Angles
	5LS28	Identify Unknown Angles

Year 6 – Spring term

The National Curriculum, detailed Programmes of Study, and Year group learner documents are all on the school website. You can also find information about what's coming up in maths on our termly class newsletter.

Maths

Term 2		
Week one	6LS16	Order of Operations and Algebra
Week two	6LS17	Formal Written Method for Long Division
Week three	6LS18	Exploring Relationships Between Perimeter and Area
Week four	6LS19 6LS20	Recognise and Find Angles Reflection and Translation
Week five and six	6LS21 6LS22 6LS23	Multiplying Fractions Dividing Fractions Fraction Problem Solving
Week seven	6LS24	Ratio and Proportion
Week eight	6LS25 6LS26	Volume Measures
Week nine	6LS27	Statistics – Interpret Line Graphs and Pie Charts
Week ten	6LS28	Algebra and Sequences

Year 6 SATS wb 13/5/19

Maths

Time	Monday	Tuesday	Wednesday	Thursday
1st session	**Reading Comprehension** 1 hour	**GAPS** 45 minutes	**Maths paper 1: Arithmetic** 30 minutes	**Maths test 3: Reasoning** 45 minutes
	Break	Break	Break	Break
2nd session	**Spelling test** No time limit		**Maths test 2: Reasoning** 45 minutes	

We have been preparing the children for these tests in the best way we feel to ensure they know: what the week will look like, what the tests will be like and how they will tackle them with our support as needed. We have been proud of how the children have tackled these so far.

They have had two sets of Mock SATs papers since and will have one more nearer to Easter.

Any extra practice they want to do at home is always beneficial and you can purchase SATS practice books.

In school we use the CPG books as well as tailored extra practice as the children identify what they want to work on. This is often identified and completed in booster group sessions in small groups on a Monday and will also be in the breakfast booster session we will run soon.

Maths

Enjoying maths at home

1. Praise your child for effort
2. When checking homework, celebrate mistakes as learning points – take the time to go through it with before they say its done.
3. All mistakes are beautiful and a learning opportunity!
4. Try not to show frustration. Take a break, let everyone calm down and come back to it
5. Do not pressurise children. Whilst knowing times tables is important, it doesn't make you a bad mathematician if you can't remember them.
6. Don't describe yourself as useless at maths
7. Show yourself to be curious about maths and playful with numbers. Make it fun!

Maths

How can parents help at home

- Any counting and dice games, card games, any maths games!

- Look for Maths in the Every Day (next slide)

- Practise quick fire number facts at home
- + and – facts to 10, 20
- x tables
- base facts

Come in and ask us if you need advice!

Maths in the Every Day

Maths

Need help with strategies?

- School Journals – contain examples of written methods we use, explanations of fractions, shapes, perimeter, area, rounding, time etc
- Lots of detail!

- Please look at them and encourage children to use them to support homework

Come in and ask us if you need advice!

E-learning that supports maths and children can log onto free from home

‘Numbergym’

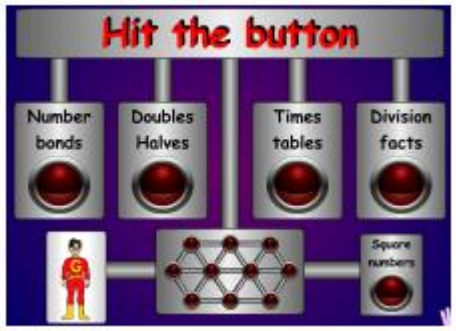
www.numbergym.co.uk

User name: ashwell

Password: silver

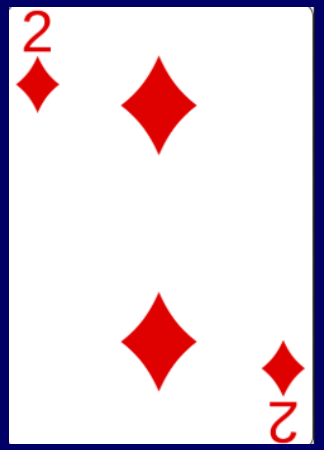
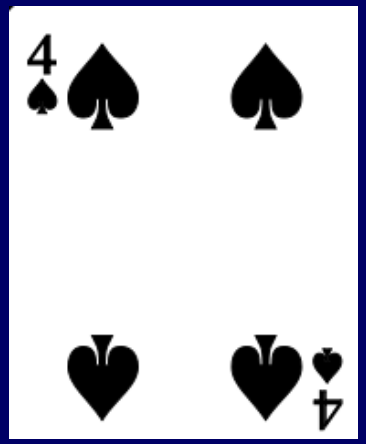
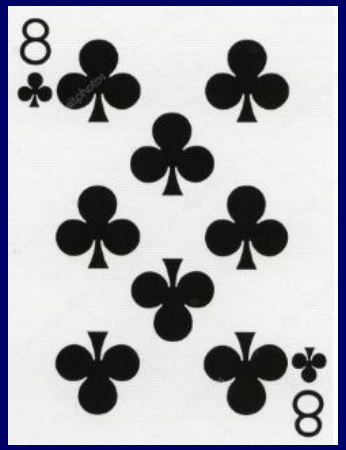
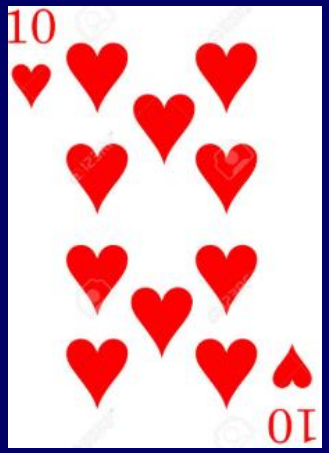
This is an excellent resource to help with learning in all areas of maths.

Bond Builder and Table Trainer are accessible via tablet.



Let's give you one more challenge!

Maths

Select some cards…

What numbers can you make with these cards when you put them in a number sentence?

Examples…

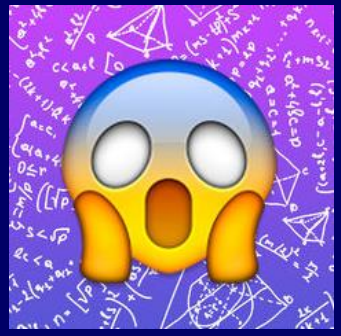
$10 - 8 = 2$ $\quad\quad$ $8 \div 2 = 4$

$10 - 1 \times 2 = 18$ $\quad\quad$ $10 \times 8 \times 2 = 160$

Maths

Many thanks for attending tonight.
We hope you have found it useful.

Please fill in our evaluation survey.



Mrs Wild's talk about mental health begins at 7pm in the main hall!