KS2 Maths parent workshop

Explain and demonstrate how mathematics is taught in KS2

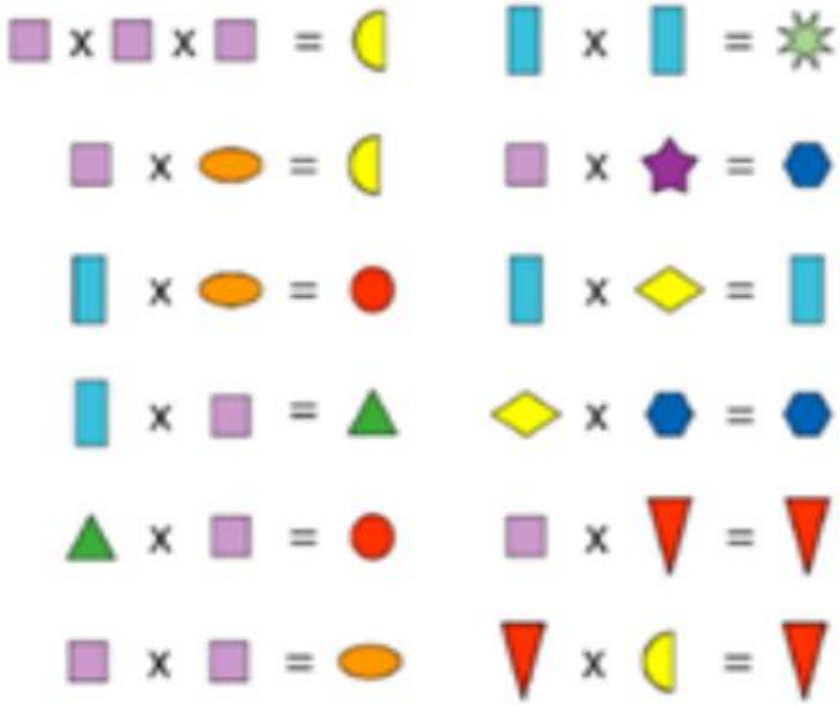
Understand what is meant by 'Mastery' in mathematics.

Identify how fluency impacts upon achieving mastery.

Increase confidence and understanding in supporting your child at home.

The coloured shapes stand for eleven of the numbers from 0 to 12. Each shape is a different number.

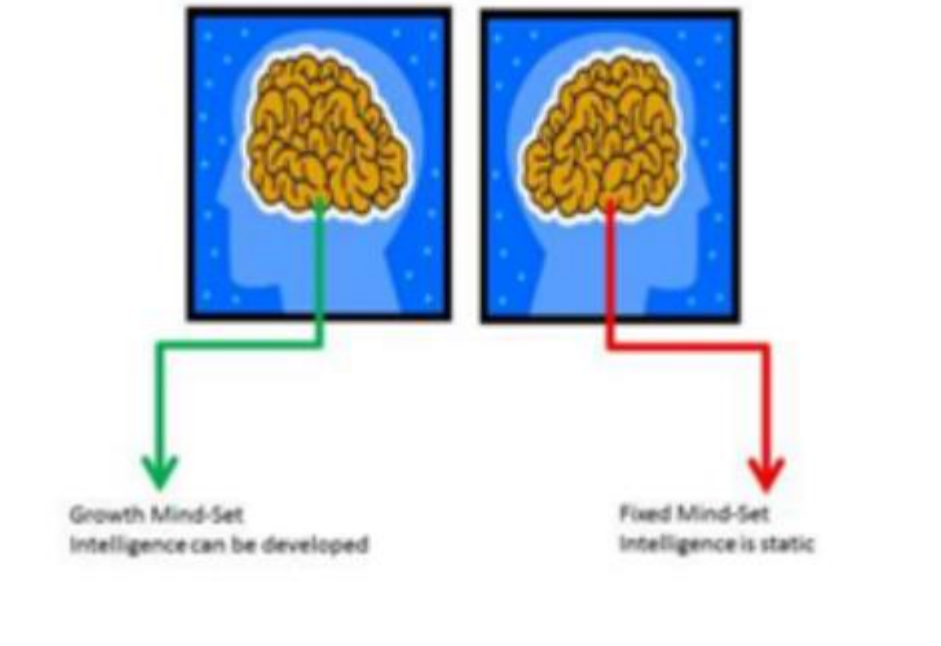
Can you work out what they are from the multiplications below?



Discuss any positive or negative experiences of Maths you had when you were a child.

If children hear ‘I can’t do maths’ from parents, teachers, friends they begin to believe it isn’t important.

People become less embarrassed about maths skills as it is acceptable to be ‘rubbish at maths’



Our School objectives:
Mastery + enjoyment + creativity and engagement in maths.

