PARENT WORKSHOPS

Llangan Primary School

How can you help your child with their maths?

"The problem is, they do it differently in school theses days."

(Quote from mums and dads everywhere)

Why is Maths Learning Important?

Numeracy and the modern economy

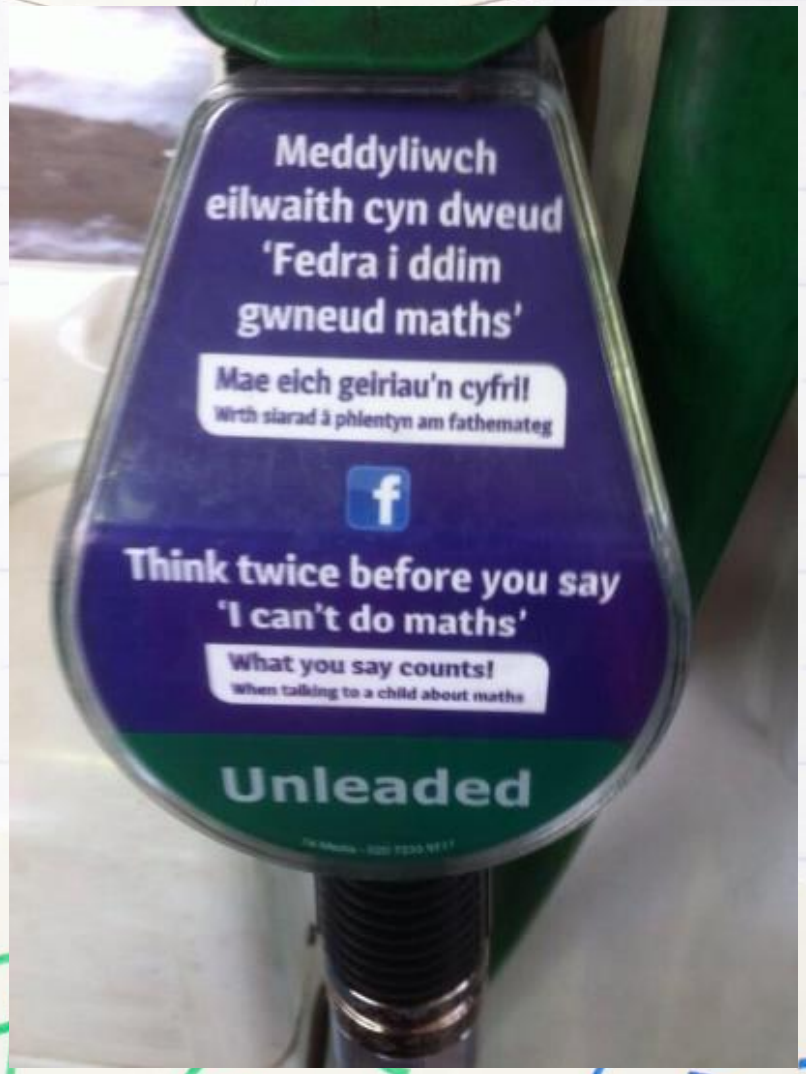
- The need for numeracy in the workplace is greater than ever. There are fewer unskilled jobs in manufacturing, but there has been growth in the service industry, where roles often require an understanding of IT, target-setting or financial awareness.
- Poor numeracy affects individuals' ability to succeed in the workplace and acts as a brake on the country's economic growth.

More important than literacy?

- Numeracy appears to play a more crucial role than literacy in influencing when a person leaves school. Those with poor numeracy but reasonable literacy are just as likely to leave school at 16 as those with both poor numeracy and literacy skills, implying that numeracy is the more significant factor.

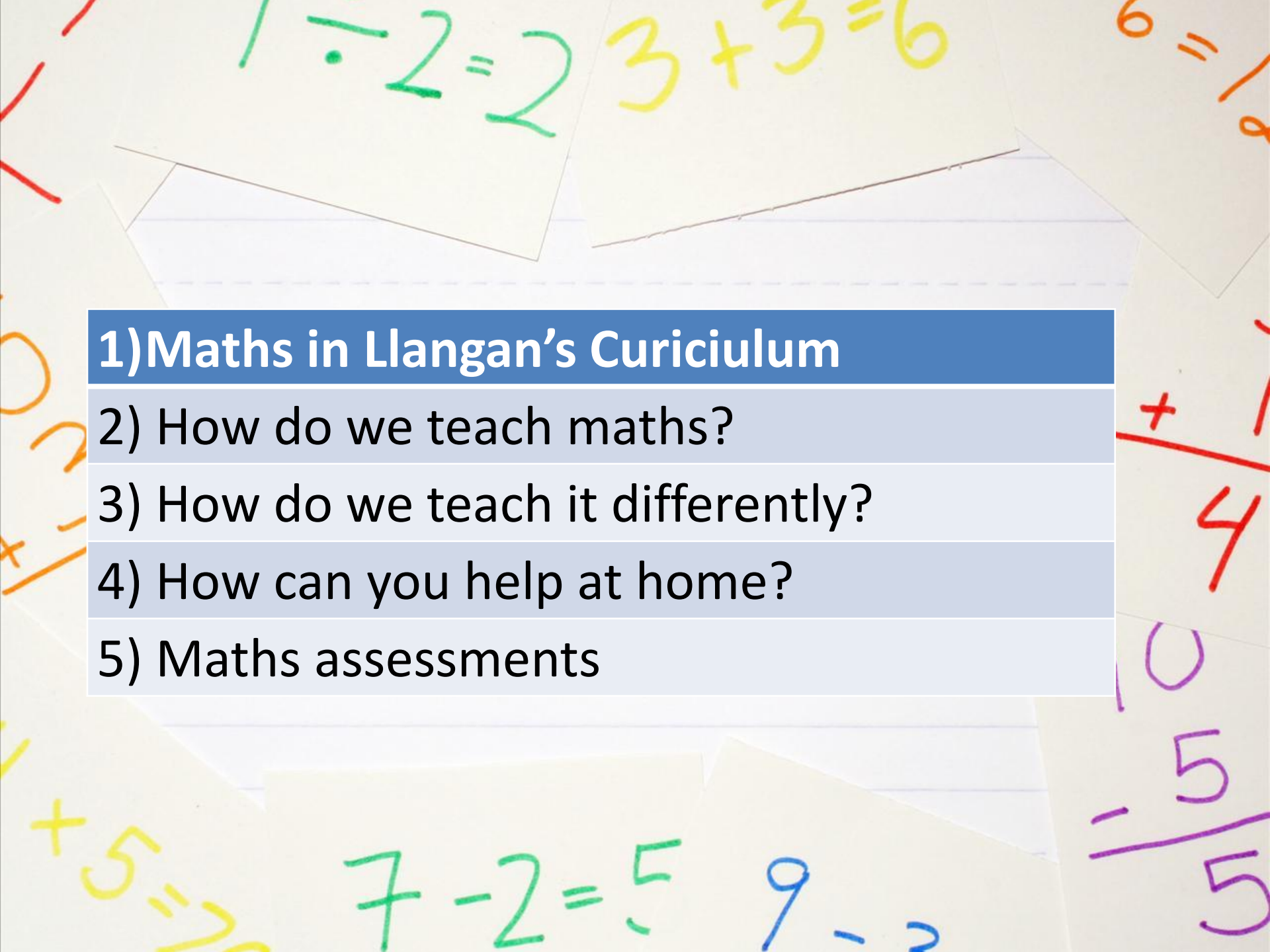
National Numeracy
for everyone, for life

MATHS IS EASY




Children
Valued & Ambitious
Community
Engaged & Collaborating
Staff
Skilled & Inspirational
Curriculum
Relevant & Dynamic
Environment
Inspirational & Engaging
School
Renowned & Achieving
GWELEDIGAETH YR YSGOL
Ysgol Gynradd Llanganna
Llangan Primary School
SCHOOL VISION


LLANGAN PRIMARY SCHOOL
CO-OPERATION
RESPECT
ADAPTABILITY
I look after all people, living things and the environment.
I can work with others.
I can change the way I think or work.
RESILIENCE
ENQUIRY
THOUGHTFUL
I can find out more.
I can stick to a task until it is finished.
I can think about the needs of others.
MORALITY
COMMUNICATION
I can choose to do the right thing.
I can share my ideas clearly.
HERIO, DARGANFOD, CYFLAWNI
VALUES TREE
CHALLENGE- DISCOVER- SUCCEED



1)Maths in Llangan's Curiciulum

2) How do we teach maths?

3) How do we teach it differently?

4) How can you help at home?

5) Maths assessments

How do we develop maths fluency through the school?

What Matters: Mathematics and Numeracy

- The **number** system is used to represent and compare relationships between numbers and quantities.
- **Algebra** uses symbol systems to express the structure of mathematical relationships.
- **Geometry** focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.
- **Statistics** represent data, probability models chance, and both support informed inferences and decisions.

Developing Mathematical Proficiency

- Conceptual understanding
- Logical reasoning
- Fluency
- Strategic competence
- Communication using symbols

measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes

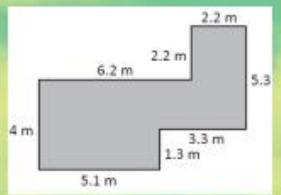
Concrete

Measure various items inside and outside the classroom. Can you do it without using a ruler?

