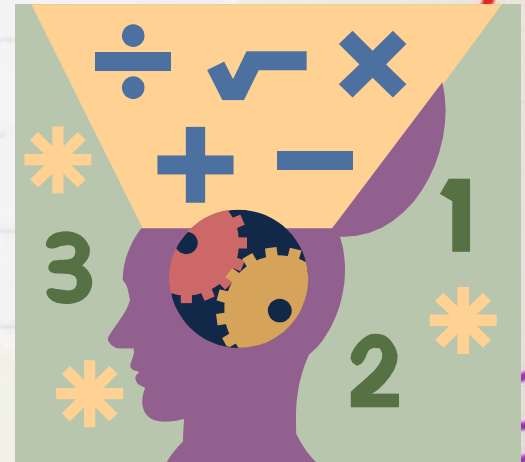


Year 5/6 Mathematical Strategies

Progression in written calculation methods.



The background features several overlapping sticky notes with handwritten mathematical equations. At the top, a green note shows $1 \div 2 = 2$ and a yellow note shows $3 + 3 = 6$. On the right, an orange note shows $6 = 1/9$. On the left, an orange note shows $3 + 3 = 8$. At the bottom, a green note shows $7 - 2 = 5$, a yellow note shows $9 - 2$, and a purple note shows $10 \div 5 = 5$.

Aims

1. Increase knowledge of how we teach written methods for addition, subtraction, multiplication and division.
2. Share helpful ideas and resources that will allow you to support your child at home.

Our approach at Hillside

- Develop children's understanding of number and give them a firm basis to build on.
- Constant reinforcement of key skills.
- Ensure the children receive daily mental maths strategies to help build confidence and knowledge.



ADDITION

Vocabulary includes; add, addition, more, plus, increase, make, sum, altogether, score, how many more....? How many more is ... than?

HOW WOULD YOU SOLVE THIS?

$$4325 + 9568 =$$



Stage One...

Horizontal Method

Either partition both numbers or just the second number.

$$\begin{aligned}126 + 51 &= 100 + 20 + 50 + 6 + 1 \\ &= 100 + 70 + 7 \\ &= 177\end{aligned}$$

OR

$$\begin{aligned}126 + 51 &= 126 + 50 + 1 \\ &= 176 + 1 = \\ &= 177\end{aligned}$$

Stage Two...

Expanded Vertical Method

Can be done using either the largest or the smallest digit first. Partial sums are added mentally.

Year 5

H	T	U	
2	8	6	+
4	9	7	
<hr/>			
	1	3	
1	7	0	
6	0	0	
<hr/>			
7	8	3	

Year 6

Th	H	T	U	
4	8	0	5	+
	4	2	9	
<hr/>				
		1	4	
		2	0	
1	2	0	0	
4	0	0	0	
<hr/>				
5	2	3	4	



Stage Three...

Compact Method

Vertical layout, contracting the working to a compact efficient form:

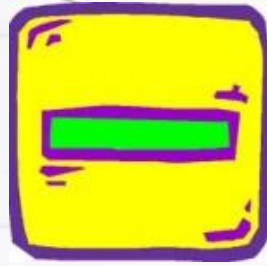
First without any carrying:

$$\begin{array}{r} \text{HTU} \\ 355 \\ + 243 \\ \hline \underline{598} \end{array}$$

Vertical layout, contracting the working to a compact efficient form:

Then including carrying:

$$\begin{array}{r} \text{ThHTU} \\ 5871 \\ + 3475 \\ \hline 9346 \\ \hline 11 \end{array}$$



SUBTRACTION

Vocabulary includes; subtract, subtraction, take away, minus, leave, how many are left/left over?

Difference between, how many fewer is... than....? How much less is....?

Difference between.

HOW WOULD YOU SOLVE THIS?

$$9734 - 8863 =$$

All ages need to be reminded:

Never swap your
numbers around!

- $23 - 14$ is not the same as $14 - 23$!!

Stage One...

Complimentary Addition

- Subtraction by adding on

$$502 - 198 = 304$$

+2 +300 +2



198 200 500 502

$$\begin{array}{r} 502 \\ - 198 \\ \hline \end{array}$$

2 (to 200)

300 (to 500)

2 (to 502)

304

Stage Two...

