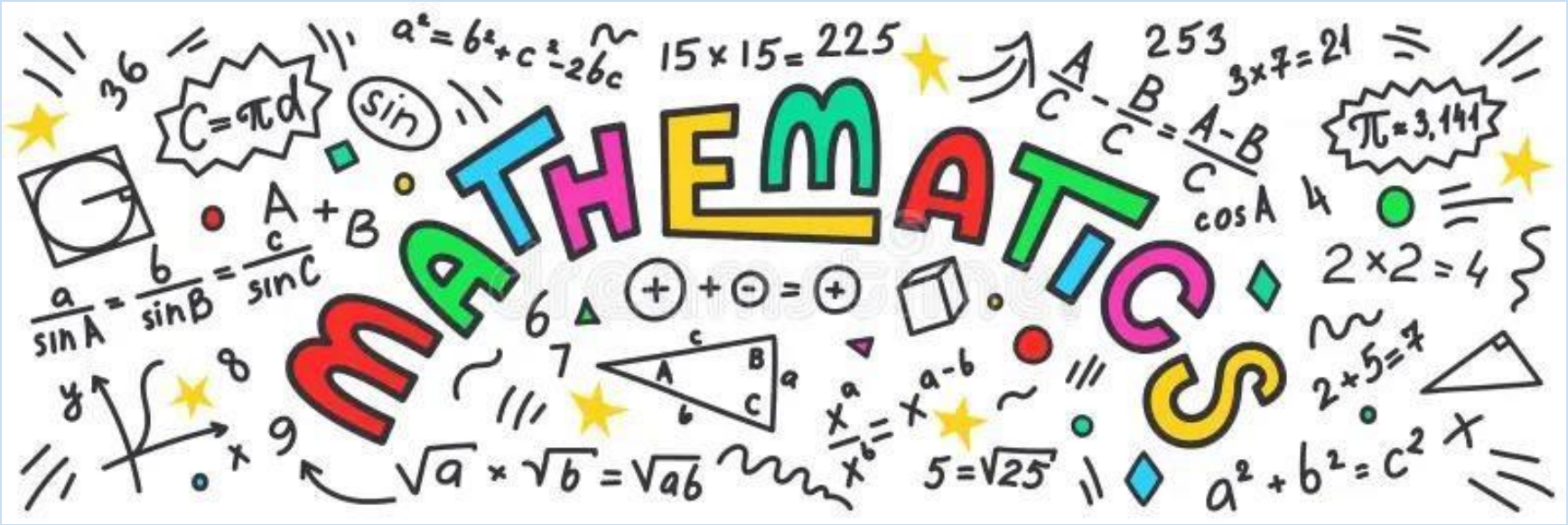
Parent Workshop



While you are waiting, have a go at the **24 Game**

Use all four digits once each to make 24.

You can use +, - , x and ÷

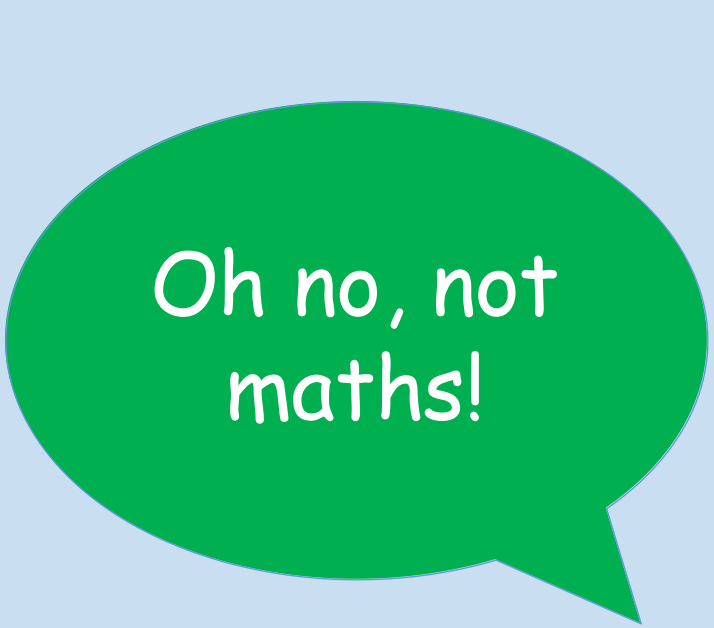
Can you do it in more than one way?

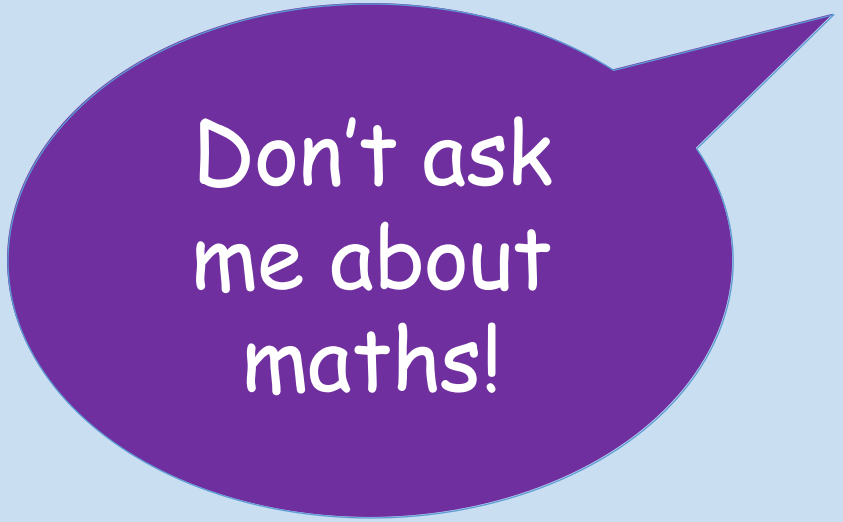
2 5 6 8

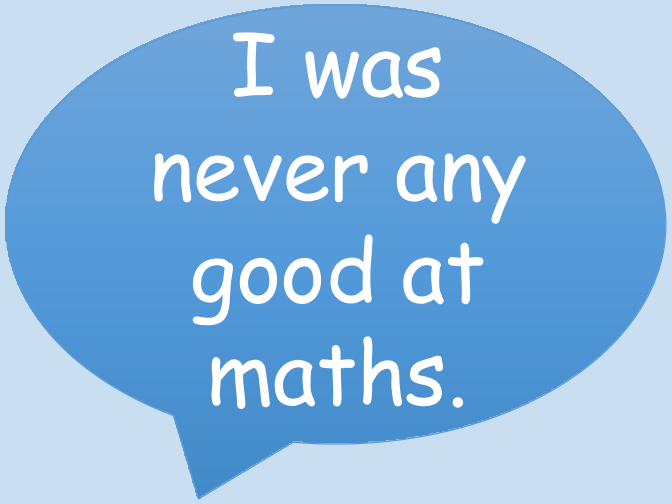
Aims for this session:

- To explore some of the things your children learn in maths
- To consider why fluency in number is so important
- To look at some of the strategies we use in school
- To think about ways you can support your children at home
- To ask any questions.

Research suggests that many adults are happy to say things like…

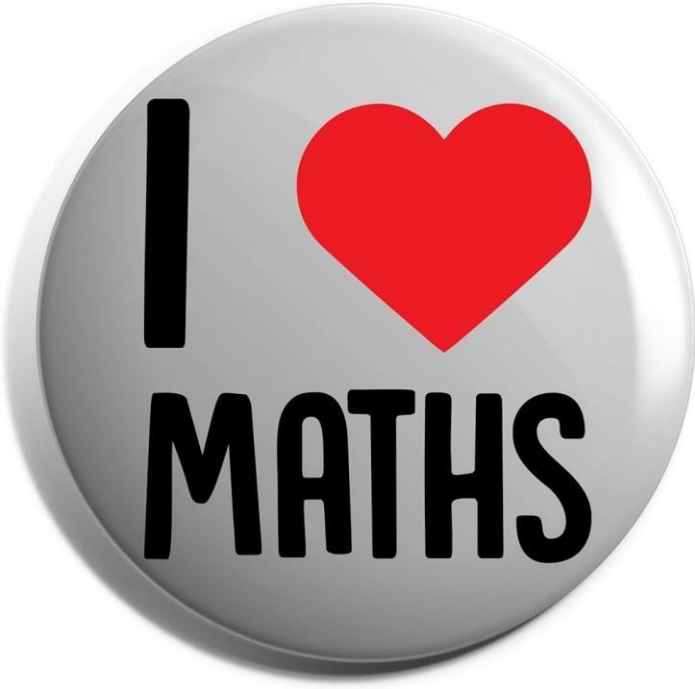






Research also suggests that adults would not openly admit to being poor at reading.

Please, please, please be enthusiastic about maths with your children.



Maths Lessons at The Stoke Poges School

Reception	Whole Class Session, Adult-guided independent task Continuous provision
Key Stage 1: Years 1 & 2	Main Lesson Fluency Session
Key Stage 2: Years 3 - 6	Interventions

Maths is not always about one right answer and the one way of working it out.

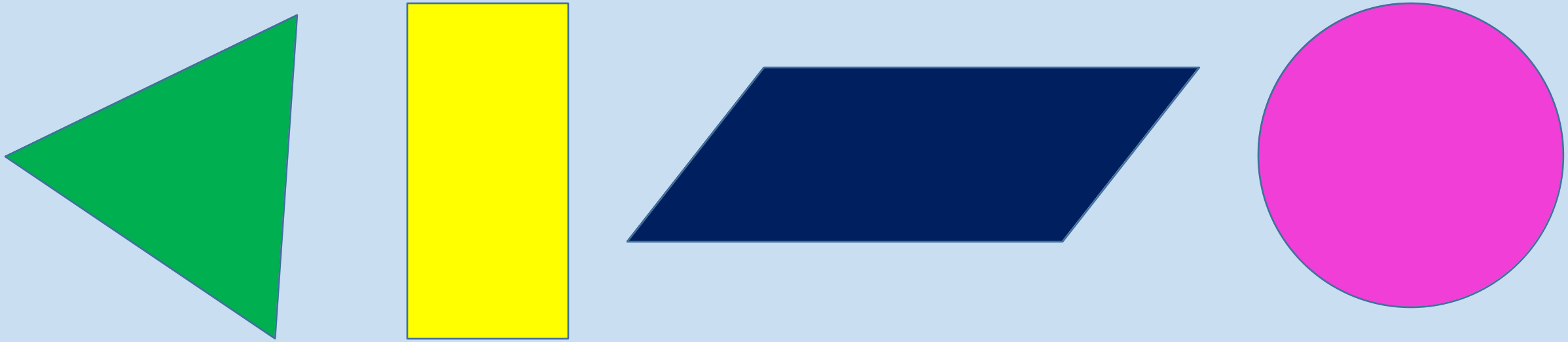
We want to equip the children with the knowledge, understanding, confidence and enthusiasm to be efficient mathematicians.

Talking
Reasoning
Investigating
Explaining
Justifying
Proving

Which is the odd one out **and why**?

3 8 13 15

Which is the odd one out **and why**?