Pictorial

Draw a picture of your playground. Estimate how much fencing you would need to put around the playground.

Abstract



Find the area and perimeter.

Fluency

The length of a rectangle is double its width. Find the perimeter if the width is 200 cm.

The length of a rectangle is 6 times its width. Find the length and width of the rectangle if the perimeter is 7 metres.

Reasoning

Draw as many shapes as you can with an area of 20cm. Compare their perimeters. Is there a pattern? what is your method?

Problem solving

Jake wants to build a fence around his swimming pool to comply with safety regulations. If the length of his pool area is 6 metres and the width is 4 metres, how much will it cost? Fencing costs £55.50 a metre.

Our Llangan Maths Curriculum

- Where can we find it?
- We follow the Mastery approach (inspired by the Maths taught in Singapore)
- We use ‘White Rose’ to help us to sequence and plan our lessons.

The mastery approach:

- Everyone can succeed at Maths!
- We break down concepts into ‘small steps.’
- We explain Maths concepts using visuals and equipment.
- We give the children lots of short tasks ‘the ping pong approach.’
- We provide the children with ‘stem sentences.’
- We ask them to repeat phrases ‘I say, you say’
- We constantly assess the children in every lesson and fill any gaps.

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value				Number Addition and subtraction			Measurement Area	Number Multiplication and division A			Consolidation
Spring	Number Multiplication and division B				Measurement Length and perimeter		Number Fractions				Number Decimals A	
Summer	Number Decimals B		Measurement Money		Measurement Time		Consolidation	Geometry Shape		Statistics	Geometry Position and direction	

White Rose Maths

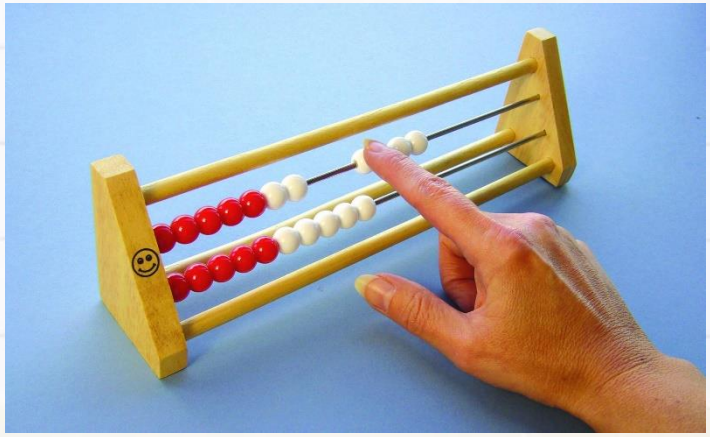
A typical Maths lesson in Llangan

Early Years

- Sing songs, play games etc
- Lots of hands on tasks
- Maths is everywhere!

Reception, Year 1 and Year 2 Mastering Number

Children have short 10 minute activities as part of ‘Mastering Number’ tagged onto their Maths lessons to develop their fluency skills.



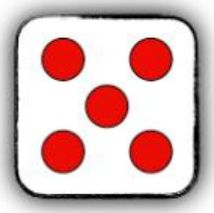
How is my child stretched if they already know how to count all of the numbers up to 10 or 20?

We ‘delve deeper’ into topics rather than going on to the next year group’s learning.

Some new terminology!

Subitizing

The ability to 'see' a small amount of objects and know how many there are without counting.



"5"

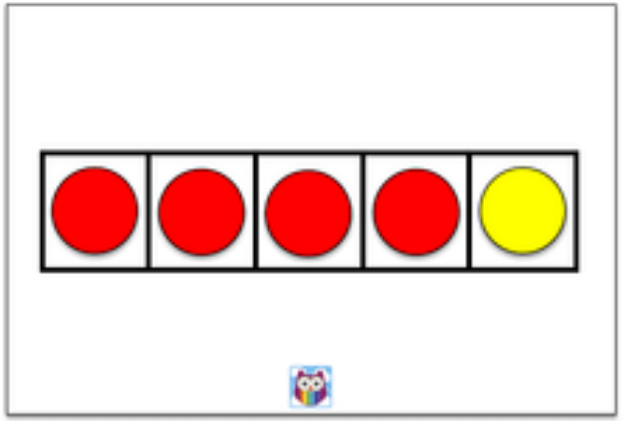
What can you see?

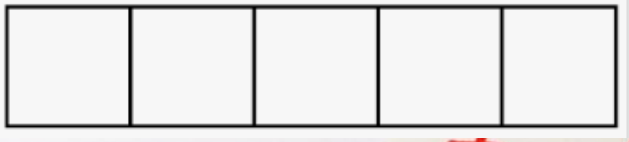
- Subitising

Say what you see! Let's have a go!

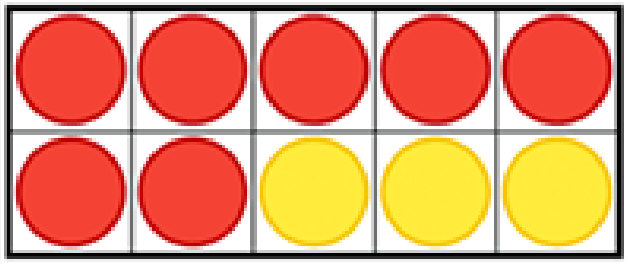
Visuals:

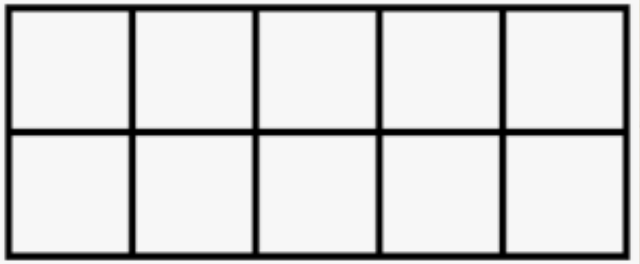
Fives frames





Tens frames



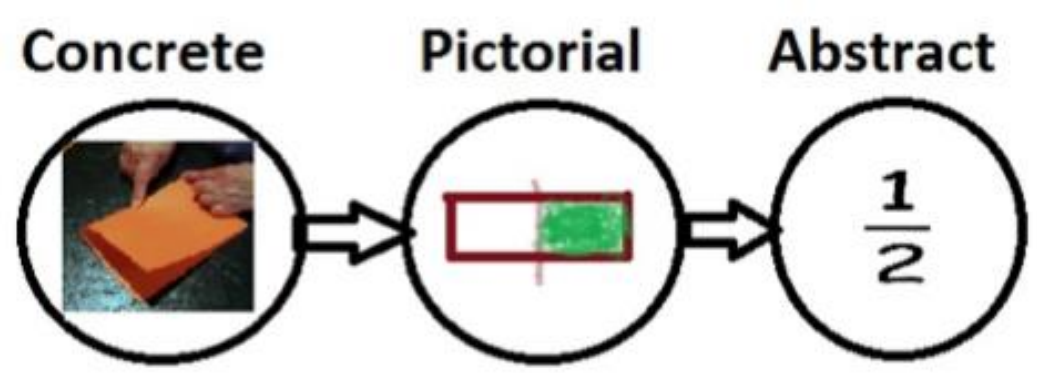


Across the school, we use manipulatives to model, encourage jottings and then move onto the abstract after this.

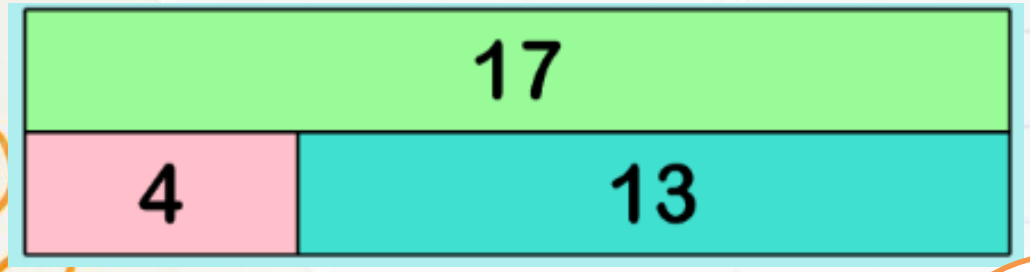
Concrete

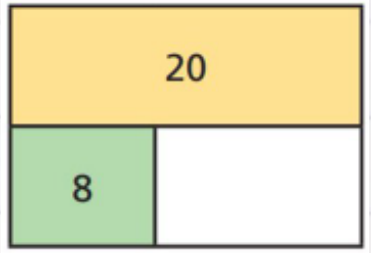
Pictorial

Abstract



Bar models





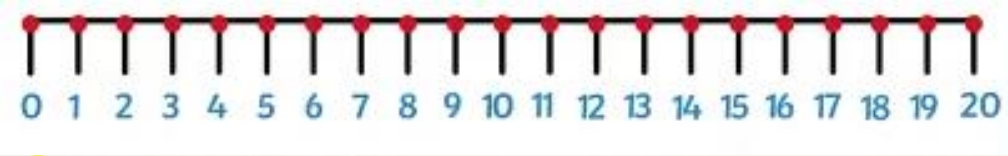
Part/ whole models

Times table grids

- 100 squares
- Number lines

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

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



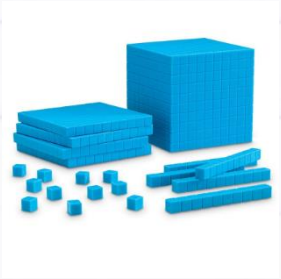
Resources used in class (manipulatives)

- Bead strings
- Counters

- Multilink

Multilink cubes

- Dienes/ Base 10



Resources that you can use at home to support your children:

- Lego can be used as multilink.

