Spot Patterns
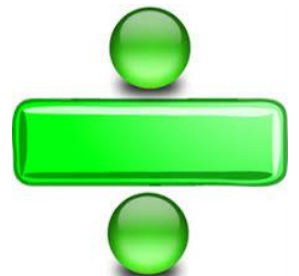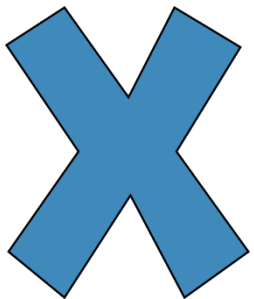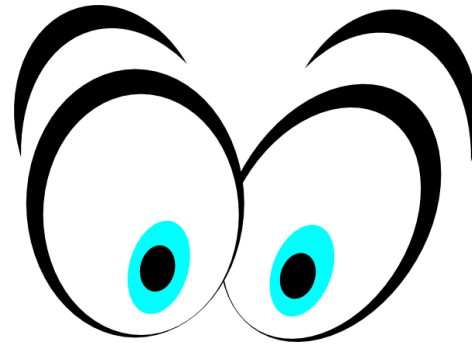
&

Identify Connections

Synopsis

Purpose… to develop fluent, confident mental mathematicians who identify patterns with numbers and apply skills they already know, to larger quantities.

- Mental Maths begins with Reception and continues throughout the Primary Curriculum.
- Skills build upon what they have learnt.
- Use what they already know to help
- Get to children to talk about what they notice or spot when looking at the numbers
- Provide the children with a range of strategies – **IT ALL DEPENDS ON WHAT NUMBERS THEY HAVE IN FRONT OF THEM!**
- Get our children to talk confidently about how they are going to tackle each number sentence and why they are choosing a certain skill / technique
- **Play plenty of games** – the children don't realise they're learning!
- EYFS & KS1 = **Concrete and Pictorial first** – mental abstract comes after.
- KS2 = **Mental first**… Apply their knowledge from KS1 to larger numbers. Children will then realise they do not have to draw formal methods for everything.
- Having strong mental maths will help children in so many other areas of the curriculum **e.g. estimating, fractions, area, perimeter, data handling, time and measures**

EYFS / KS1 Addition Journey

1. Mentally + within 10

E.g.

3 + 2 = 5

5 + 4 = 9

2. Doubling

E.g.

6 + 6 = 12

7 + 7 = 14

3. Near Doubles

E.g.

8 + 7 = 15

(8 + 8 – 1)

4. Number bonds to 10

E.g.

3 + 7 = 10

4 + 6 = 10

5. Get to the next 10 (+ to 20)

E.g.

8 + 5 = 13

(8 + 2 = 10

10 + 3 = 13)

6. + 10 and tens

E.g.

Ones won't change!

56, 66, 76, 86, 96

7. NEVER + 9

E.g.

26 + 9 = 35

(26 + 10 – 1)

8. + 3 single digit numbers

E.g.

8 + 6 + 2 = 16

9. Number bonds to 20, 100 etc.

If I know 6 + 4 = 10...

16 + 4 = 20

26 + 4 = 30

60 + 40 = 100   etc.

What do you notice?

If I know this... I also know

KS2 Addition Journey

1. 3 digit + ones

E.g. Get to next 10!

$357 + 8 = 365$

$(357 + 3 = 360$

$360 + 5 = 365)$

2. 3 digit + tens / hundreds

E.g.

$624 + 40 = 664$

$529 + 200 = 729$

3. Adding near multiples

E.g.

$53 + 39 = 92$

$(53 + 40 - 1)$

4. Doubling larger numbers

E.g.

$25 + 25 = 50$

(Double 20, double 5)

5. + near doubles

E.g.

$28 + 29 = 57$

$(30 + 30 = 60$

$-2 - 1 = 57)$

6. Partition tens and ones

E.g.

$53 + 35 = 88$

$(50 + 30 = 80$

$3 + 5 = 8)$

What do you notice?

If I know this… I also know

EYFS / KS1 Subtraction Journey

1. Mentally - within 10

E.g.

6 - 2 = 4

8 - 5 = 3

2. Get back to 10!

E.g.

13 - 5 = 8

(13 - 3 = 10

10 – 2 = 8)

3. Numbers close… find the difference

E.g.