Number Sense

Subitising:
Instantly knowing the number of items in small group without counting

Counting:
Knowing the number names in order, forwards and backwards. Understanding how to count objects, events or actions in ones and also in twos, fives and tens.

Composition:
Understanding how each number can be made up in different ways by adding and subtracting
Knowing how our number system uses groups of tens and ones

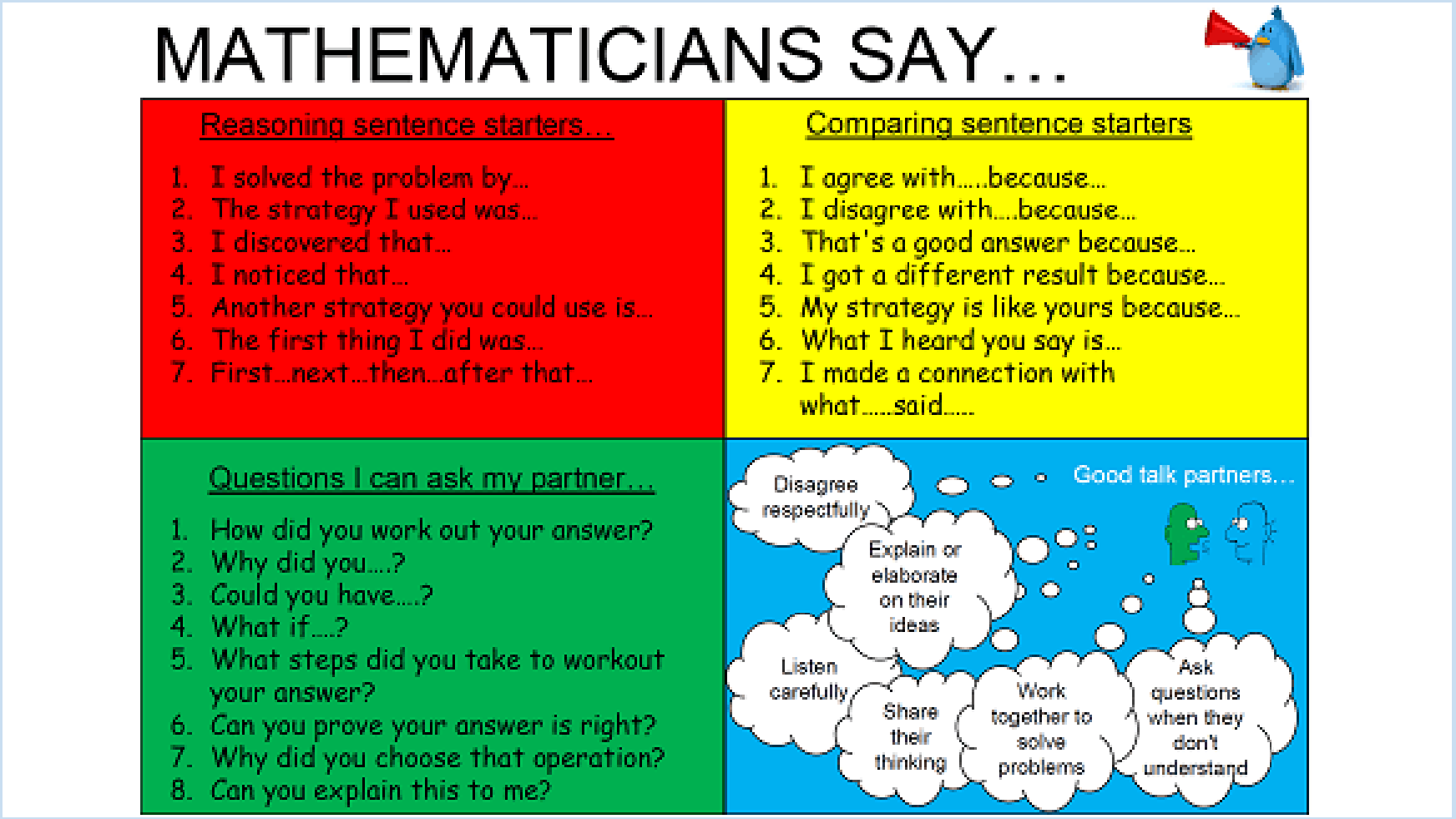
Comparing:
Having a feel for the relative sizes of numbers
Putting numbers in order
Estimating

What can you do to help your child to develop secure number sense at home?

Practise counting

- Forwards
- Backwards including to zero
- Start from any number
- Don’t always stop in the same place
- Match the counting to objects and actions
- Make it real
- Count anything and everything!

Developing oracy in mathematics



Stem sentences

Year 3 examples

Number and Place Value *[NPV]*	Number Facts *[NF]*	Addition and Subtraction *[AS]*	Multiplication and Division *[MD]*	Fractions *[F]*	Geometry *[G]*	Measurement *[M]*
One part is ____. The other part is ____. The whole is ____ The digit ____ has a value of ____ hundreds/tens/ ones. The whole is ____ and the parts are ____	____ times ____ is equal to ____ To compare three-digit numbers, we need to compare the hundreds digits. If I know ____ then I know____.	The calculation tells me I need to add/ subtract the numbers. If the column total is equal to ten or more we must regroup. Whole minus/subtract a part is equal to the	To find ten times as many, multiply by ten. ____ is a multiple of ____ because ____ ____ multiplied by ____ is equal to ____. divided by ____ is	If ____ is the whole, then ____ is part of the whole. The whole has been divided into ____ equal/unequal parts.	There are three hundred and sixty degrees in a full circle — a complete turn. nence is equal to	Quadrilaterals are shapes that have four sides. A ____ is a shape with ____ equal sides and ____ equal angles.

Year 5 examples

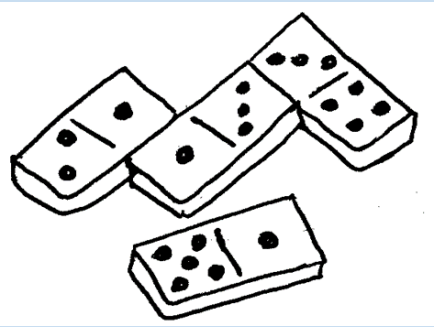
Number and Place Value *[NPV]*	Number Facts *[NF]*	Addition and Subtraction *[AS]*	Multiplication and Division *[MD]*	Fractions *[F]*	Geometry *[G]*	Measurement *[M]*
I can estimate the answer to be ____ because ____ Decimals are part of a integer. ____ is more than ____ because negative numbers get lower as they get bigger.	____ is greater / less than ____ because I know ____ is ____ than ____ ____ is getting 10 / 100 / 1000 times smaller / larger. ____ rounded to the nearest integer is ____ The midpoint of ____ and	The most efficient way to add these numbers is by ____ because ____ ____ tens plus the ____ we already have, gives us ____ To subtract ____ from ____ I can partition ____ into ____	____ is not in its simplest form, because ____ is a common factor of ____ ____ is a factor/multiple of ____ because ____ x ____ = ____ ____ is a factor/multiple of ____ because ____ ÷ ____ = ____ Numbers that have more	The denominator tells us it is split into ____ parts. The numerator tells us how many parts we have. There are ____ halves in four / six / eight / ten ____ ____ is a integer and a fraction, which is ____ as an improper fraction ____	X and Y axis - Along the corridor and up the stairs or walk before you fly. When we move a shape sideways, up or down, we call it translation. The x / y co-ordinate has changed to ____ because it has moved ____	I know ____ ml is equivalent to ____ L because there are 1000ml in 1L. ____ m is ____ km because there are 1000m in 1km. There are ____ centimetres in ____ metres.

Use the language of comparing and ordering whenever you can.

- Which one is heavier?
- Who came first?
- Who has more?
- Which plate has fewer?
- Which animal is smaller/taller?

Talk about maths in real life contexts:

- Look at house numbers, bus numbers, road signs, number plates. What numbers can you see? What's the number before/after?
- Cut food in half/into shapes/share it out.
- Play games using dice/money/dominoes
- Sing songs about numbers
- Talk about the shapes around you – road signs are very useful!



The National Curriculum

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions, decimals & percentages (& ratio and proportion in Year 6)
- Measurement
- Geometry
- Statistics (from Year 2)
- Algebra (in Year 6)

Year 3 and 4

- Using and understanding numbers up to 1000 and then beyond 1000
- Counting up in multiples of 10, 25, 50 100 and 1000
- Using negative, as well as positive, numbers
- Adding, subtracting, multiplying and dividing mentally and using formal written calculation methods
- Remembering times tables up to 12 x 12
- Exploring fractions and decimals
- Analysing and comparing a range of 2D and 3D shapes and their properties
- Telling the time accurately, including using Roman numerals, and calculating with time
- Calculating with measurements, including calculating perimeter and area
- Converting measurements (e.g. from centimetres to metres)
- Interpreting and presenting data using pictograms, tables and bar graphs.

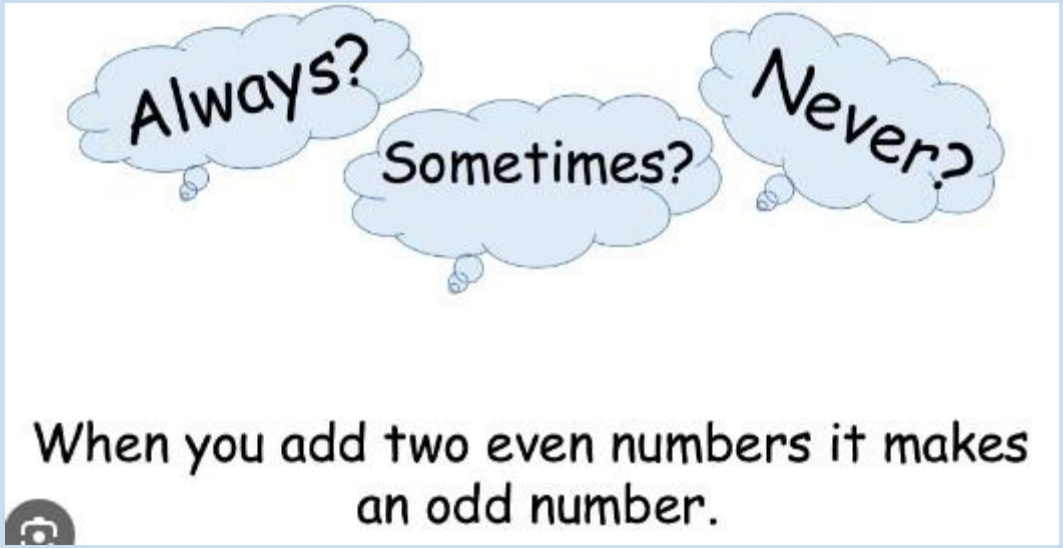
Year 5 and 6

- Reading, writing, ordering and comparing numbers up to 10,000,000 and determining the value of each digit
- Rounding whole numbers and beginning to use negative numbers
- Reading Roman numerals to 1000 and recognising years written in Roman numerals
- Adding and subtracting numbers with more than 4 digits, using formal written methods
- Multiplying and dividing numbers with up to 4 digits by two-digit whole numbers, using long multiplication and division
- Identifying common factors, common multiples and prime numbers
- Using the order of operations and solving multi-step problems
- Comparing, ordering and simplifying fractions
- Calculating with fractions and associating fractions with decimals and percentages
- Solving problems involving ratio and proportion
- Using simple formulae and expressing simple problems algebraically
- Converting between units of measure and calculating with measurements, including time, area and volume
- Drawing 2D shapes and recognising, describing and building simple 3D shapes
- Drawing, identifying and measuring angles
- Using tables, pie charts and line graphs
- Calculating and interpreting the mean as an average

The National Curriculum

- Fluency
- Reasoning
- Problem solving

automaticity



When you add two even numbers it makes an odd number.