What does mastery look like?

I know how to do it

I can do it on automatic pilot.

I can explain what I am doing.

I can show someone else how to do it.

My learning is transferrable.

Speaking and listening

- Vocabulary
- Questioning
- Full sentences with sentence scaffolds
- Reasoning and explanation
- Problem solving

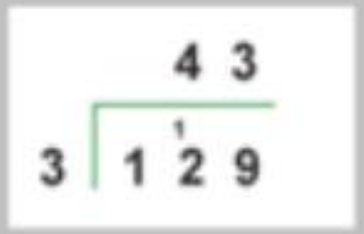
How do you know?
Can you show me?
Prove it to me…
Can you show me in a different way?

Mastery of mathematics also includes:

- **Deep** and sustainable learning
- The ability to build on something that has already been sufficiently mastered
- The ability to reason about a concept and make connections
- Conceptual and procedural fluency

Conceptual fluency + procedural fluency = MASTERY

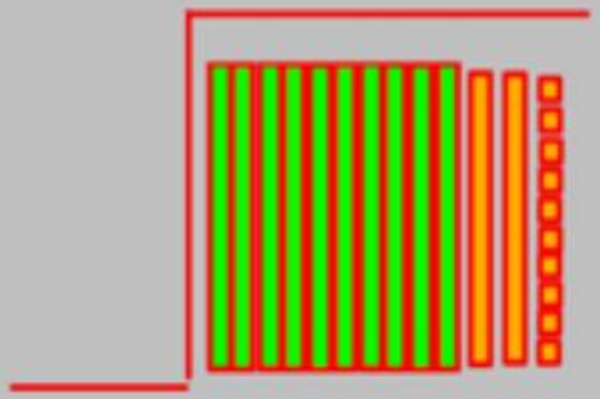
Procedural fluency : can use a method correctly.
e.g. short division.

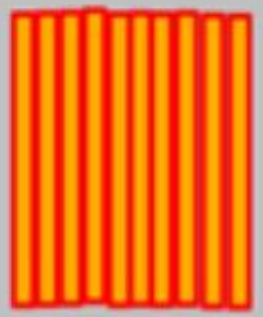


Conceptual: Understand
what you are doing and why.

Both developed in parallel.

$$\begin{array}{r} 43 \\ 3\overline{)129} \\ \end{array}$$





$$9999 + 999 + 99 + 9 + 5 =$$

What else does number fluency entail?

Three key goals: efficiency, accuracy and flexibility.

Efficiency: having strategies that are understood, that don't involve too many steps , easy to keep track of workings thus easy to back track and find any error made.

Accuracy : careful recording - including writing correct equation and transposing figures correctly, using correct number facts and other important relationships and double checking results.

ESTIMATION - is a key skill.

Flexibility requires the knowledge of more than one approach to solvinga particular type of problem e.g. two-digit multipication.

25 x 8 =

37 x 8 =

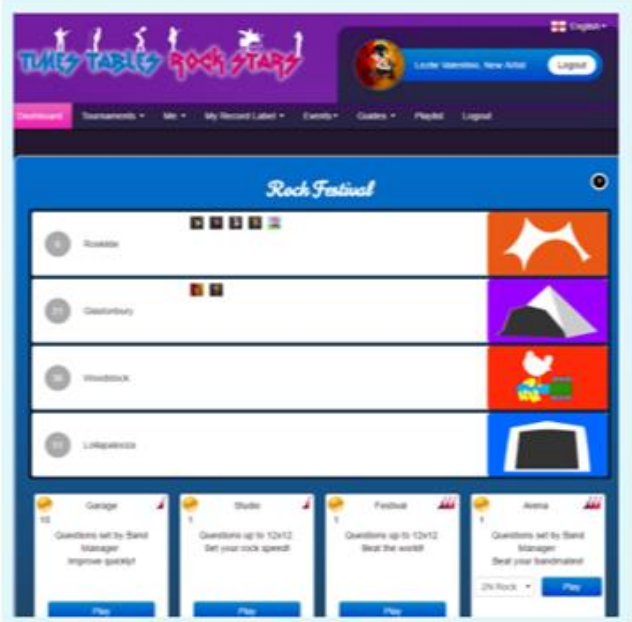
35 x 8 =

Thus can choose appropriate strategy for numbers involved and can check with other method.

How do we do this....?

Lots of practise!
Short and regular rather than long and irregular.

Times Tables



Key facts and skills - that aid fluency thus help reach mastery?