18 - 15 = 3

Count on from 15 to 18.

4. – 10 and tens

E.g.

Ones won't change!

84, 74, 64, 54, 44

5. NEVER – 9!

E.g.

33 - 9 = 24

(33 - 10 + 1)

6. Use what you know about +

E.g.

17 – 8 =

I know 8 + 9 = 17, so 17 – 8 has to be 9

What do you notice?

If I know this… I also know

KS2 Subtraction Journey

1.   3 digit – ones

E.g. Get back to 10!

464 - 7 = 457

(464 - 4 = 460

460 - 3 = 457)

2. 3 digit – tens / hundreds

E.g.

681 - 50 = 631

875 - 400 = 475

3. Numbers close… find the difference

E.g.

368 - 355 = 13

Count on from 355 to 368.

4. Partitioning to subtract

E.g.

58 - 34 = 24

(50 - 30 = 20

8 - 4 = 4 and put back together)

5. Subtracting near multiples

E.g.

87 - 38 = 49

(87 - 40 + 2)

6. Using x tables to help

E.g.

42 - 6 = 36

I know 42 is a multiple of 6 so I can use my 6x table

What do you notice?

If I know this… I also know

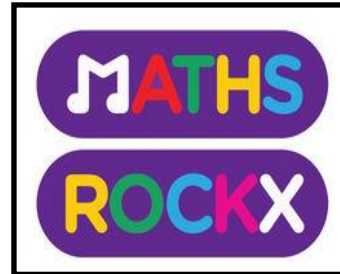# EYFS / KS1 Multiplication Journey

1.   Chanting tables

E.g.

2, 4, 6, 8 ….

10, 20, 30, 40 …

5, 10, 15, 20 …

2. Introducing MathsRockx songs

MATHS ROCKX

3. 2x link to doubling

E.g.

I know 7 + 7 = 14

so 7 x 2 has to = 14

4. Making numbers 10x bigger

E.g.

Value of each number moves 1 place to the left…

4 x 10 = 40

12 x 10 = 120
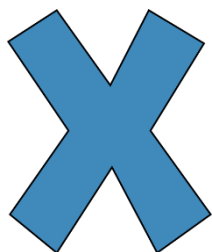
5. Identify patterns with 2x,10x and 5x

E.g.

2x table – even

10x table – ends with 0

5x table – 5 and 0 ones repeat

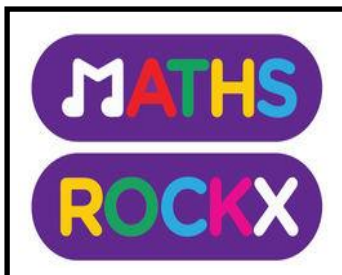What do you notice?

If I know this… I also know

KS2 Multiplication Journey

1. Use MathsRockx songs

2. 9x anything tip

E.g.

Do 10x and - one lot

9 x 3 = 27

(10 x 3 – 3)

3. Use doubling to help some x tables

E.g.

6x table (3x and double)

4x table (2x and double)

4. 12x anything tips

E.g.

Start at 10x

12 x 7 = 84

(10 x 7 + 2 x 7)

5. Partitioning x tables

E.g.

16 x 4 = 64

(10 x 4 = 40

6 x 4 = 24)

6. Using what you know about x tables

E.g.

If I know 8 x 4 = 32, I know…

80 x 4 = 320

7. x10, 100 and 1000

E.g.

12 x 100 = 1,200

0.65 x 1000 = 650

What do you notice?

If I know this… I also know
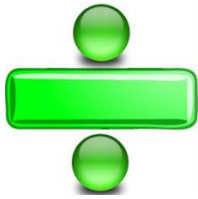
KS1 Division Journey
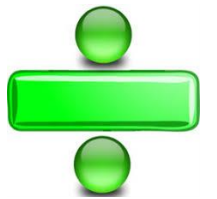
1. Use your x tables for ÷ 2, 10 and 5

> E.g.
>
> $8 ÷ 2 = 4$
>
> (How many groups
> of 2 are in 8)?