Always, sometimes or never?

If you add three odd numbers, you will make a prime number.

Always, sometimes or never?

An acute angle add an acute angle equals an obtuse angle.

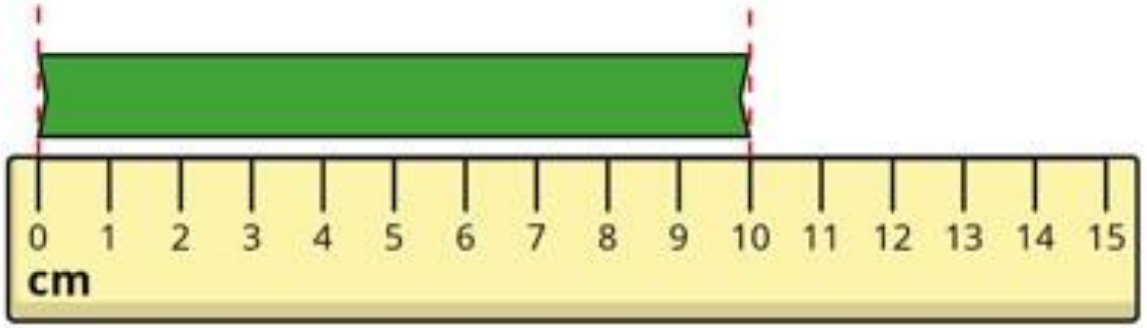
Half an even number is a whole number

The square of any prime bigger than 3 is 1 more than a multiple of 24

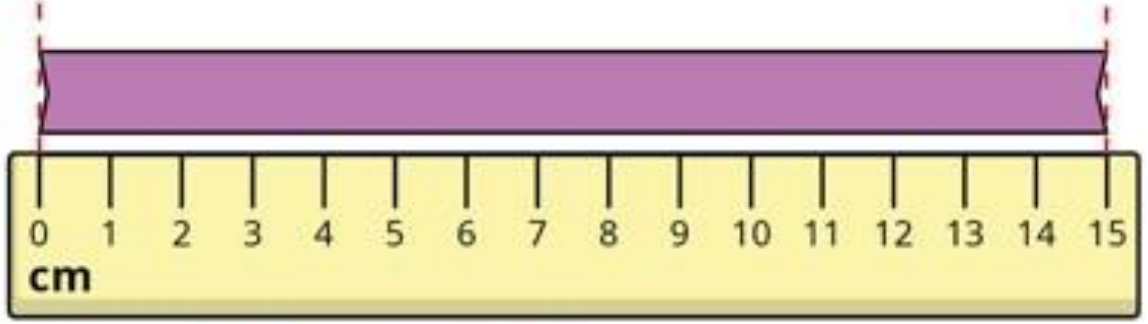
Y1

Jo, Max and Sam are comparing the lengths of some ribbons.

Jo



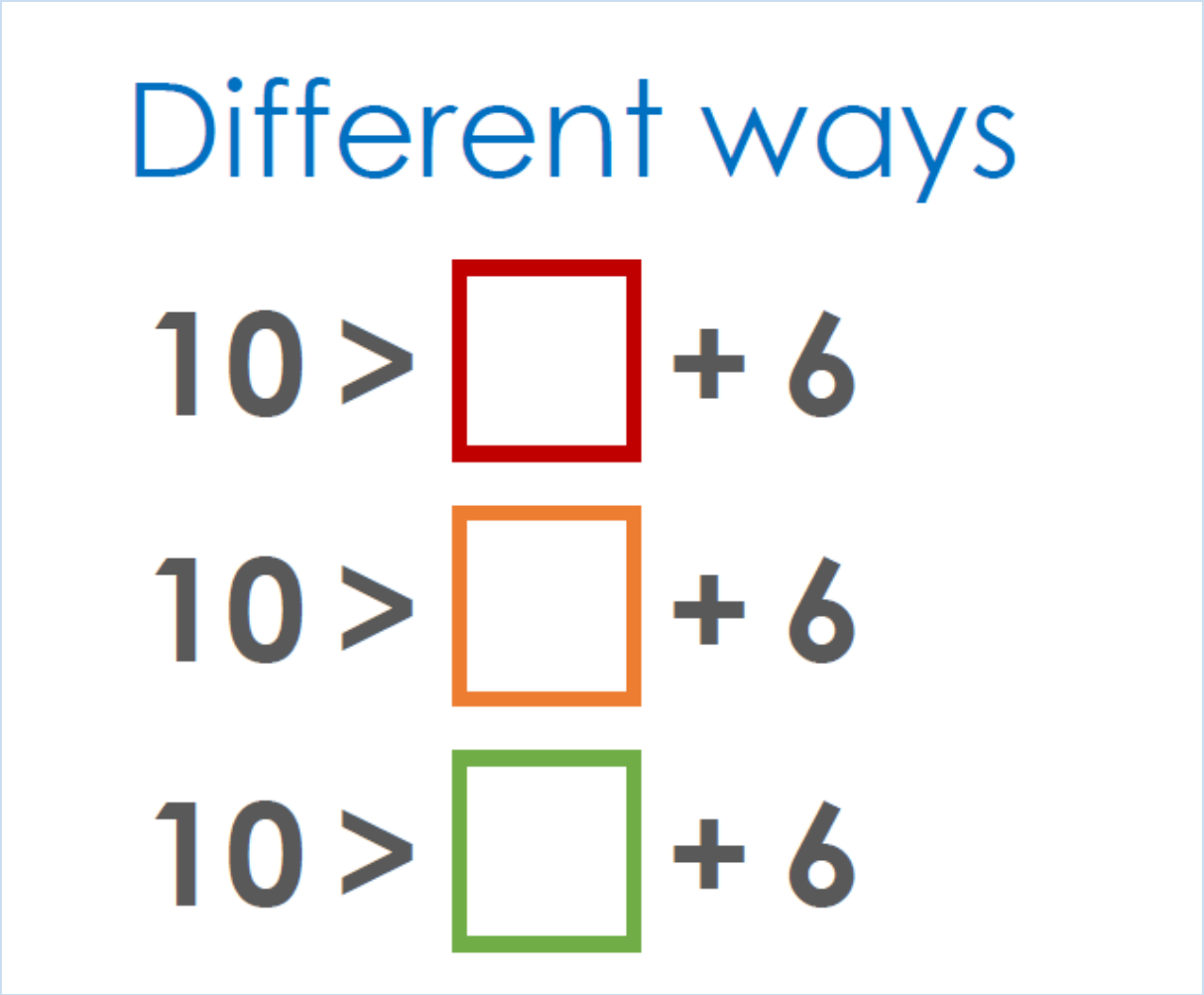
Max



Sam

My ribbon is shorter than Max's, but longer than Jo's.

How long could Sam's ribbon be?



How many different ways are there?

$$100 - 5n > 60$$

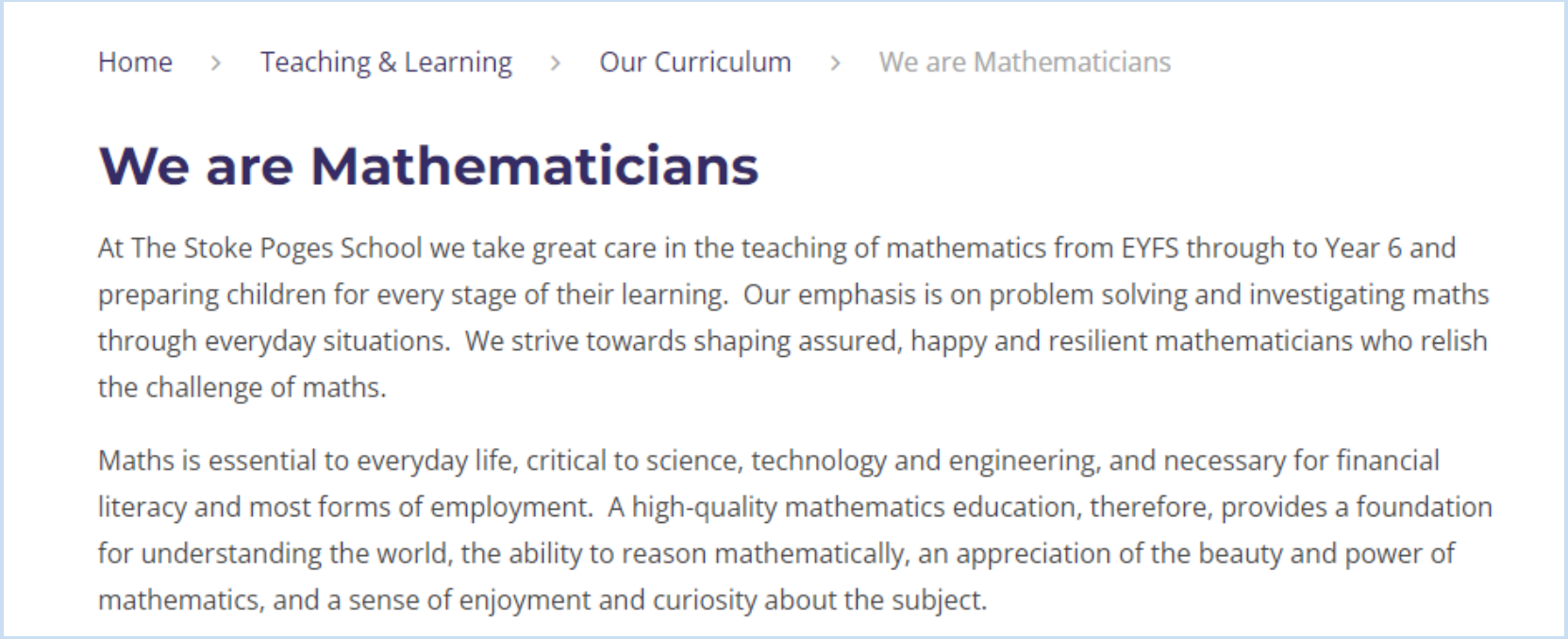
n is a whole number

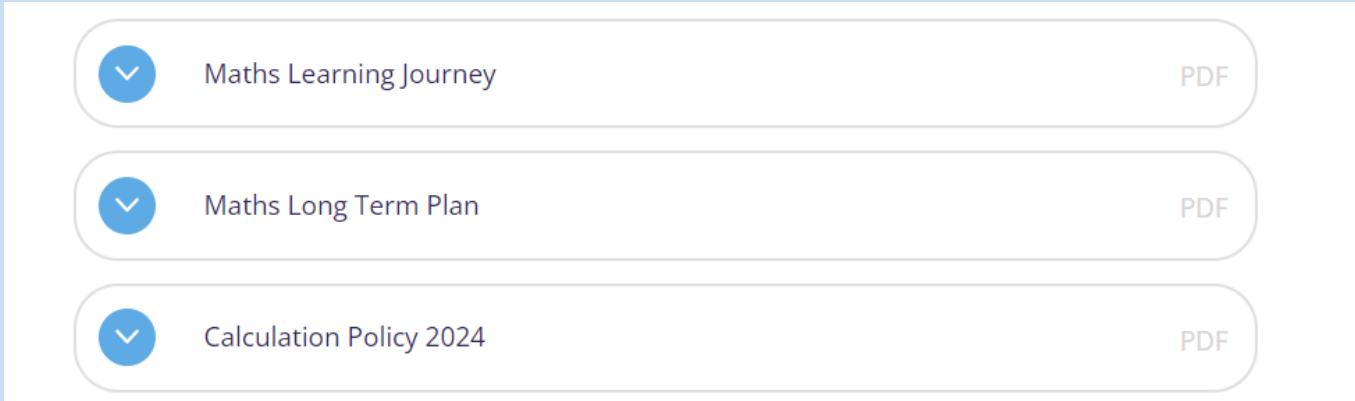
What is the largest number n can be?