- *Know and use number facts (+/-)*
- *Has number bonds or efficient strategies which enable bridging*
- *Rules e.g. 2 x 7 x 5 can be ordered as 2 x 5 x 7 .....*
- *Has really secure grasp of Place value*
- *Can round - albeit roughly!*
- *Uses estimation*
- *Conceptual understanding of the four operations*
- *and the relationship between them...*
- *Table and division facts to 12 x 12*
- *Being able to count on one more or count back - one less....*
- *Know when to use mental method and when to use written methods OR combination of the two.*
- *Understands what bench marks are and uses them*
- *Understand concept of part/part/whole model.*
- *Can read & write big nos WITH understanding.....*

Tables

Practice on regular basis

Use commutativity to make facts less!

Learn division facts alongside

Begin with 2, 5, 10,
then 3, 4, 7,8,9,11,12

MAKE LINKS: if I know twos - I can double to work out 4s.... 3 /6s.....

Use bench marks to help work out..

Place for Rote learning but not just 3,6,9,12.....

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Use place value to make connections:

e.g. 3 x 4 = 12

30 x 4 = 130

0.3 x 4 = 1.2

0.3 x 0.4 = 0.12

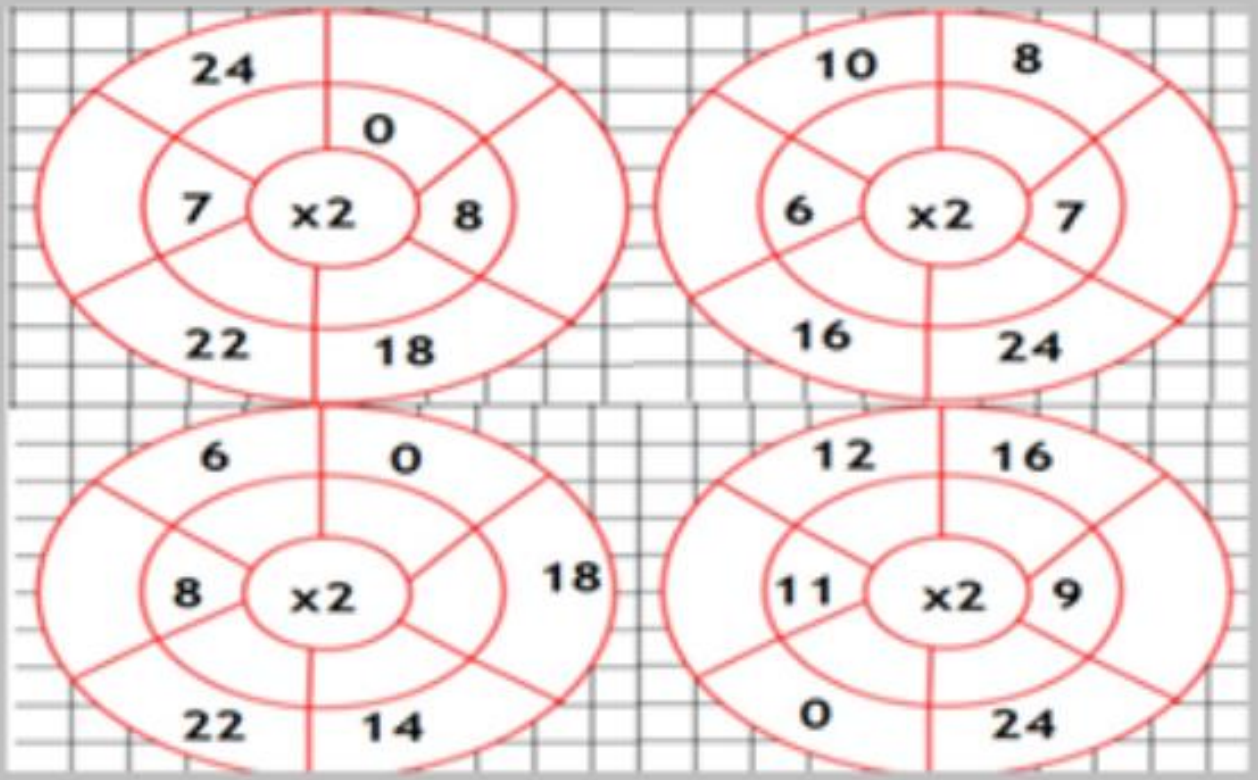
12 ÷ 0.4 = 30

Give children blank multiplication to complete - do this with them. Really cheers children up to see how much they already know.

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Learn tricky facts as discrete - e.g. 7 x 8 = 56.....56 /8 = 7:
LET children use aids at first..... works by osmosis!
Reinforce it with language e.g. 2 groups of 4, 4 lots of 6...

Good way to practise... why?



Mental calulation stragegies: addition....

Key points:

COMMUTATIVE $a + b = b + a$

Key point for children to grasp.....