- Group everyday items into sets to understand division, remainders, multiplication etc.

Eg 14 divided by 2= 5r4

Encourage your child to **draw** the problem.
1/3 of 9 =

- Also, encourage them to use their fingers!

Other everyday resources that can help your child's Maths skills at home

- Board games and card games encourage your children to **reason**

- Find an analog[illegible]atch and refer to the time

A quick game of 21!

Using money:

- Allow your children to use real coins.
- Can they work out which coins they will need to buy something?
- Can they use the smallest number of coins?
- Can they calculate their change?

Calculation policy

- The calculation policy for each year group can be found on your child's class page in the 'Useful documents' section.

- Please si… …oday (with your child's na… …oup) and then we can g… …f the calculati… …ir class.

Here are some suggestions for parents helping at home:

- Let your children know you believe they can be successful in maths.
- Encourage and support risk taking and **celebrate perseverance.**
- Encourage your children **to solve problems** with you.
- Help them **identify different methods or strategies** to use in finding solutions and resist the temptation to provide the answer or method. There is usually more than one way to solve a problem, and simpler strategies are often effective.
- Provide opportunities for your children to **explain and justify their thinking.**

Here are some suggestions for parents helping at home:

- Connect mathematics to real life experiences. Emphasising the **mathematics around us helps to make mathematics education relevant**.
- **Ask good questions of your children about their homework** and be good listeners when your children respond.
- Encourage children to **estimate answers** before working out the answer.
- **Good questions, and equally important, good listening** can help children make sense of mathematics, build their confidence, and encourage mathematical thinking and communication. A good question opens up a problem and supports different ways of thinking about it.

Some questions to try while helping a child might include:

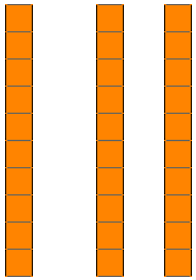
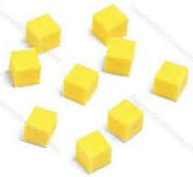
- What do you already know about this?
- What do you need to find out?
- How might you begin?
- How can you organise your information?
  - Can you draw a picture to explain your thinking?
- Are there other possibilities?
- What would happen if …?
- What do you need to do next?

Why do we learn Maths?

- Always draw out real life links to Maths around your home
- Talk about how you use Maths in your job!
- Point out that their dream job involves Maths!
- Be positive about Maths!

Place Value

- Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods.

thousands	hundreds	tens	ones
1	2	3	9
	 		

Understanding number

- Number bonds are the window to success in KS2 and it is vital that your child knows these securely as they enter this phase.
- By the end of Year 4, your child is expected to know all their times tables up to 12 x 12. To ensure this, we practise the tables daily and explore connections between the tables,
e.g. to find 6 x 8, we know 5 x 8 is 40,
so 6 x 8 is one more 8, so is 48.

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

Addition

Written calculations:

Partitioning

Add two digit numbers using a written method, e.g.

– use written methods that involve bridging 10

36 + 45

70 + 11 = 81

Expanded Column addition

Add three digit numbers involving bridging 10 or 100

239	239
+154	+154
300	13
80	80
13	300
393	393

Column addition

Use efficient written methods of addition, e.g.

- *calculate 1202 + 45 + 367*
- *add decimals to 2 places*
- *add 3 numbers eg*

348+276+368 – notice unit total 24

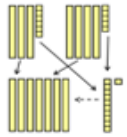
2	3 9
1	5 4
3	9 3
	1

Column addition

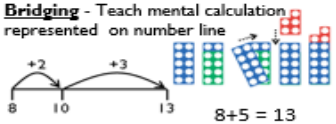
Add numbers that do not have the same number of decimals places

Models & images:

Partitioning (Dienes/ PV Counters)



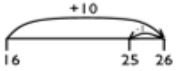
Bridging - Teach mental calculation represented on number line



8+5 = 13

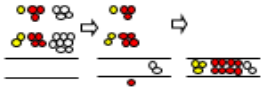
Compensating

16 + 9 = 25



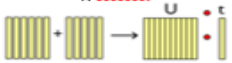
Column addition

Model using Dienes/ PV counters to show the carrying into the next column



Addition facts for decimals

Introduce using Dienes: 0.6+0.5=1.1



Mental calculations:

Begin to add multiples of 10 to a 2 digit number, e.g. calculate 26 + 30

(By counting on in 10s or partitioning)

Record their work in writing, e.g.

- *record their mental calculations as number sentences*

Add 2 digit numbers mentally, e.g.

- Calculate 36 + 19

(Partitioning, compensating, bridging or near doubles)

- Complements to 100

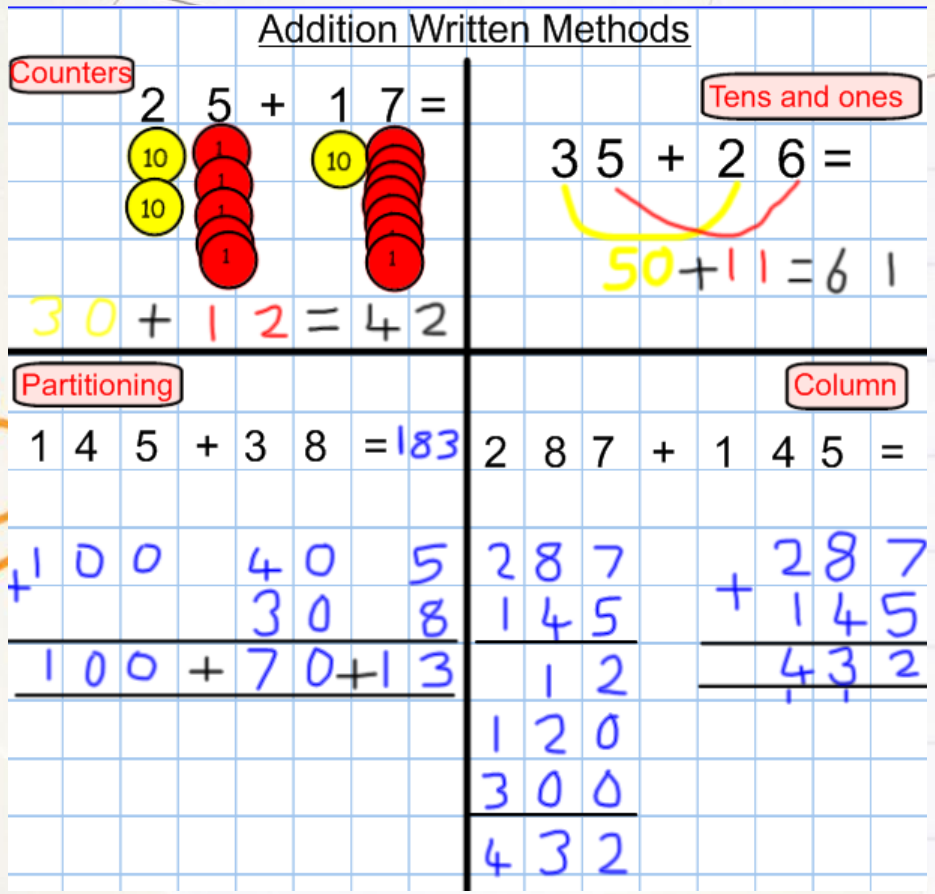
(Counting on strategy)

Calculation complements to 1000 for multiples of 10, e.g.

340 + ___ = 1000

100 = _____ + _____

Calculate decimal complements to 10 or 100


Addition Written Methods
Counters
25 + 17 =
10
10
30 + 12 = 42
Tens and ones
35 + 26 =
50 + 11 = 61
Partitioning
145 + 38 = 183
100 40 5
30 8
100 + 70 + 13
Column
287 + 145 =
287
145
12
120
300
432

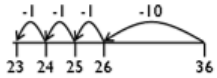
128 + 76 =

Subtraction

Written calculations:

Counting back on number line

Subtract two digit numbers using a written method, e.g. 36 -13, *(including bridging 10, e.g. 42 – 15)*



Subtract three-digit numbers including bridging 10 or 100

Progressions towards decompostion

1) 83 – 47 = Can you partition 83 so you can see 47 in it?

2) Expanded decompositions

3) Decomposition with place value counters/ straws/ diennes alongside written

Column subtraction

Use efficient written methods of subtraction, e.g.