How many possible answers are there?

What if n didn’t have to be a whole number?

More information about our mathematics curriculum





Learning Journey

Year 3

Pupils should be taught to:

- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
- recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- compare and order numbers up to 1000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1000 in numerals and in words
- solve number problems and practical problems involving these ideas.

Number and Place Value

- I can count from 0 in multiples of 4, 8, 50 and 100
- I can recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- I can find 10 or 100 more or less than a given number
- I can compare and order numbers up to 1000
- I can identify, represent and estimate numbers using different representations
- I can read and write numbers up to 1000 in numerals and in words
- I can solve number problems and practical problems involving these ideas

Non-statutory guidance

Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.

They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16).

Using a variety of representations, including those related to measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.

Year 4

Pupils should be taught to:

- count in multiples of 6, 7, 9, 25 and 1000
- find 1000 more or less than a given number
- count backwards through zero to include negative numbers
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- order and compare numbers beyond 1000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

Number and Place Value

- I can count in multiples of 6, 7, 9, 25 and 1000
- I can find 1000 more or less than a given number
- I can count backwards through zero to include negative numbers
- I can recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones)
- I can order and compare numbers beyond 1000
- I can identify, represent and estimate numbers using different representations
- I can round any number to the nearest 10, 100 or 1000
- I can solve number and practical problems that involve all of these skills and with increasingly large positive numbers
- I can read Roman numerals to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value

Non-statutory guidance

Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice.

They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.

They connect estimation and rounding numbers to the use of measuring instruments.

Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time.

Long term plan

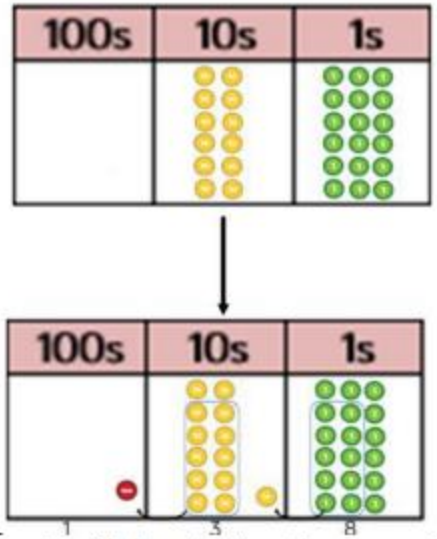
Year 4	**Number and place value** • Find 1000 more or less than a given number • Recognise the place value of each digit in a four- digit number (thousands, hundreds, tens, and ones) • Order and compare numbers beyond 1000 • Identify, represent and estimate numbers using different representations • Count backwards through zero to include negative numbers • Count in multiples of 6, 7, 9 • Count in multiples 25 and 1000 • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value **Addition and subtraction** • Practise mental methods with increasingly large numbers to aid fluency • 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 • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Multiplication and division**	**Number and place value** • Find 1000 more or less than a given number • Recognise the place value of each digit in a four- digit number (thousands, hundreds, tens, and ones) • Order and compare numbers beyond 1000 • Identify, represent and estimate numbers using different representations • Count backwards through zero to include negative numbers • Count in multiples of 6, 7, 9, 7 • Count in multiples 25 and 1000 • Solve number and practical problems that involve all of the above and with increasingly large positive numbers **Addition and subtraction** • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Multiplication and division** • Recall multiplication and division facts for multiplication tables up to 12 × 12 • Recognise and use factor pairs and commutativity in mental calculations • Multiply two-digit numbers by a one-digit number using formal written layout	**Number and place value** • Round any number to the nearest 10, 100 or 1000 • Solve number and practical problems that involve all of the above and with increasingly large positive numbers **Addition and subtraction** • Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why • Add and subtract numbers mentally with increasingly large numbers **Multiplication and division** • Multiply two-digit numbers by a one-digit number using formal written layout • Multiply three-digit numbers by a one-digit number using formal written layout • Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit, integer scaling problems and harder correspondence

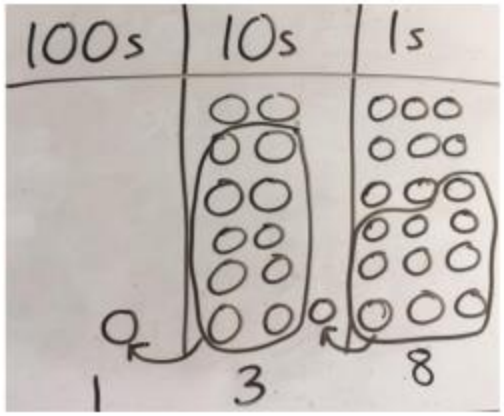
Calculation policy

<table>
<tr>
<td>Years 3 – 6

Multiplying a 2/3/4-digit number by a 1-digit number (with regrouping)</td>
<td>Formal column method with place value counters (or other appropriate resources).

6 x 23

 
</td>
<td>Children to represent the counters/base 10, pictorially e.g. the image below.

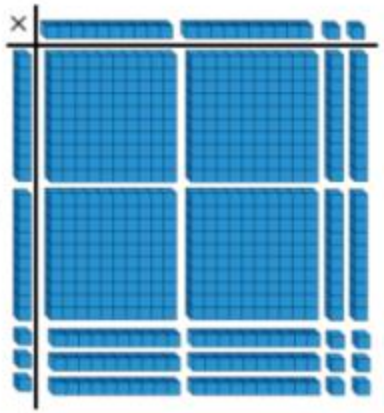
 
</td>
<td>Formal written method

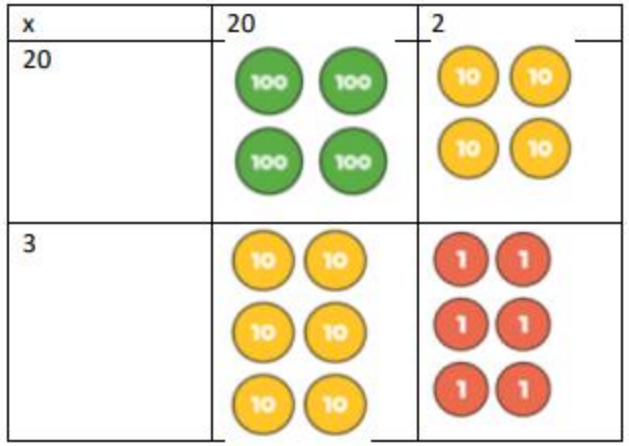
6 x 23 =

23
× 6
138
1 1</td>
</tr>
<tr>
<td>Years 5 – 6

Multiplying two 2-digit numbers</td>
<td>Area model with base ten (or other appropriate resources)

22 x 23 =

 
</td>
<td>Pupils represent pictorially using counters (or similar)

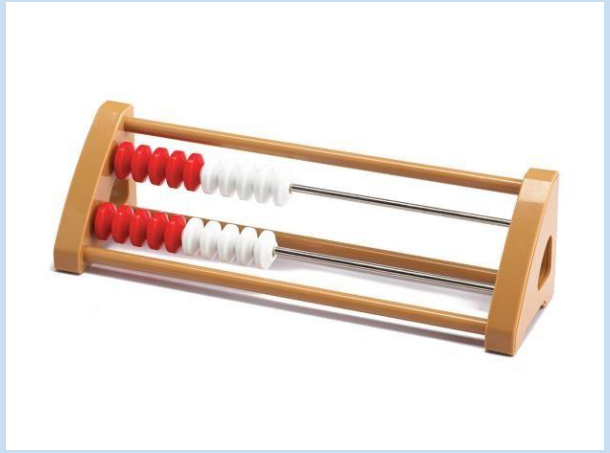
 
</td>
<td>Area model filled out with numbers

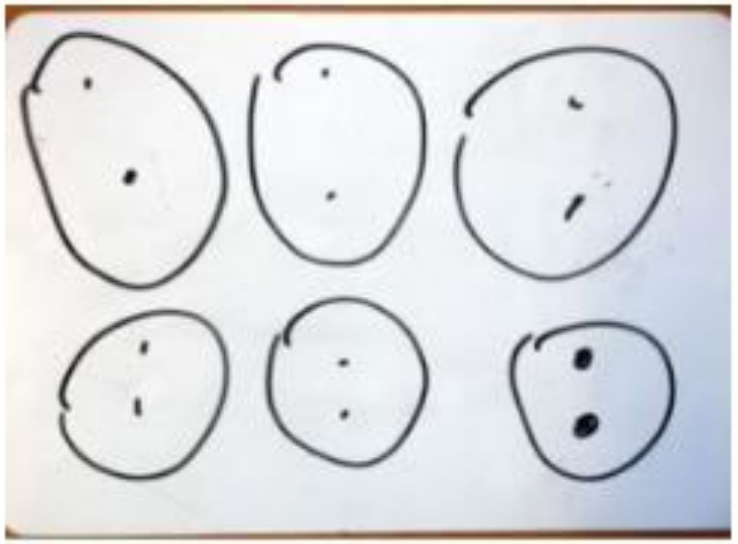
<table>
<tr><td>x</td><td>20</td><td>2</td></tr>
<tr><td>20</td><td>400</td><td>40</td></tr>
<tr><td>3</td><td>60</td><td>6</td></tr>
</table>

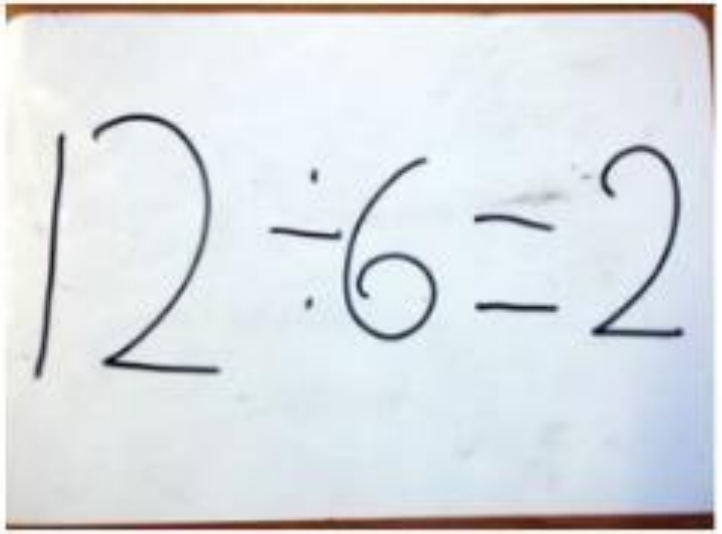
400 + 60 + 40 + 6 = 506</td>
</tr>
</table>