Larger number goes first. e.g. 12 + 47 =

47 + 12 =

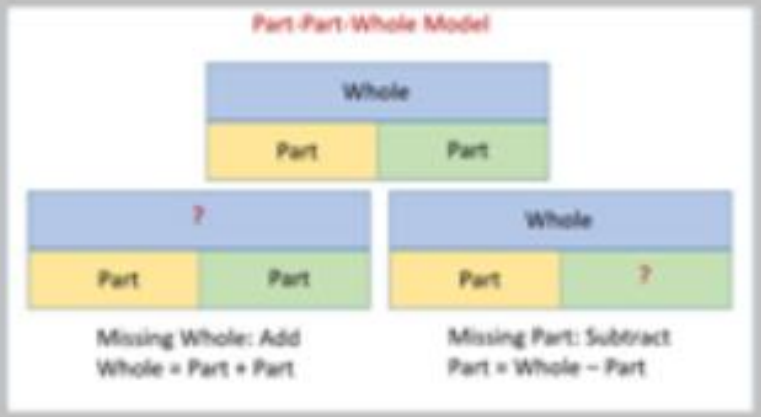
47 + 10 + 2

UNLESS RE-ORDERING to make calculation easier!

e.g. 87 + 95 + 3

Encourage children to look for natural partners - bonds.....

Visual resources to support understanding:
Part-part- whole model BAR MODEL



James has 98 stickers. Bobby has 34 . How many do they have in total?

Altogether, there are 98 stickers which are shared between 3 pupils, Mary gets 21, James gets 19. How many does Bobby get?

756 = _____ minus 92. _____ + 345 = 592

Bonds , bonds and more bonds!!

What holds children back from being quick adders?

NOT ABLE TO BRIDGE

Why not? Don't have finger tip recall of bonds or not secure enough to partition.. e.g. 37 + 54 =

30 + 50 + 7 + 4 =

Most do for bonds to 10 but not for 8 + 5 ect...

AIM TO TO GET TO 100....

Think this is one of the most important skills a child can have!

Number bonds to 100.

1 + 99	26+ 74
2 + 98	27+ 73
3 + 97	28+ 72
4 + 96	29+ 71
5 + 95	30+ 70
6 + 94	31+ 69
7 + 93	32+ 68
8 + 92	33+ 67
9 + 91	34+ 66
10 + 90	35+ 65
11 + 89	36+ 64
12 + 88	37+ 63
13 + 87	38+ 62
14 + 86	39+ 61
15 + 85	40+ 60
16 + 84	41+ 59
17 + 83	42+ 58
18 + 82	43+ 57
19 + 81	44+ 56
20 + 80	45+ 55
21 + 79	46+ 54
22 + 78	47+ 53
23 + 77	48+ 52
24 + 76	49+ 51
25 + 75	50+ 50

Get children to identify patterns

Get children to identify why stopped at 50 + 50

Go go for easy ones first

build in subtraction facts.
e.g. 77 + 23 = 100
thus 100 - 23 = 77
100 - 77 = 23 and so one.

LINK to place value

42 + 58 = 100 × 10

420 + 580 = 1000 × 10

4.2 + 5.8 = 10

÷ 10

Other ways of helping at home....
Doubles/halving.
Days in the months
Time : digital and analogue
Reading tables e.g. train times
Reading scales.
Measure - being able to convert between
Ratio: altering recipes
Money!!
Board games -

Sharing methods you may have....

Please do...

- Play (maths) with your child
- There are opportunities for impromptu learning in games with real people that you can't get from an ipad or DS!
- Let your child win or be better than you! Otherwise all they learn is that you are better at maths than them
- Recognise that there is more than one way of doing calculations
  - You may have learned one method, but children are actively encouraged to seek out alternative methods in school and choose one which works for them, no matter how long winded.
- Be an actor!
  - Get excited about maths and your child will get excited too.

Please try not to…

Don't expect them to understand after you've explained it once.

- It is normal for a child to 'get it' one day, and then in a different context not know how to find an answer

Don't tell them you are hopeless at maths

- You may remember maths as being hard, but you were probably not hopeless, and even if you were, that implies to your child, "I was hopeless at maths, and I'm a successful adult, therefore maths is not important"

Don't get into an argument over homework.

- It will be something that your child has covered in class, and if they really can't do it without a lot of tears and frustration, leave it and LET US KNOW!

Ideas taken from Maths for Mums and Dads Eastaway, R. and Askew, M. (2010)

Chinese Bamboo

When you plant it, nothing happens in the first year, nor in the second year or the third or the fourth years. You don't even see a single green shoot.

And yet, in the fifth year, in a space of just six weeks, the bamboo will grow nine feet high.

The question is, did it grow nine feet in six weeks or in five years?