- *Calculate 1025 - 336*
- *Subtract decimals to 2 places*

$$\begin{array}{r} 3\,{}^{5}\!\not{6}\,{}^{1}2 \\ -\ 1\ 2\ 4 \\ \hline 2\ 3\ 8 \end{array}$$

Column subtraction

Subtract numbers that do not have the same number of decimals places

Models & images:

Subtraction facts w/ Numicon

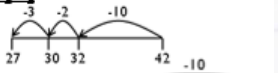
9 – 3 = 6

Subtracting 10 with Numicon

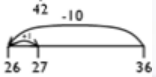
Until chn can do this seamlessly, don't start on number line

25 – 10 = 15

Bridging



Compensating

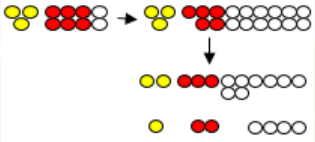


Use of Diennes/Place Value Counters to model repartitioning a number to enable 'take away'

eg 34 – 16 : How can I partition 34 so I can 'see' 16 in it

Column subtraction

Model exchanging using dienes/place value counters, as shown fully on separate sheet.



Mental calculations:

At top L2, tart to use counting on to derive subtraction facts to 20 where relevant, e.g. 19 – 17 = 2

Record their work in writing, e.g.

- *record their mental calculations as number sentences*

Subtract 2 digit numbers mentally, e.g.

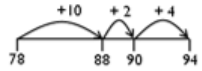
- Calculate 63 - 26

(Counting back or counting on incl using compensating or bridging where relevant)

- Complements to 100, e.g. 100 - 64

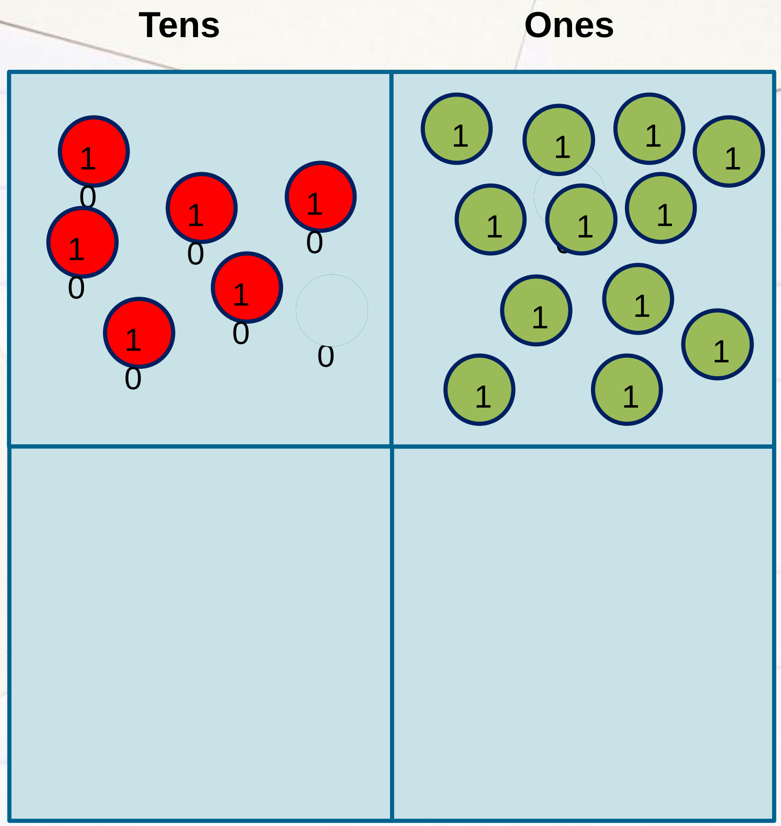
Counting on on a number line for numbers close together e.g. 94 – 78

Subtract decimals in the context of money where bridging not required

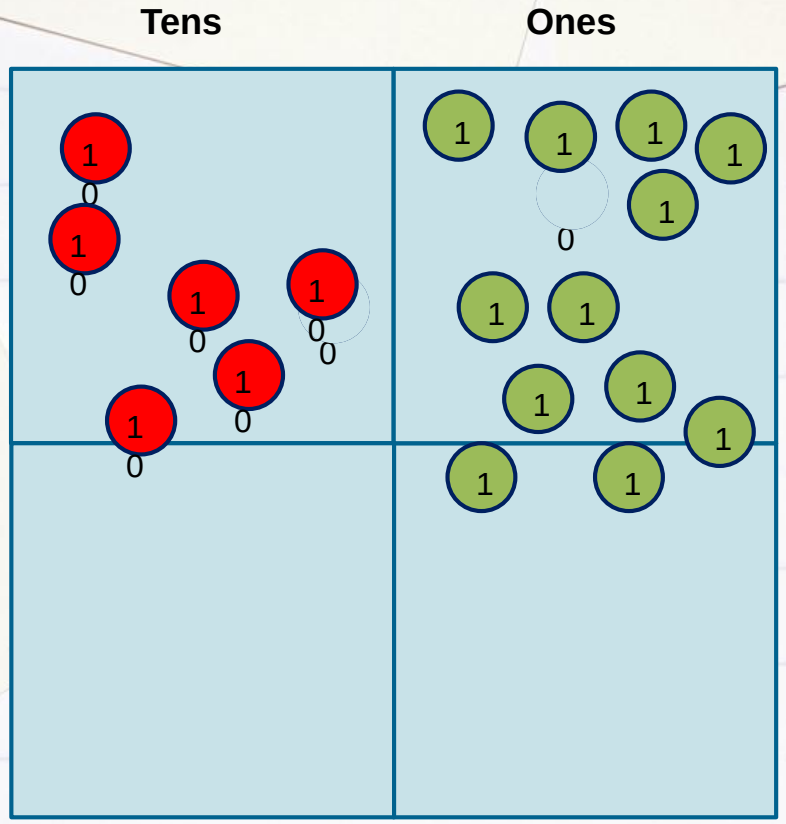


Continue to use counting on/ counting back for all calculations that can and should be done mentally

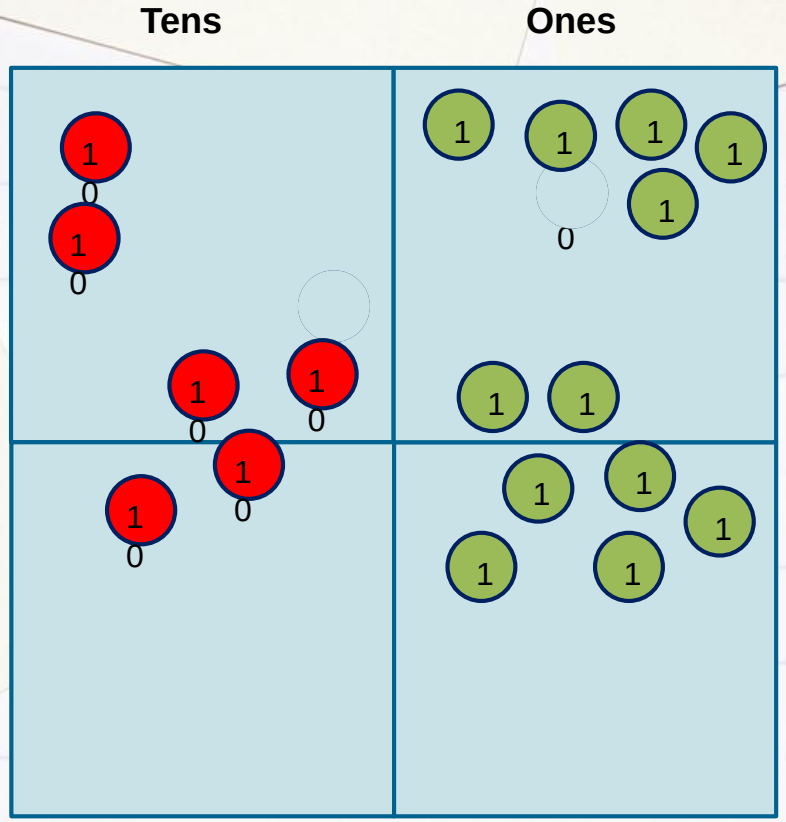
Continue to use counting on/ counting back for all calculations that can and should be done mentally