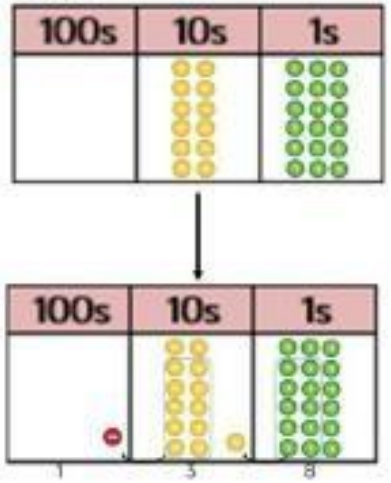
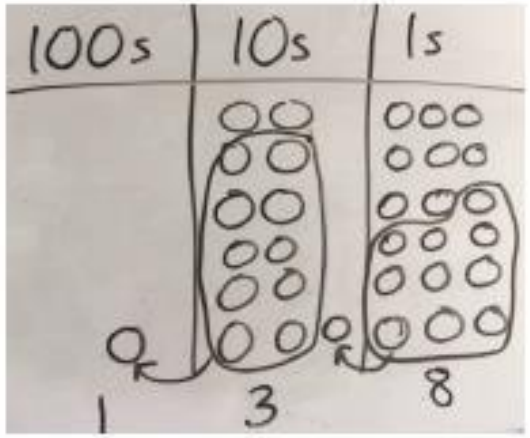
concrete pictorial abstract

Concrete Resources






12 ÷ 6 = 2

Formal column method with place value counters. 6 x 23 	Children to represent the counters/base 10, pictorially e.g. the image below. 	Formal written method 6 x 23 = 23 × 6 138 1 1

How can you help to build your child's number sense and fluency?

One of the most important things you can do to help your child is to help them to learn their number facts:

- Addition and subtraction

Addition and subtraction facts

Composition of numbers

Number bonds

Practise the ‘best friends’ or number bonds to 10

0 + 10

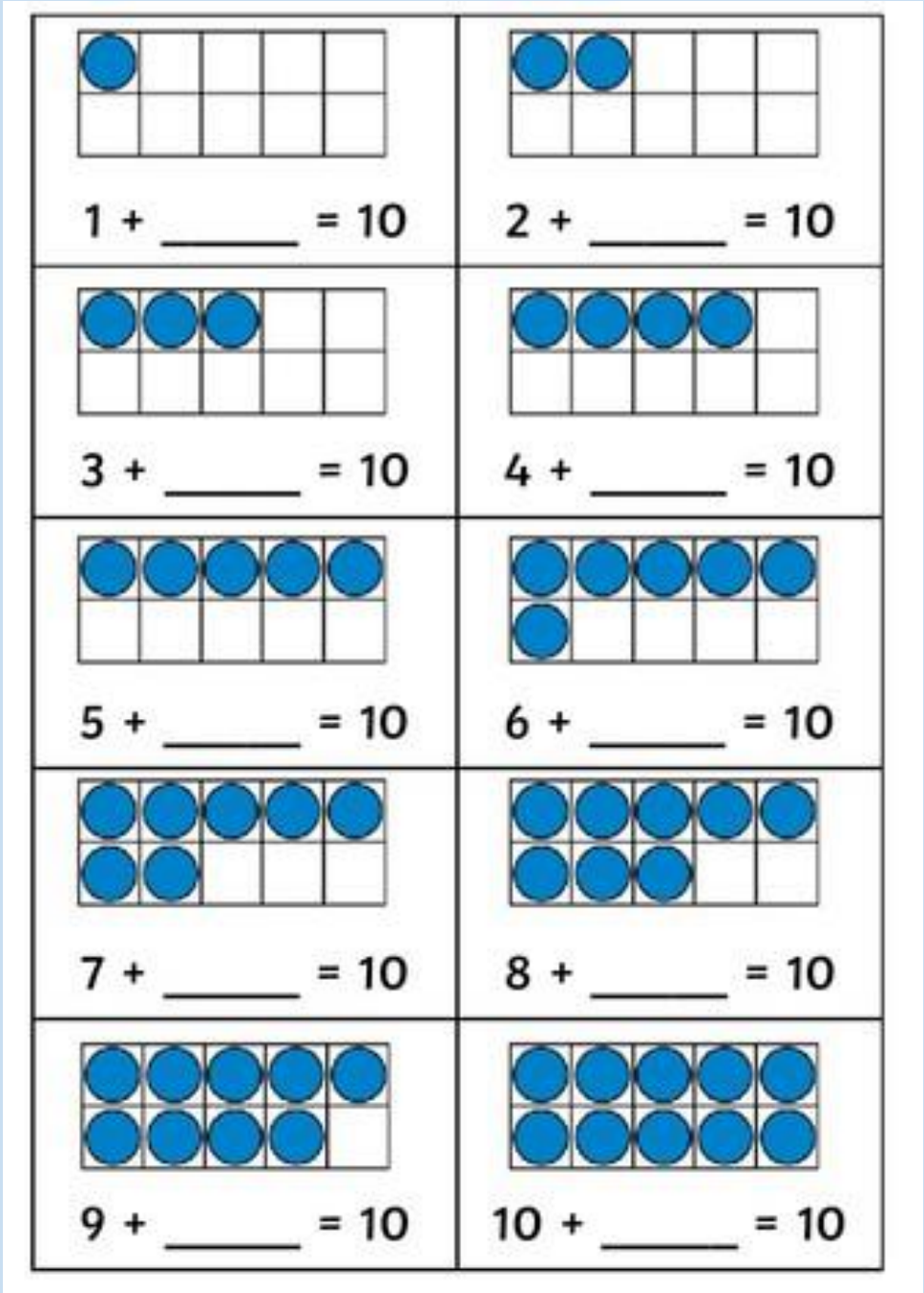
1 + 9

2 + 8

3 + 7

4 + 6

5 + 5



This then means you can easily count up to the next 10 which is an extremely helpful strategy for mental calculations.

36 + ___ = 40

62 + ___ = 70

6 + 8 + 4 is suddenly much easier if you spot the number bonds to 10

These then lead to the number bonds to 100, 1000, 1 etc.

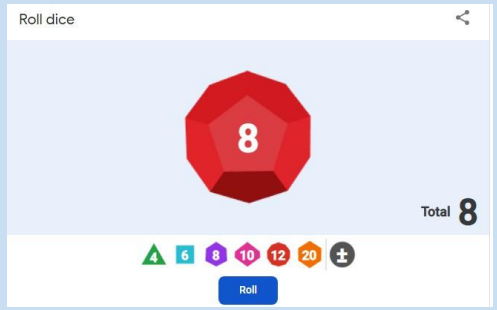
0 + 100
10 + 90
20 + 80
30 + 70
40 + 60
50 + 50

0 + 1000
100 + 900
200 + 800
300 + 700
400 + 600
500 + 500

0 + 1.0
0.1 + 0.9
0.2 + 0.8
0.3 + 0.7
0.4 + 0.6
0.5 + 0.5

Play games with dice:

- Roll the dice and give the best friend to 10
- Roll a dice and double the number
- Add ten to the number
- Throw two dice and race to add or subtract the numbers
- Play a game using one dice and double the number if it's odd and halve the number if it's even.



Card Games

- Remove picture cards (you can add them back in later to make things more challenging!)
- Decide on a rule e.g. Double/partner to 10…
- Turn over top card
- First person to say the correct answer wins the card

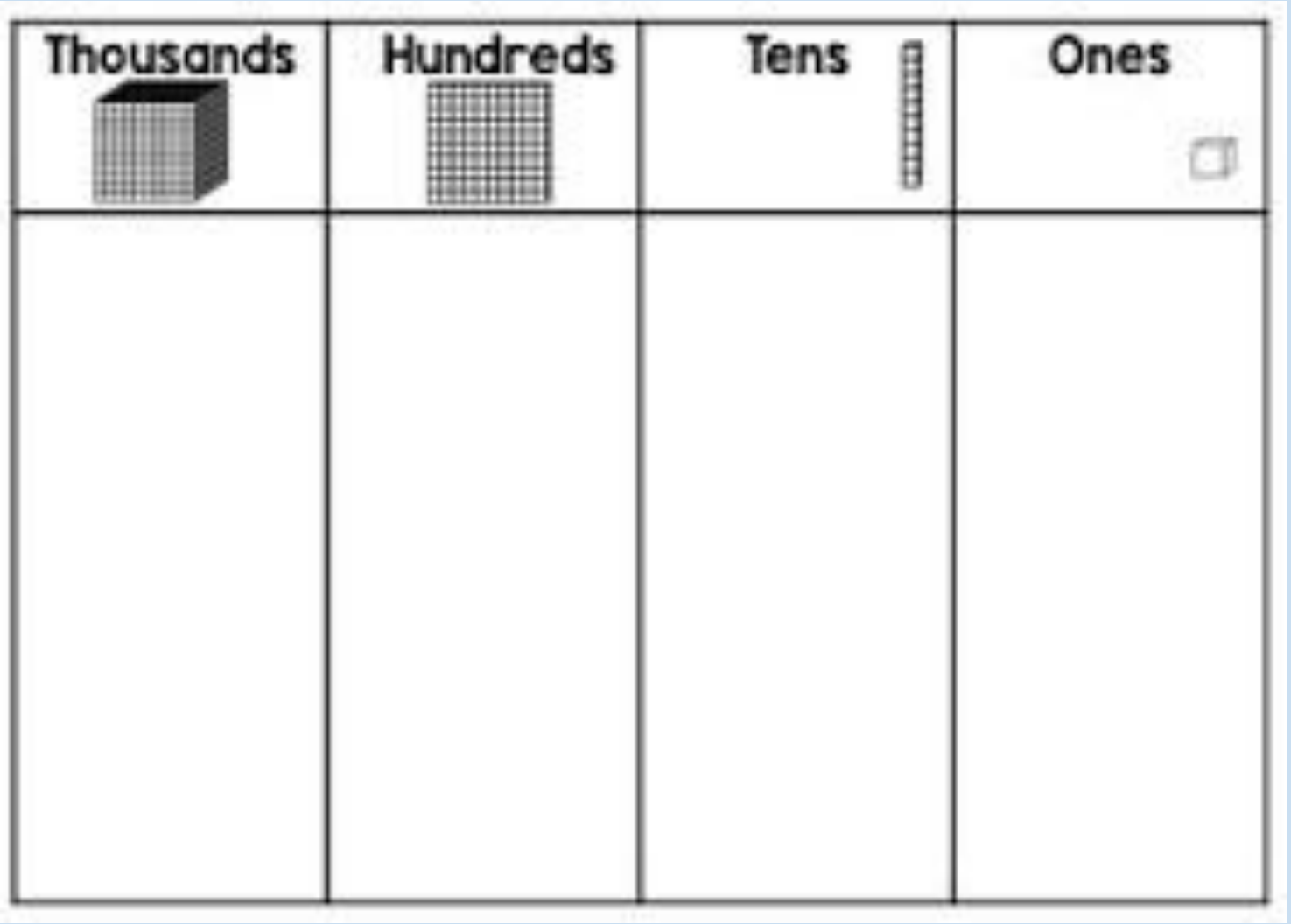
Card Games

- Remove picture cards
- Split deck in half – one pile each face down
- Both turn over top card
- First person to say sum/difference wins the pair
- Turn over two cards, make it a 2-digit number and give the fact to 100 or make it a decimal number and give the fact to 10