2. Practise 4 facts to further understand division

> E.g.
>
> If I know $7 x 5 = 35$
>
> I also know…
>
> $5 x 7 = 35$
>
> $35 ÷ 5 = 7$
>
> $35 ÷ 7 = 5$

3. Identify link between fractions and division

> E.g.
>
> ½ = ÷ 2
>
> ¼ = ÷ 2 and ÷ 2 again
>
> 1/3 = ÷ 3

What do you notice?

If I know this… I also know
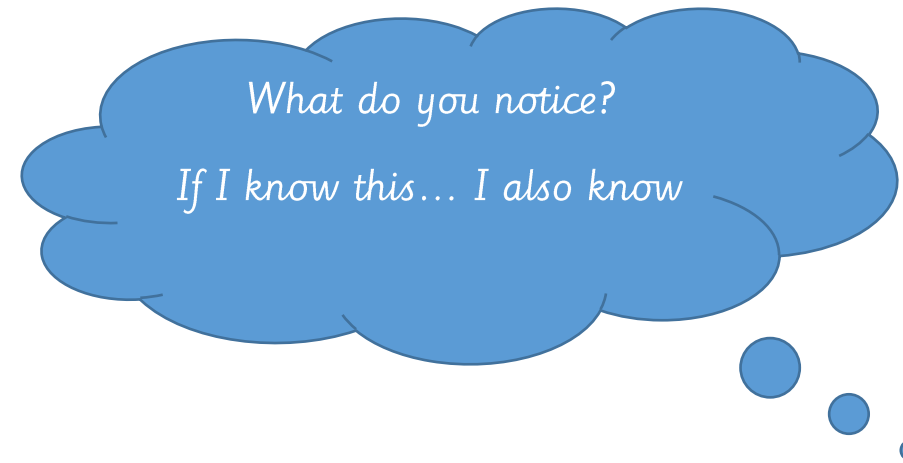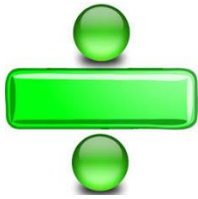
KS2 Division Journey
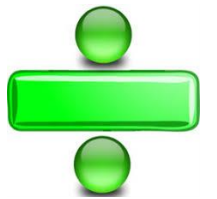
1. Build understanding of using x to help

E.g.

$56 \div 8 = 7$

(How many groups of 8 are in 56)?

2. Use what you know with larger numbers

E.g.

$69 \div 3 = 23$

I know $6 \div 3 = 2$ so…

$60 \div 3$ has to be 20

$9 \div 3 = 3$

3 Build on fractions and ÷ link

E.g.

$1/6 = \div 6$

$1/8 = \div 8$

$1/10 = \div 10$

4. ÷10, 100 and 1000

E.g.

$512 \div 10 = 51.2$

$827 \div 100 = 8.27$

What do you notice?

If I know this… I also know

Mental Games Ideas / Websites

Playing games and giving each mental aspect a purpose, will help the children improve their fluency, speed and confidence. Make it fun... the children won't realise they're learning!

Games Ideas

- Pinterest
- Teacherspayteachers
- Decks of cards
- Create simple board games

Websites

- Daily 10
- Hit the button
- Topmarks – games

Number Splat!
A Fun Number recognition game

Created by the M&M's

Spin, Solve, Color
adding within 100

Roll and Solve
Race to the Top
Add By 7-12

SUBTRACTION COVER UP
UP TO 12

CHOOSE YOUR SUBTRACTION FACT TO WORK OUT.
THE FIRST PLAYER TO GET 4 IN A ROW WINS THE GAME!

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

NO PREP MULTIPLICATION SQUARES

Connect Four!
Multiplication

How to play:
1. Roll two 6-sided dice
2. Multiply the numbers
3. Cover the answer with your counter
4. First player to get 4 in a row wins!

ARRAY CAPTURE

Player 1

Player 2

REMAINDERS WANTED

25	810	154	74	98	152
589	14	37	256	35	802
745	10	77	63	658	746
81	409	250	83	98	87
522	45	612	30	214	870
118	632	407	48	175	333

Division Squares
Each row and column is a division problem. Complete the math and write the answers in the empty spaces.

Tic Tac Toe
Divide by 7 Facts

a game for 2 players
Need: counters in 2 different colors or symbol cards

14÷7	49÷7	28÷7
21÷7	42÷7	63÷7
56÷7	35÷7	7÷7