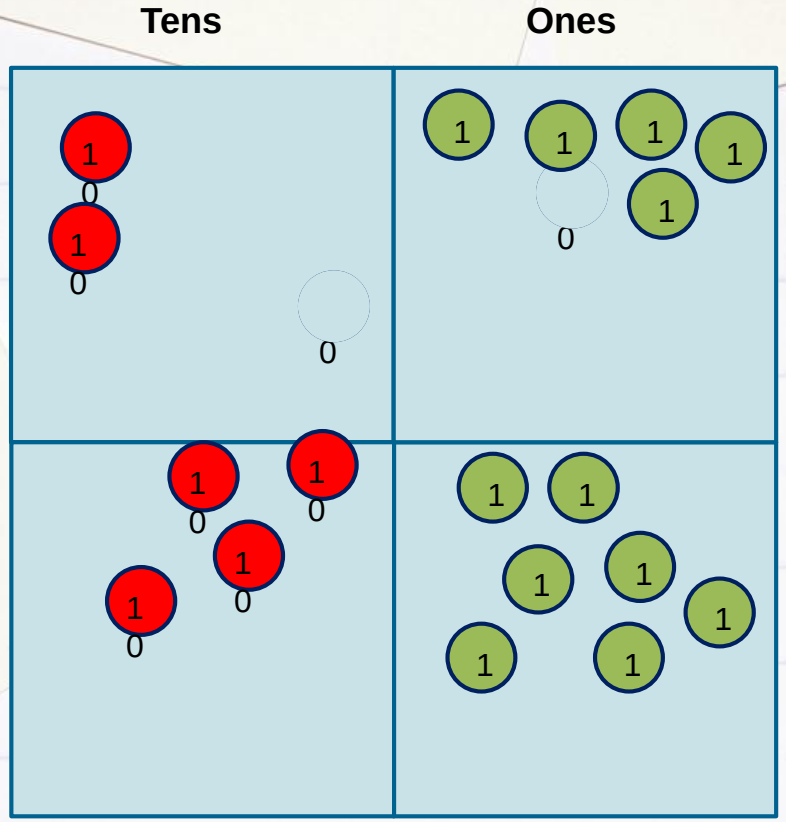
$$
\begin{array}{r}
\overset{6}{\cancel{7}}\,{}^{1}2 \\
-\;4\,7 \\
\hline
\\
\hline
\end{array}
$$



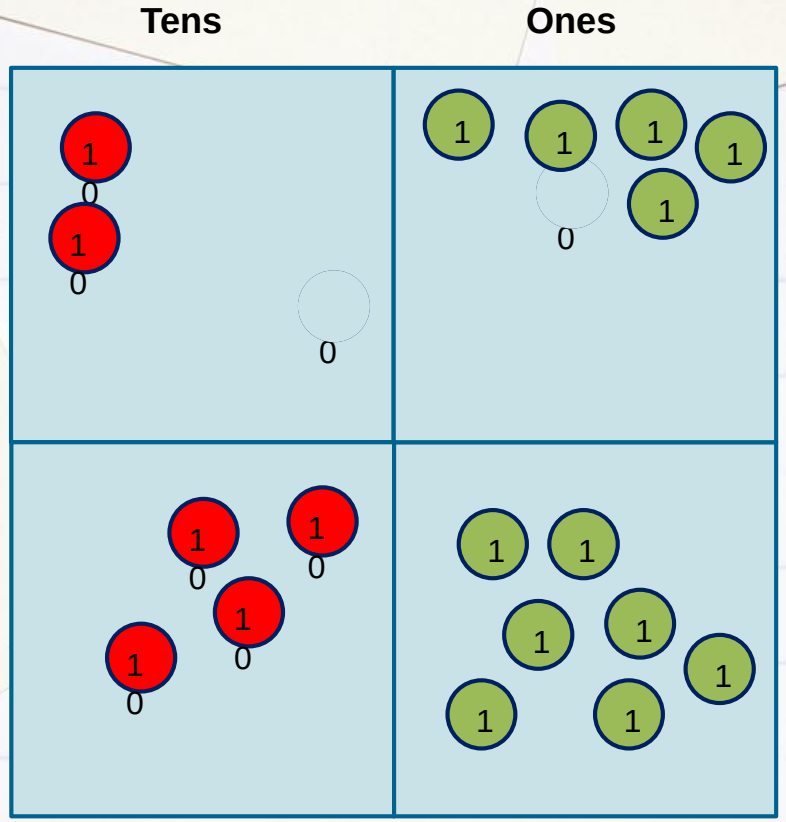
$$\begin{array}{r} {}^{6}\cancel{7}\,{}^{1}2 \\ -\ 4\,7 \\ \hline \\ \hline \end{array}$$



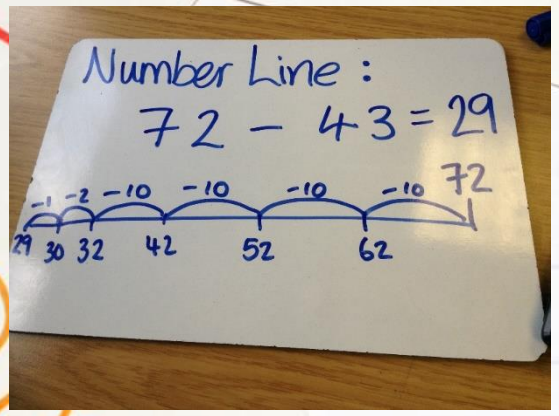
$$\begin{array}{r} {\not{7}}^{6}\,{}^{1}2 \\ -\ 4\ 7 \\ \hline \\ \hline \end{array}$$

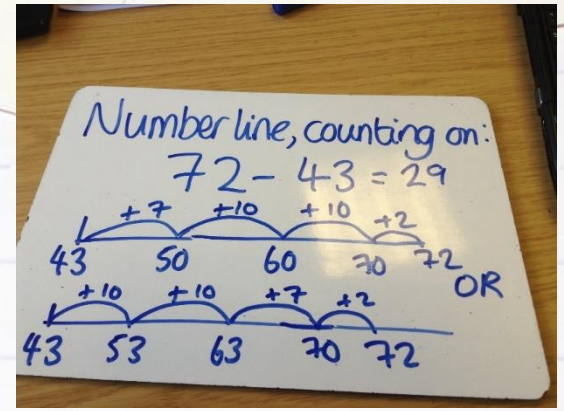


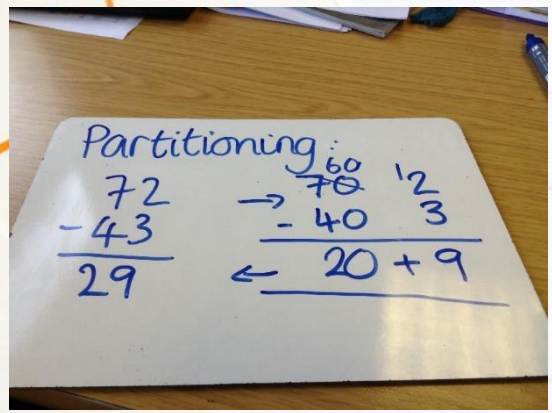
$$\begin{array}{r} {\not{7}}^{6}\,{}^{1}2 \\ -\ 4\ 7 \\ \hline \\ \hline \end{array}$$

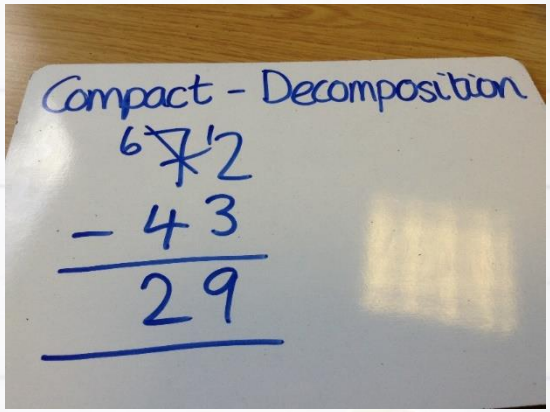


$$\begin{array}{r} {\scriptstyle 6}\not{7}\,{\scriptstyle 1}2 \\ -\ 4\ 7 \\ \hline 2\ 5 \end{array}$$


Number Line :
72 - 43 = 29
-1 -2 -10 -10 -10 -10
29 30 32 42 52 62 72


Number line, counting on:
72 - 43 = 29
+7 +10 +10 +2
43 50 60 70 72
OR
+10 +10 +7 +2
43 53 63 70 72


Partitioning:
72
-43
29
60 12
70
-40 3
20 + 9


Compact - Decomposition
6 7 12
- 43
29

Multiplication

Written calculations:

Grid method

Multiply a 2 digit number by 2, 3, 4 5 & 6 – use PV counters to model

X	30	2
4	120	8

Extend grid method to 2 digit by 2 digit - dotty paper useful to model this.

Short multiplication for single digit multiplication

- Use efficient methods of short multiplication (see video)
- Multiply a simple decimal by a single digit, e.g. 36.2 x 8

$$\begin{array}{r} 239 \\ \times\ \ 4 \\ \hline 956 \\ 1\ \ 3 \end{array}$$

Grid method

Use grid method to use with 2 digit by 2 digit and extend to a single digit x decimal as well

Short multiplication or grid

Multiply decimal numbers by a single digit, e.g. 31.62 x 8

Multiply any 3 digit number by any 2 digit number

Models & images:

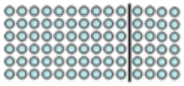
Arrays

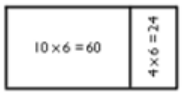
These show commutative properties ie 1 array shows 3x4=4x3

Counting stick times tables

NB Its worth watching 17x table on youtube

'Rows of chairs in hall' (array) as visual representation of grid method





Introduce short multiplication linked to grid for 2/3 digit by 1 digit

Grid method

Extend grid method to use with a single digit x decimal

Mental calculations:

Instant recall
- Double 15, 25, 35, 45
- Mental recall of 2, 3, 4, 5 and 10
- Begin to know times table facts for 6x, 7x, 8x and 9x

Derived
- Times table facts for 6x, 7x, 8x and 9x
- Times tables & place value calculations such as 70 x 3