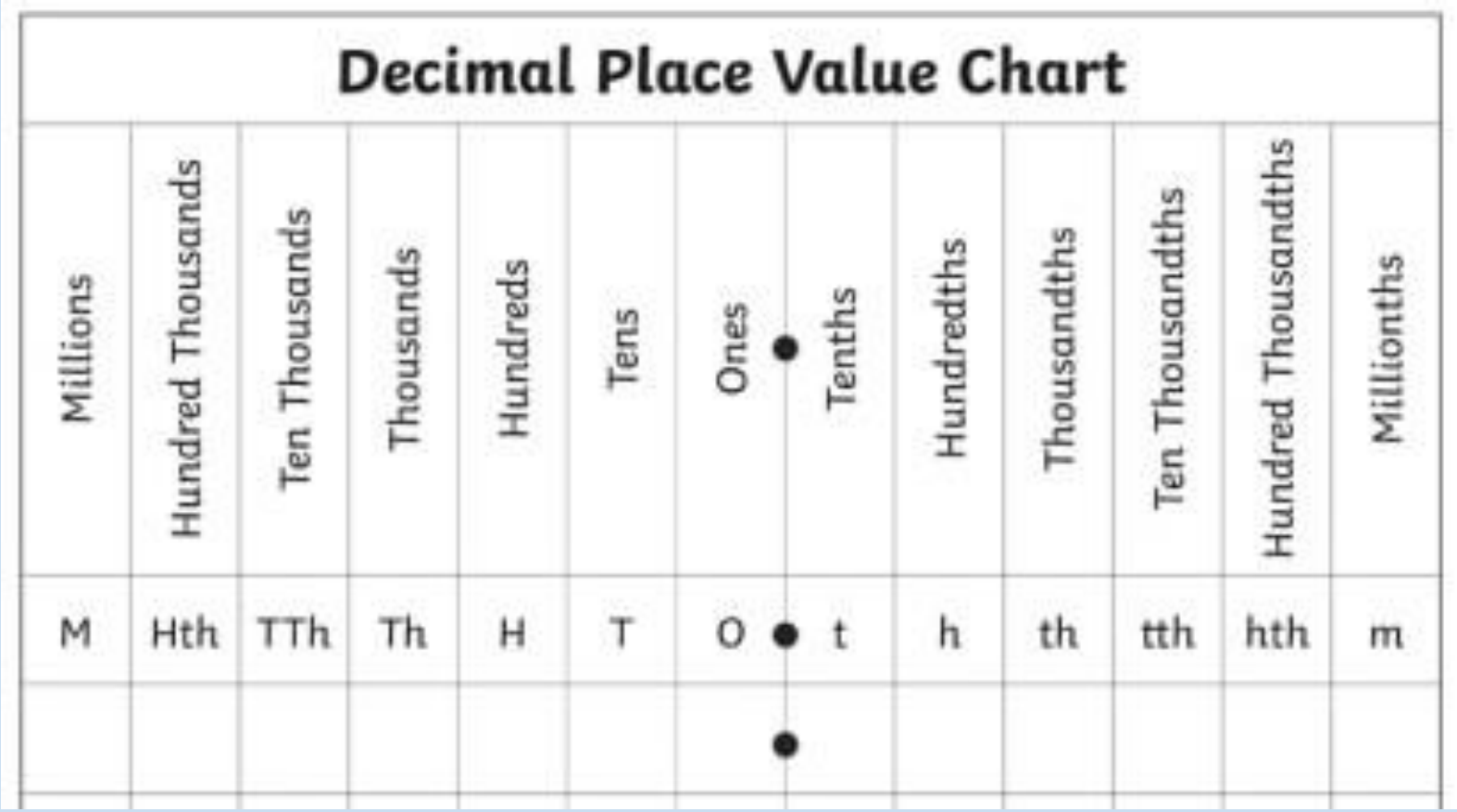

Hit the Button
Square Numbers
Halves
Division Facts
Number Bonds
Doubles
Times Tables
Topmarks


1-minute MATHS
Subitising
Addition
Subtraction
Multiplication
Division

A sense of 10 and Place Value



Understanding place value and the size of numbers



Decimal Place Value Chart

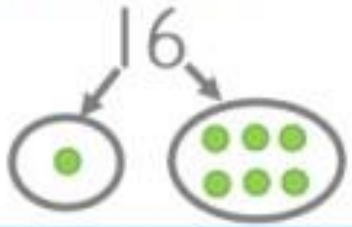
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	•	Tenths	Hundredths	Thousandths	Ten Thousandths	Hundred Thousandths	Millionths
M	Hth	TTh	Th	H	T	O	•	t	h	th	tth	hth	m
							•						

Is it sixteen? ✓ ✗

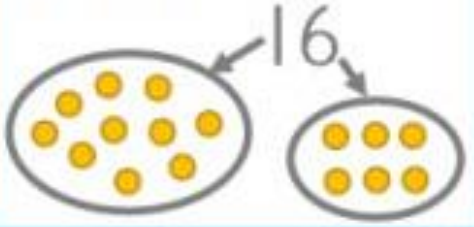
Is it sixteen?

61

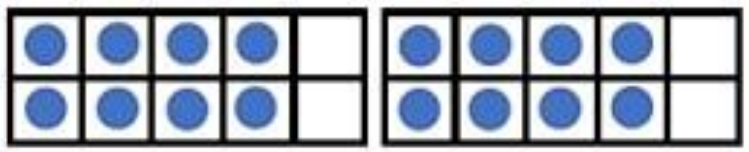
Is it sixteen?



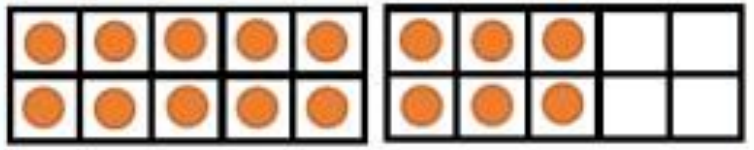
Is it sixteen?



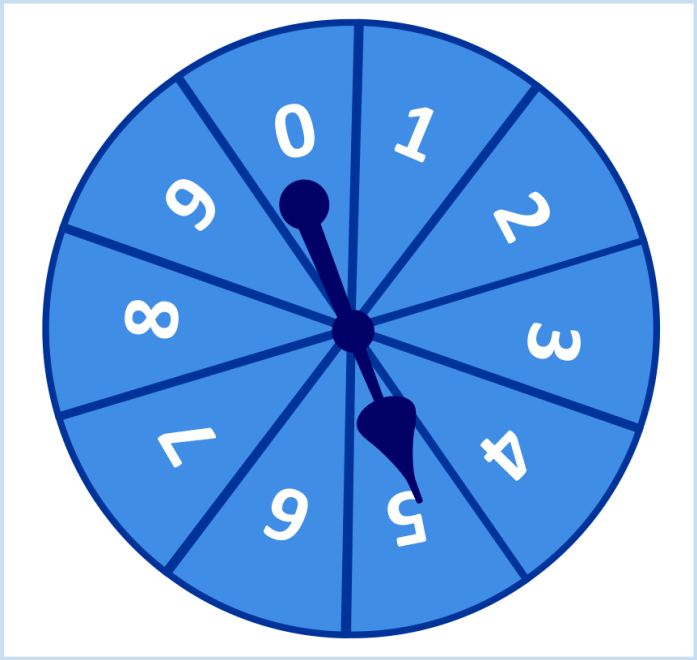
Is it sixteen?



Is it sixteen?

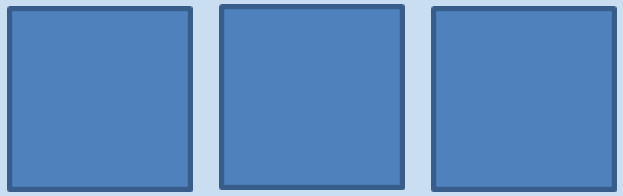


With an understanding of place value, children can partition numbers to help with calculations.

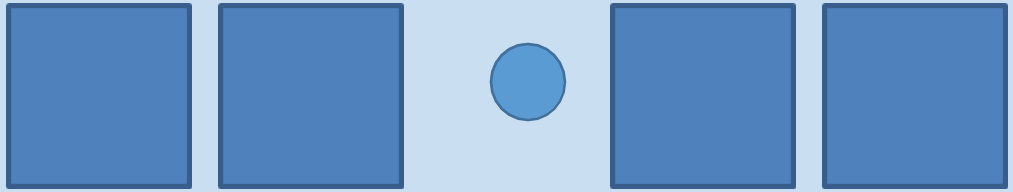


Let’s play!

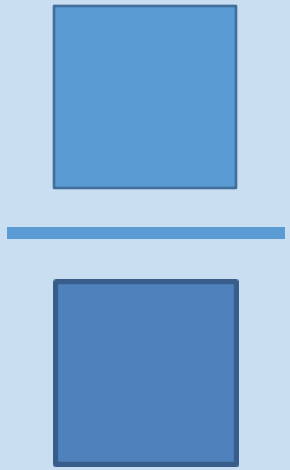
Understanding place value and the size of numbers.



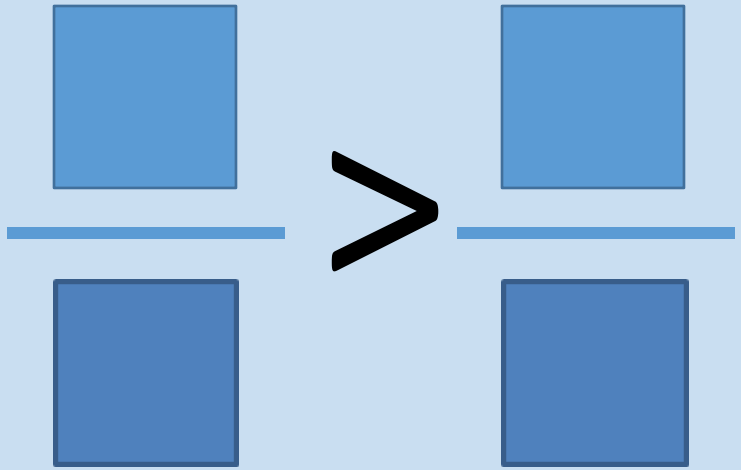
Biggest number wins!



Number closest to
50 wins

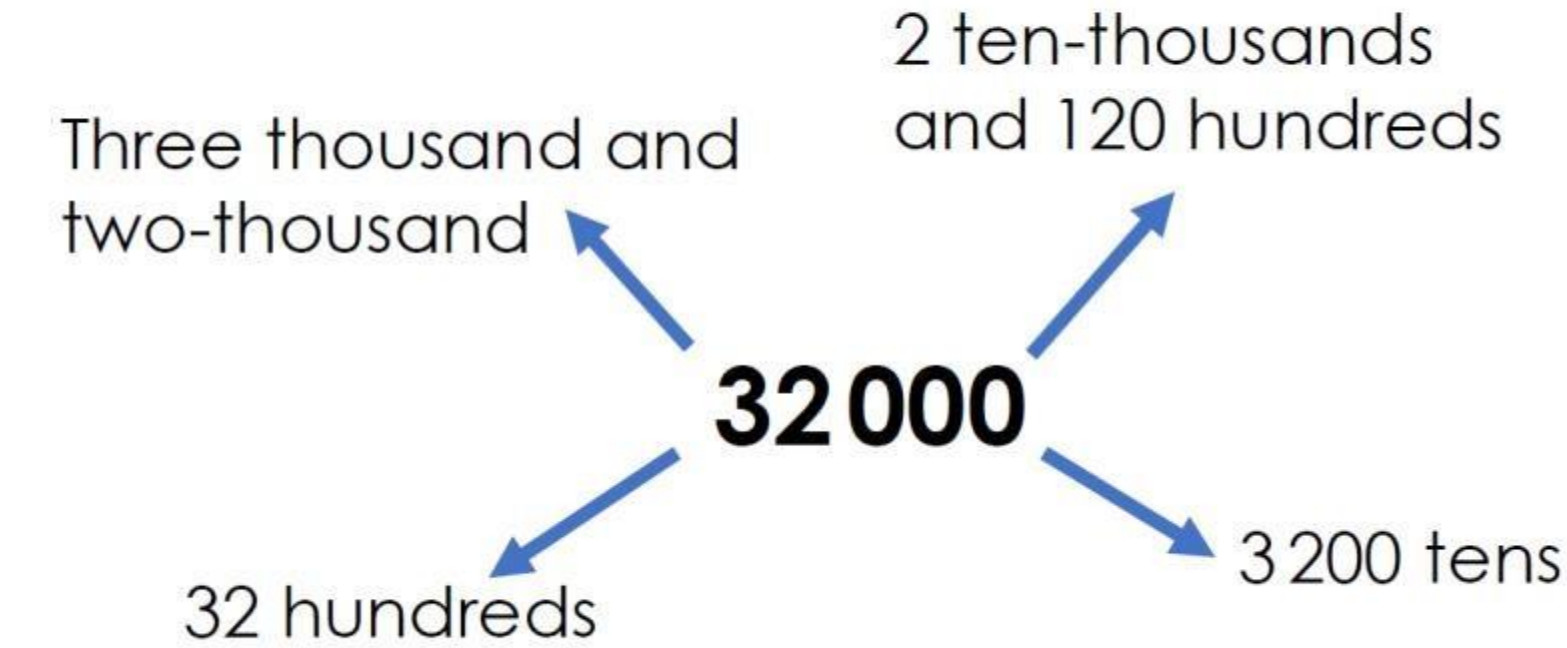


Biggest number wins!

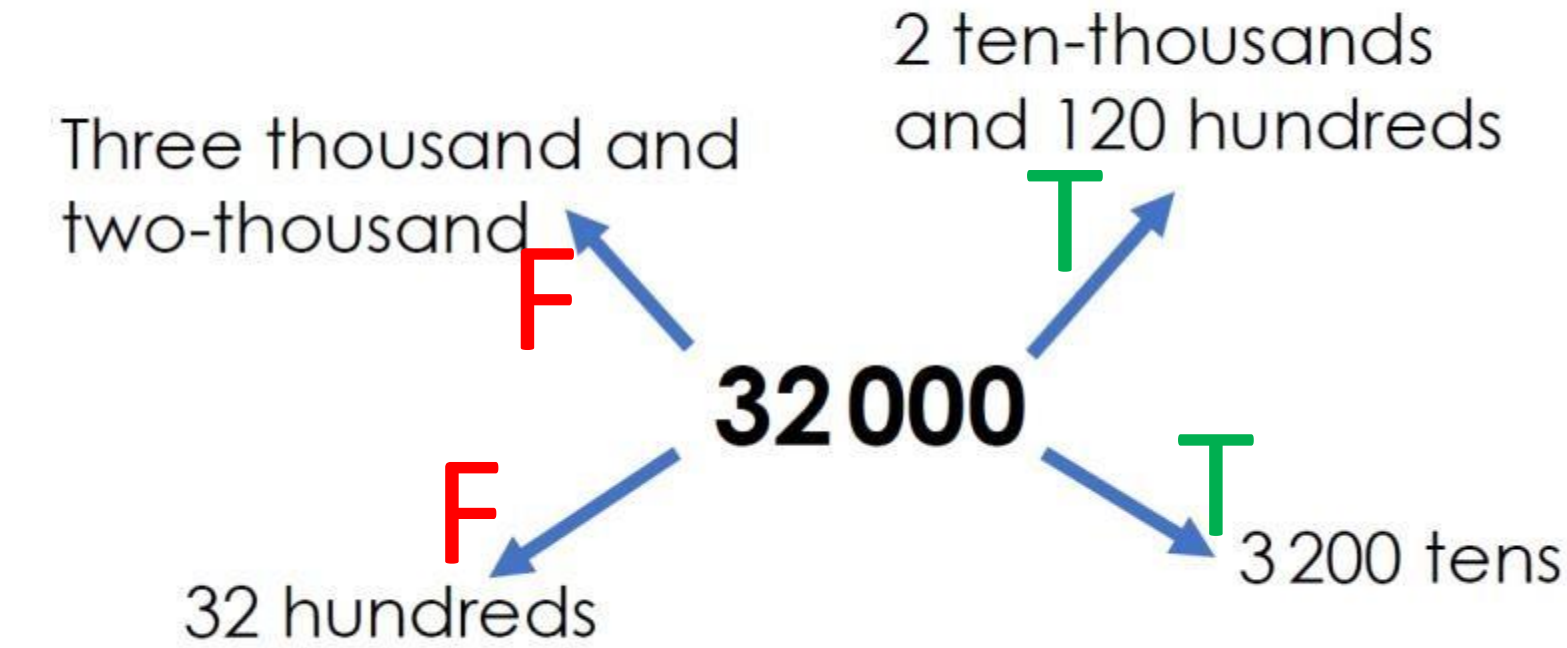


Score a point if you can make this true?

True or false?



True or false?



One of the most important things you can do to help your child is to help them to learn their number facts:

- Multiplication and division (times tables)

Year 1: Count in multiples of 2, 5, 10
Recall and use doubles and halves to 10.

Year 2: Recall and use multiplication and division facts for the 2, 5 and 10 times tables. Begin learning the 3 times table.

Year 3: Recall and use multiplication and division facts for the 3, 4, 6 and 8 times tables.

Year 4: Recall and use multiplication and division facts for all the times tables up to 12 x 12.

End of Year 4: Government times tables test

Year 5 and 6

Know and use all the times tables up to 12 x 12 and use them efficiently

If I know that 4 x 8 = 32 I know that ...

8 x 4 = 32

32 ÷ 4 = 8

32 ÷ 8 = 4

3.2 ÷ 8 = 0.4

$\frac{1}{4}$ of 32 = 8

80 x 4 = 320

8 x 400 = 3200

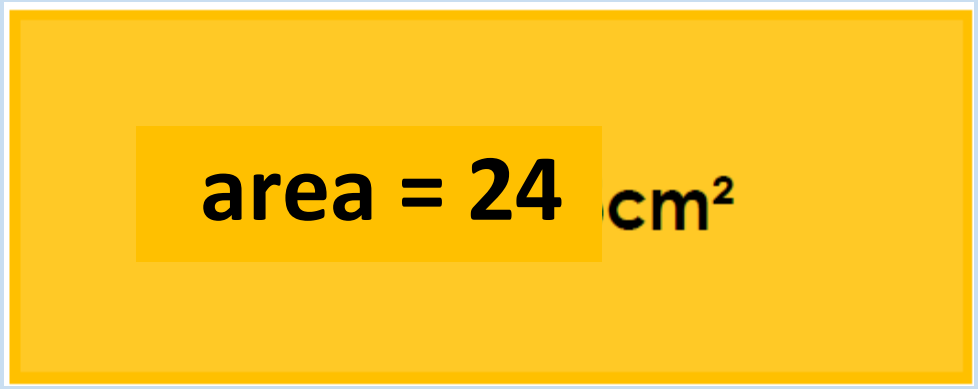
0.8 x 4 = 3.2

0.8 x 0.4 = 0.32

$\frac{1}{8}$ of 32 = 4

If I know my four times table, I can immediately spot that $\frac{28}{32} = \frac{7}{8}$

I know the perimeter of an octagon with sides of 4cm is 32cm.



What could the perimeter be?

If

Find the value of

Card Games

- Remove picture cards (you can add them back in later to make things more challenging!)
- Choose a times table to practise
- Turn over top card
- Multiply the card by your chosen number
- First person to say the correct answer wins the card

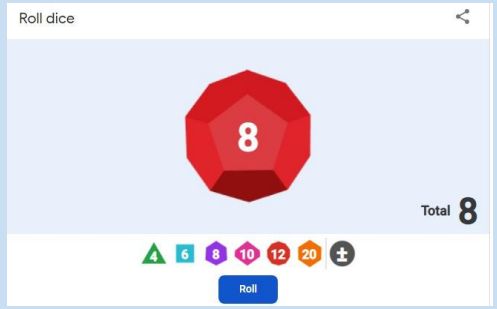
Card Games

- Remove the picture cards (keep them in for the 11 and 12 times tables)
- Split deck in half – one pile each face down
- Both turn over the top card
- First person to say the product (the two numbers multiplied together) correctly wins the pair

Play games with dice to practise times tables:

Treat yourselves to some 1-12 dice to make this more effective or use two dice and add the two numbers before multiplying.

- Choose a times table, roll the dice and race to multiply the number on the dice by your chosen times table.
- Roll two dice (or four if using pairs of 1-6 dice) and race to multiply the two numbers together.



- Look for patterns/rules:
  Even/odd/last digit/digit sums...

- Make up a rhyme e.g.

I ate and ate till I was sick on the floor
8 times 8 is 64!