Instant recall
- Recall multiplication facts up to 10 x 10
- Quickly derive corresponding division facts

Derived
- Times tables & PV calculations with decimals such as 0.7 x 3

Instant recall

Times tables & place value calculations such as 40 x 3

Derived

Times tables & PV calculations with decimals such as 0.7 x 0.3

Multiplication

Progression

arrays

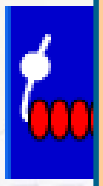
grid

compact

Models for multiplication

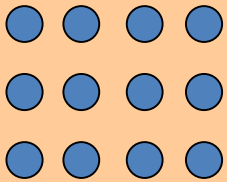
Fing

Bea

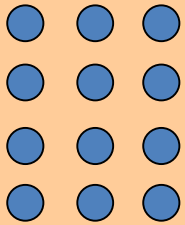


Nur

But these images aren't commutative



3×4



4×3

Multiplication

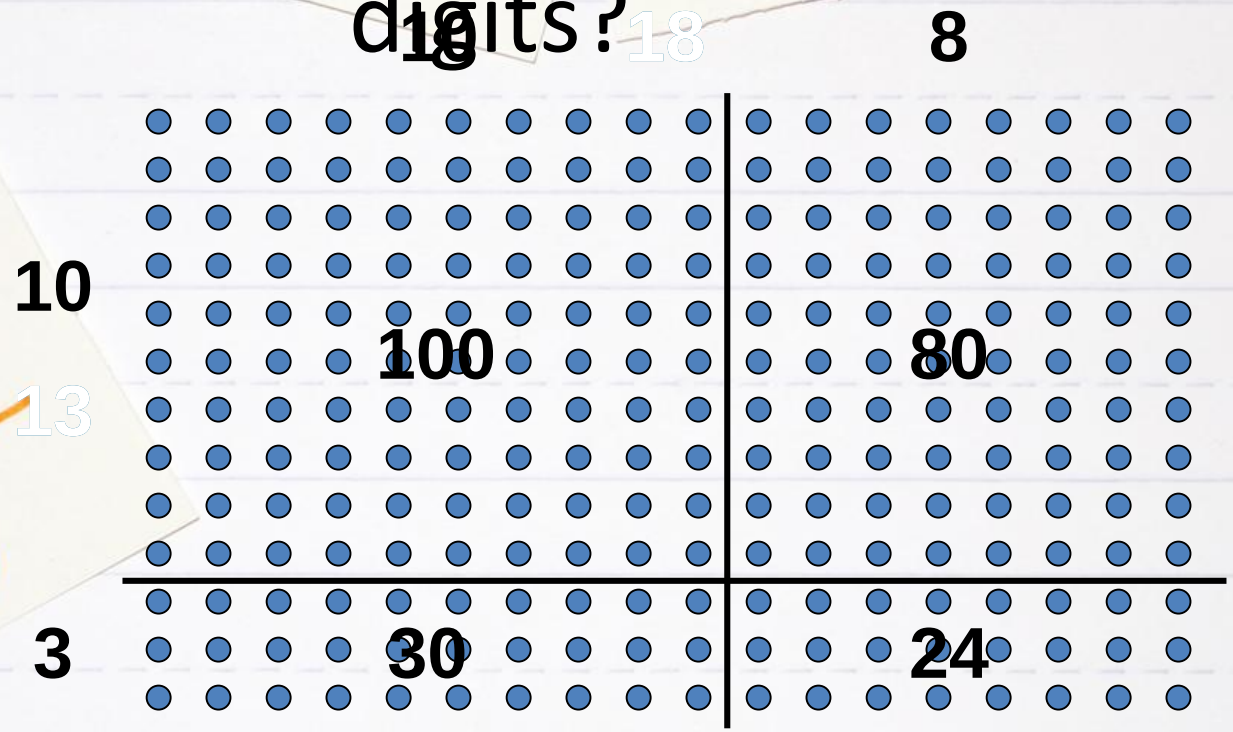
Progression

arrays

grid

compact

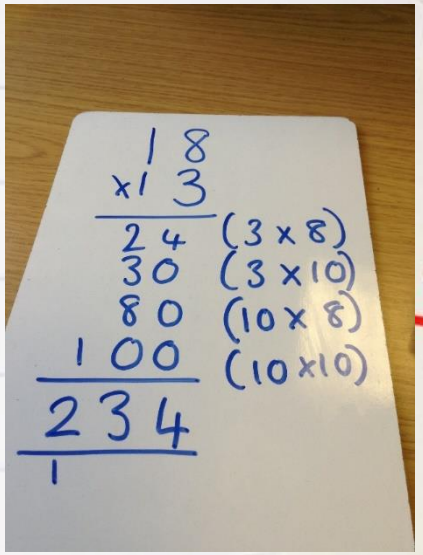
More than single digits?



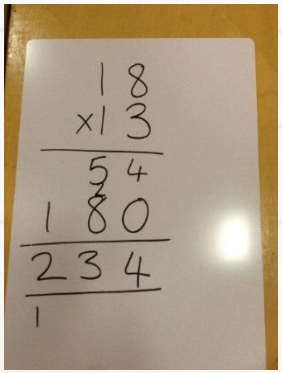
Progressing towards the grid…

	10	8
10	100	80
3	30	24

Progressing towards expanded column…



Progressing towards expanded column…



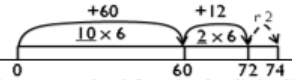
Division

Written calculations:

$$9 \overline{)\,36}\quad 4$$

Chunking on a number line

Divide a 2 digit number by single digit with whole number answers and remainders e.g.
49 ÷ 3 74 ÷ 6 = 12 r 2



Short method for single digit division

Divide a 2 or 3 digit number by a single digit

$$4 \overline{)\,6^{2}3^{3}7}\quad 159\ r1$$

Note: remainder should also be represented as a fraction.

Short method

- Divide decimal numbers by a single digit, e.g. 31.62 ÷ 8
- Divide any 3 digit number by any 2 digit number

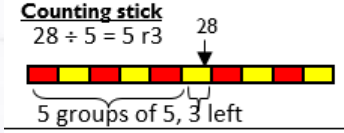
Models & images:

Arrays with remainders

16 ÷ 3 = 5 r 1

Counting stick

28 ÷ 5 = 5 r3



Use PV counters to introduce short division

See video resource

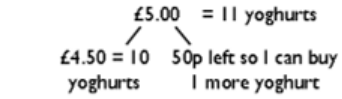
Mental calculations:

- Use half and half again for ÷ 4
- Divide whole numbers by 10/100 (whole number answers)
- Calculate div facts with remainders for 2, 3, 4, 5 and 10 tt

Jottings to support mental chunking

e.g. 2000 ÷ 250
2 x 250 = 500
4 x 250 = 1000
8 x 250 = 2000

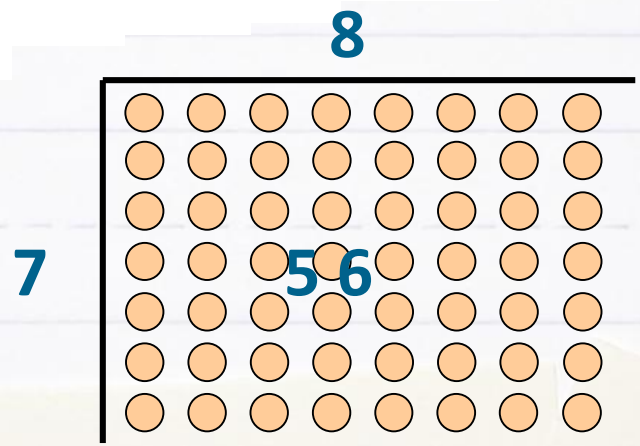
- Div numbers by 10 or 100
- Mental chunking for 'simple' calcs, e.g. Yoghurts cost 45p each; how many can I buy for £5?



- Multiply and divide decimals and whole numbers by 10, 100 and 1000
- Multiply a two digit number by a single digit

56 ÷ 7

The array is an image for division too



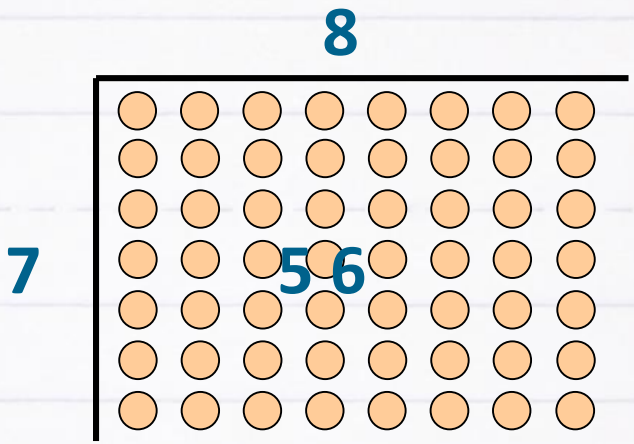
Either:

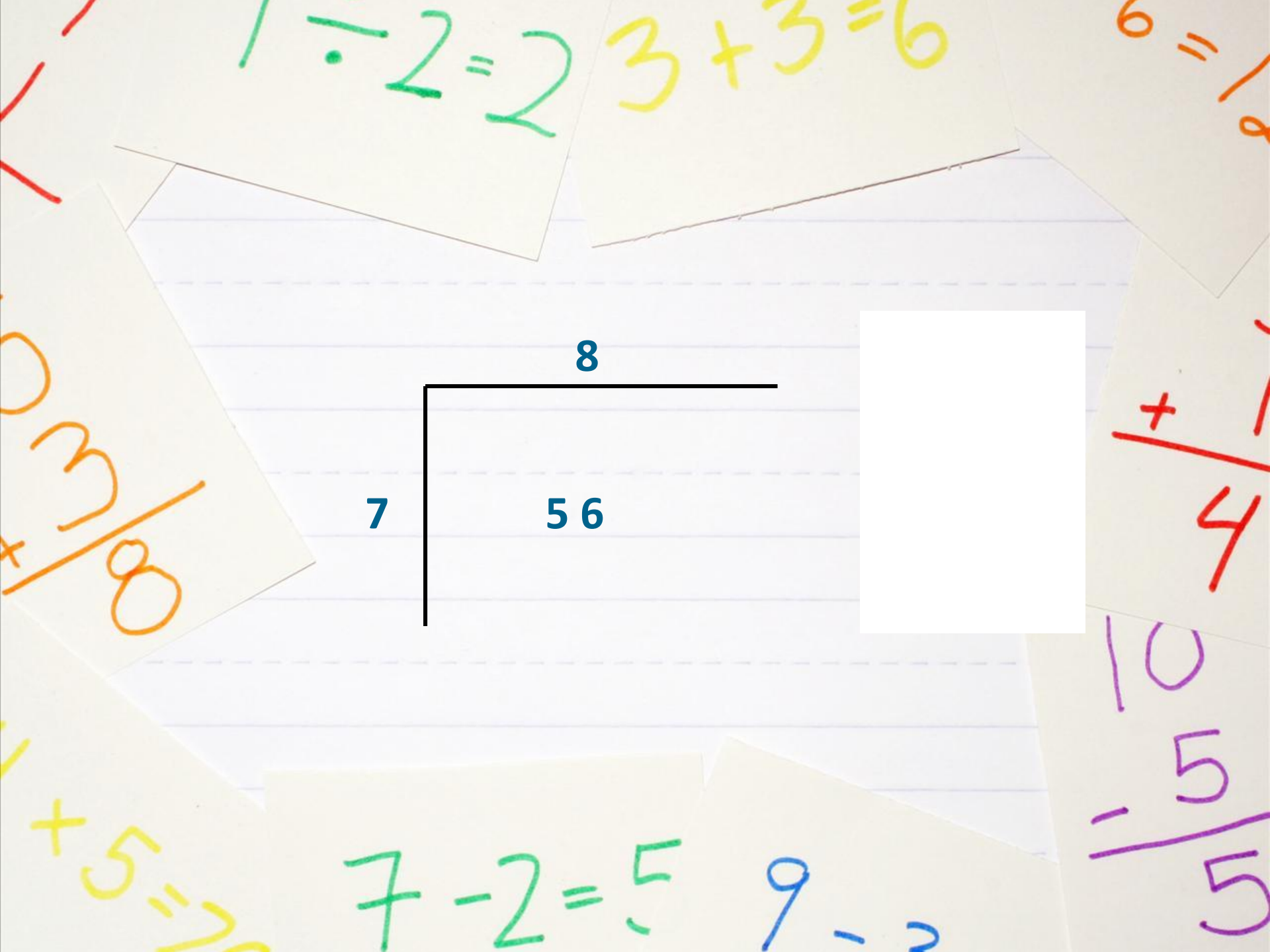
- How many 7s can I see? (grouping)

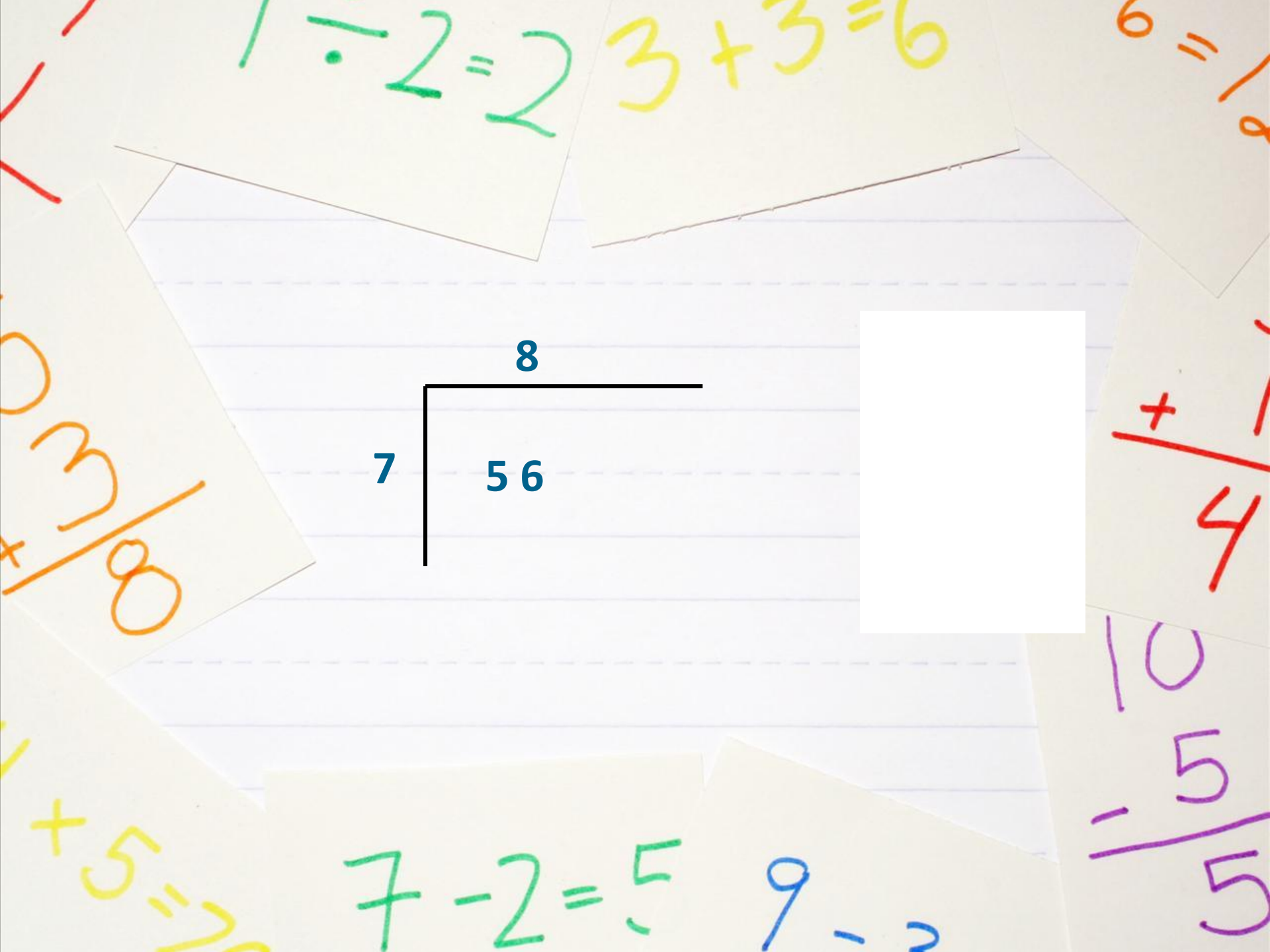
Or:

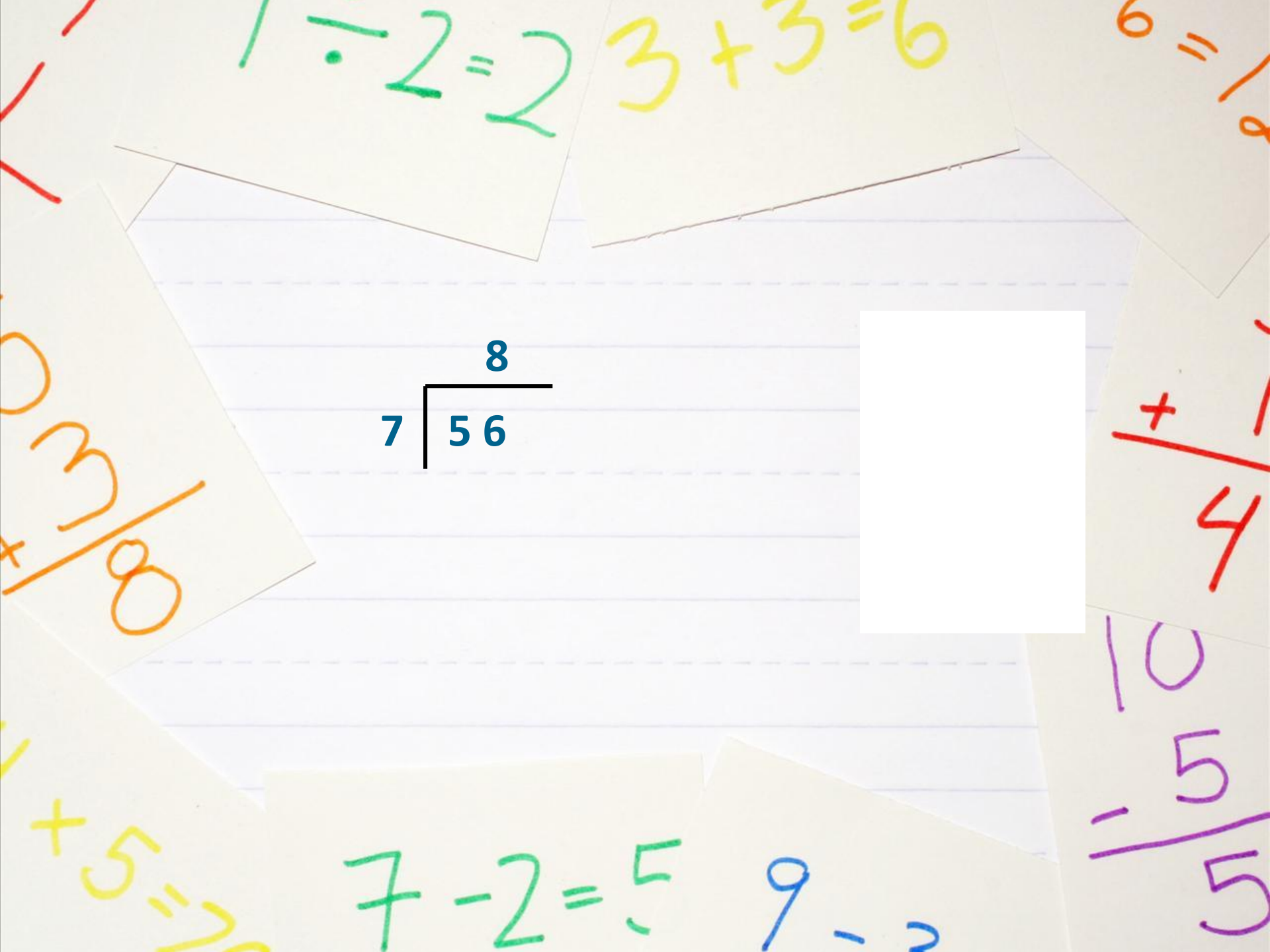
- If I put these into 7 groups how many in each group? (sharing)

An image for 56 ÷ 7



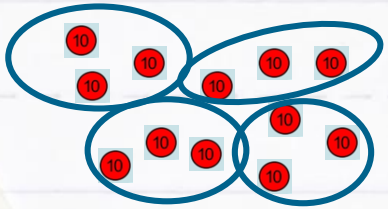

8
7
5 6


8
7
5 6

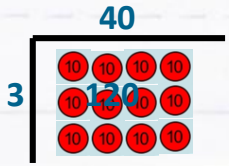

8
7 | 5 6

The power of the place value: counters for larger numbers

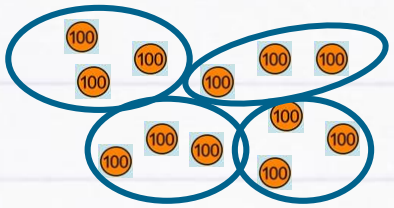
$120 \div 3$



Is this sharing or grouping?

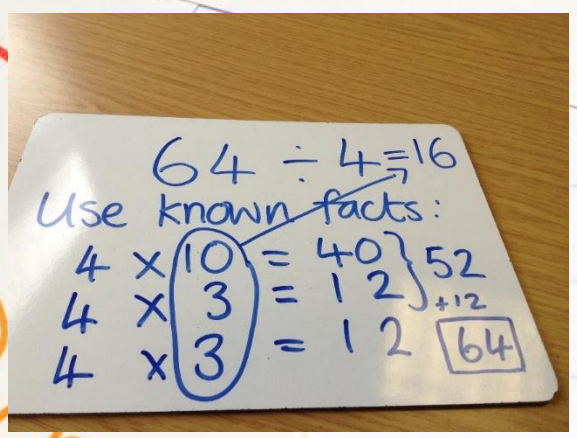


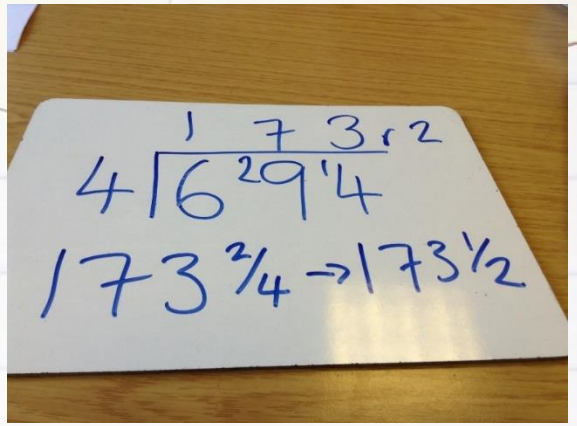
1200 ÷ 3

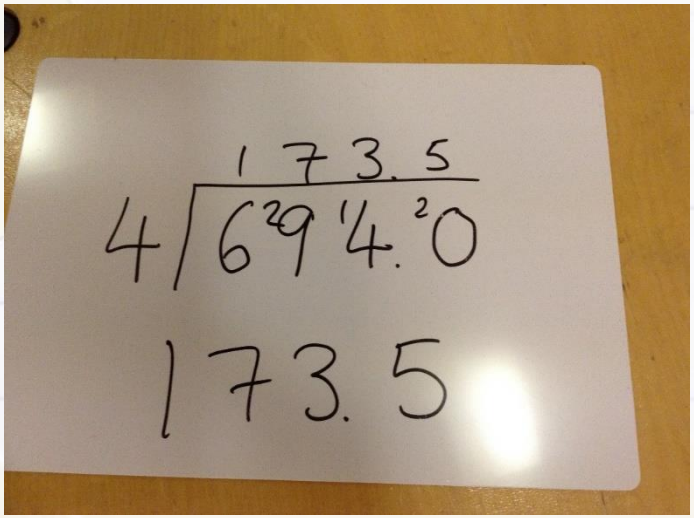


Similarly for 100s

$$\begin{array}{r} 400 \\ 3\overline{)\,1200} \end{array}$$


64 ÷ 4 = 16
Use known facts:
4 x 10 = 40
4 x 3 = 12
52
+12
4 x 3 = 12
64


1 7 3 r 2
4 | 6 2 9 1 4
173 2/4 → 173 1/2


1 7 3. 5
4 | 6 2 9 1 4. 2 0
173.5

Big Maths Learn Its

Name:

My 'Beat That' score was...

Year 5 & 6 - 100 seconds

BIG MATHS... BEAT THAT!

72

6+3=	9x4=	8x7=	6+2=	5x5=	9+4=	4x2=	8+2=
7x6=	9x2=	9+5=	6+5=	6x5=	5+4=	9x9=	5x2=
7+3=	8+6=	6x6=	7x3=	9+7=	2+2=	5+2=	9x5=
7x5=	8+7=	8+5=	5+5=	6x3=	5x3=	8+3=	4+2=
9+3=	3x3=	9x3=	8+8=	2x2=	9x8=	7x2=	9+8=
8x4=	6x2=	7+5=	8x2=	7+6=	9x6=	3x2=	8x8=
4+3=	6+6=	9x7=	9+2=	7x7=	7+2=	6+4=	3+2=
3+3=	4x3=	4+4=	8x5=	8x6=	8+4=	9+6=	4x4=
9+9=	5x4=	7x4=	7+4=	8x3=	7+7=	5+3=	6x4=

Y5,6 7

Maths Around The Home

- A prominent clock- digital and analogue is even better. Place it somewhere where you can talk about the time each day.
- A traditional wall calendar-Calendars help with counting days and spotting number patterns
- Board games that involve dice or spinners-helps with counting and the idea of chance
- A pack of playing cards- Card games can be adapted in many ways to learn about number bonds, chance, adding and subtracting
- A calculator- A basic calculator will help with maths homework when required, there are also many calculator games you can play, too.
- Measuring Jug-Your child will use them in school, but seeing them used in real life is invaluable. Also useful for discussing converting from metric to imperial
- Dried beans, Macaroni or Smarties- for counting and estimating
- A tape measure and a ruler- Let your child help when measuring up for furniture, curtains etc
- A large bar of chocolate (one divided into chunks)- a great motivator for fractions work
- Fridge magnets with numbers on- can be used for a little practice of written methods
- Indoor/outdoor Thermometer- especially useful in winter for teaching negative numbers when the temperature drops below freezing
- Unusual dice- not all dice have faces 1-6, hexagonal dice, coloured dice, dice from board games all make talking about chance a little more interesting
- A dartboard with velcro darts- Helps with doubling, trebling, adding and subtracting.

Mathletics

- Mathletics is a captivating online learning space providing students with all the tools they need to be successful learners, both in the classroom and beyond.
- http://uk.mathletics.com/.

National Tests

NUMERACY

Y4 Reasoning sample materials

NUMERACY

Y3 Procedural sample materials

Evaluation

What did you think of this workshop?

What else would you like to find out about your child's maths learning?

Diolch yn fawr!

Any Questions?