- Relate it to something real – make a mental picture
  5 tables with 6 children round each one = a class of 30

An Array

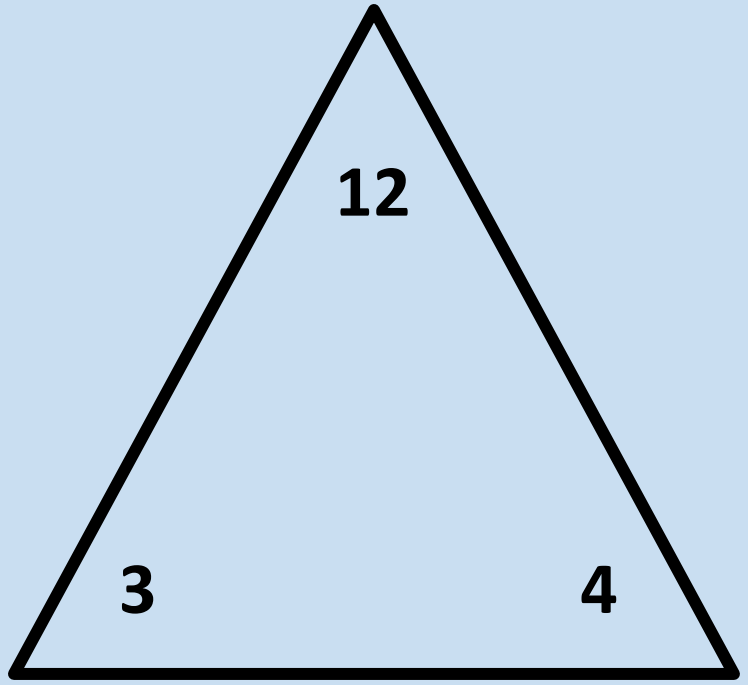
A way of organising objects to visualise the multiplication and division facts.

$3 \times 4 = 12$

$4 \times 3 = 12$

$12 \div 3 = 4$

$12 \div 4 = 3$



Put it up somewhere at home.

Evens...

- 2, 4, 6, 8, 10, 12... times tables:

  Even times tables have even answers

Odds...

- 1, 3, 5, 7, 9, 11... times tables:

Odd times tables have alternate answers: odd, even, odd, even...

Hit the Button – no account required

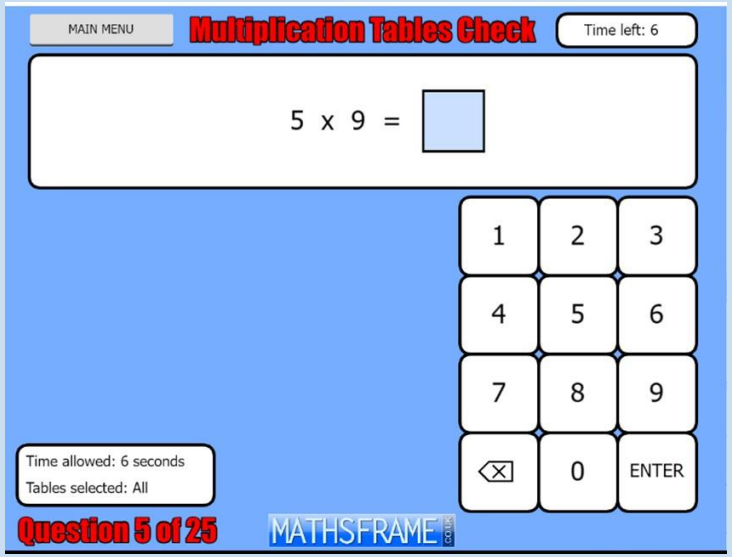
https://www.topmarks.co.uk/maths-games/hit-the-button

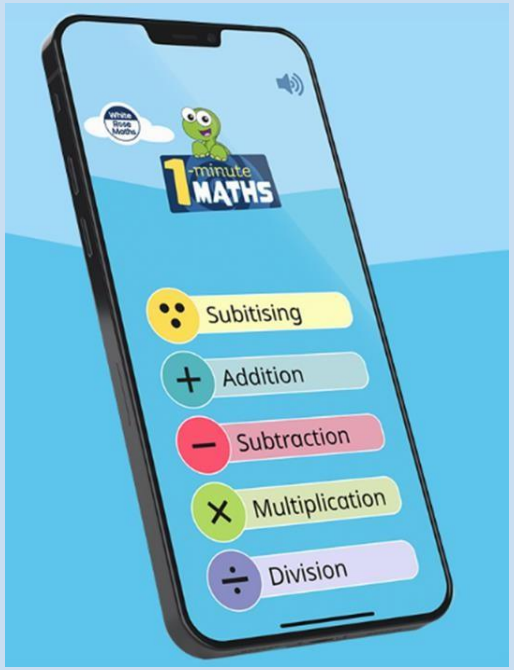
www.timestables.me.uk

Play online or print out written sheets

1 minute maths app from White Rose

Maths Frame





Telling the time

How much time we have to get ready?

How long until tea is ready?

What time is it?

Talking about maths – make it real

- Numbers
- Time
- Measurements – length, height, weight, capacity, distance...
- Estimating
- Fractions
- Shape
- Directions

Be enthusiastic – have fun!

Website full of hints, tips and videos

oxfordowl.co.uk

https://www.theschoolrun.com/times-tables-the-best-ways-to-learn

BBC supermovers times tables songs

https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4

Assessment

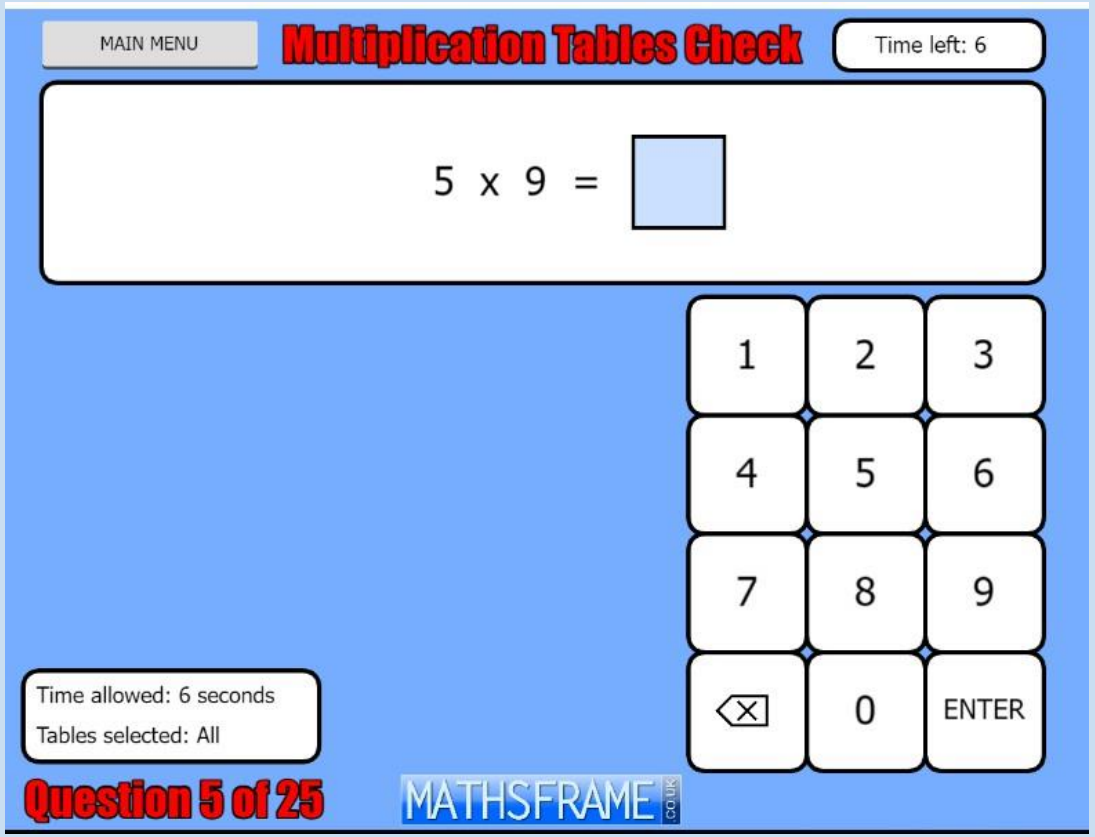
Year 4 Multiplication Tables Check (June of Year 4)

25 times tables questions with 6 seconds to answer each one.

Year 4 Multiplication Tables Check (June of Year 4)

25 times tables questions with 6 seconds to answer each one.

Mathsframe



https://mathsframe.co.uk/en/resources/resource/477/Multiplication-Tables-Check

Key Stage 2 SATs (May of Year 6)

Paper 1: Arithmetic (fluency and calculations)

Paper 2: Reasoning (fluency, calculations, reasoning and problem solving)

Paper 3: Reasoning (fluency, calculations, reasoning and problem solving)

15 ☐ = 596 × 7

1 mark

16 2.12 ÷ 10 = ☐

1 mark

18 $\frac{4}{9} + \frac{2}{3} =$

1 mark

27 15% of 3,200 =

1 mark

2 Here are six number cards.

3	4	5	6	7	8

Use **all six** cards to complete the three multiplications below.

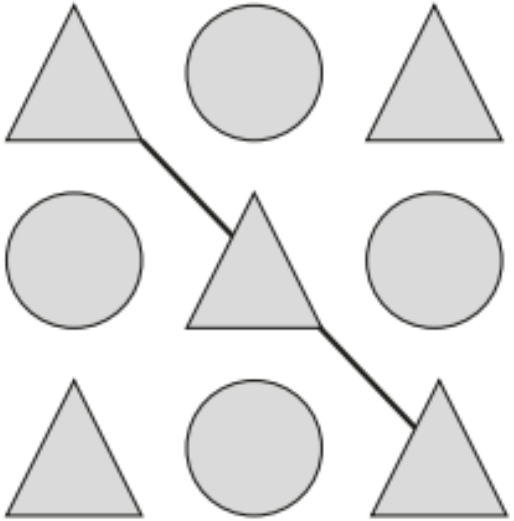
24 = ☐ × ☐

28 = ☐ × ☐

30 = ☐ × ☐

1 mark

21



Each shape stands for a number.

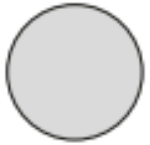
The total of the shapes on the diagonal line is 48

The total of all the shapes is 200

Calculate the value of each shape.

 =

1 mark

 =

1 mark

23 Adam has a bag of fruit that weighs **1.25 kilograms**.

He takes out a banana. Now the bag of fruit weighs **1.1 kg**.

Next, he takes out an orange. Now the bag weighs **920 g**.

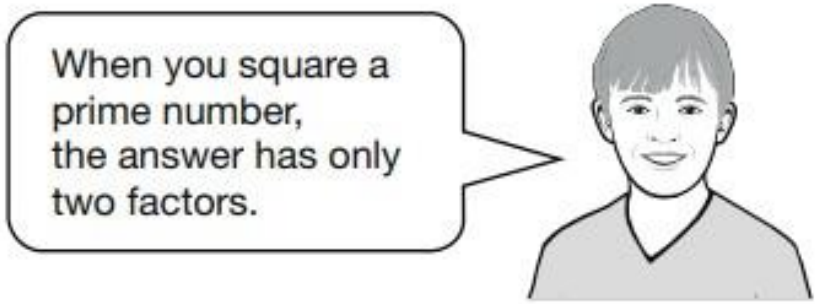
How much **more** does the orange weigh than the banana?

Show your method

g

2 marks

19 Jack says,



Explain why Jack is **not** correct.

1 mark

Any questions?

Thank you!