Compact Method

$$1 \div 2 = 2 \quad 3 + 3 = 6$$

$$6 = 1/9$$

$$\begin{array}{r} 0 \\ + 3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} + \\ \hline 4 \end{array}$$

$$+ 5 = 2$$

$$7 - 2 = 5 \quad 9 - 2$$

$$\begin{array}{r} 10 \\ \hline 5 \\ 5 \end{array}$$

Method 1 - Without decomposition

Year 5

$$\begin{array}{r} \text{HTU} \\ 349 \\ - 228 \\ \hline 121 \end{array}$$

Year 6

$$\begin{array}{r} \text{ThHTU} \\ 3768 \\ - 2336 \\ \hline 1432 \end{array}$$

Method 2: with decomposition

Year 5

$$\begin{array}{r} \text{HTU} \\ 71 \\ \cancel{8}23 \\ - \underline{582} \\ 241 \end{array}$$

Year 6

$$\begin{array}{r} \text{ThHTU} \\ 1131 \\ \cancel{2}346 \\ - \underline{827} \\ 1519 \end{array}$$

Decimals - Compact method

Year 5

$$\begin{array}{r} \text{H T U. } \dagger \\ \overset{8}{3} \overset{13}{9} \overset{1}{4}. 6 \\ - 287.7 \\ \hline 106.9 \end{array}$$

Year 6

$$\begin{array}{r} \text{Th H T U. } \dagger \text{ h} \\ \overset{3}{8} \overset{1}{9} 4. 36 \\ - 6893.45 \\ \hline 2300.91 \end{array}$$



MULTIPLICATION

Vocabulary includes; lots of, groups of, times, multiply, multiplication, multiplied by, multiple of, product, repeated addition, array.

HOW WOULD YOU SOLVE THIS?

$$734 \times 23 =$$

Stage One...

Expanded Method

$1 \div 2 = 2$ $3 + 3 = 6$

$6 = 1$

134 x

7

28

210

700

938

17 x

15

35

50

70

100

255

135 x

24

20

120

400

100

600

2000

3240

3

$+$
4

10
 5
 5

$+ 5 = 2$

$7 - 2 = 5$

$9 - 3 = 6$

Decimal Expanded method

$$\begin{array}{r} 3.64 \\ \times \quad 7 \\ \hline 0.28 \\ 4.20 \\ \hline 21.00 \\ \hline 25.48 \end{array}$$

Stage Two...

Compact Method

$1 \div 2 = 2$ $3 + 3 = 6$

$6 = 1$

$3/8$

$+$
 4

$+ 5 = 2$

$7 - 2 = 5$

$9 - 2$

10
 $5/5$

$$1 \div 2 = 2 \quad 3 + 3 = 6$$

$$6 = 1$$

$$\begin{array}{r} 217 \times \\ \quad 5 \\ \hline 1085 \end{array}$$

$$\begin{array}{r} 17 \times \\ \quad 15 \\ \hline 85 \\ \hline 170 \\ \hline 255 \end{array}$$

$$\begin{array}{r} 134 \times \\ \quad 24 \\ \hline 536 \\ \hline 2680 \\ \hline 3216 \end{array}$$

$$\begin{array}{r} + \\ \hline 4 \end{array}$$

$$\begin{array}{r} 10 \\ \hline 5 \\ \hline 5 \end{array}$$

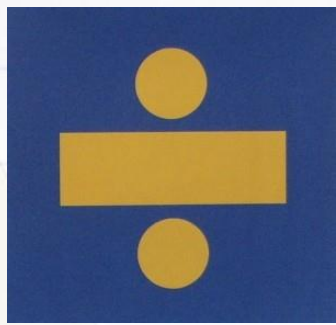
$$+ 5 = 2$$

$$7 - 2 = 5$$

$$9 - 2$$

Decimal Compact method

$$\begin{array}{r} 3.64 \\ \times \quad 7 \\ \hline 25.48 \\ \hline 42 \end{array}$$



DIVISION

Vocabulary includes; halve, share, share equally, group in pairs, equal groups of, divide, division, factor, quotient, divisible by.

HOW WOULD YOU SOLVE THIS?

357 divided by 17 =

The background features a collage of yellow sticky notes with various mathematical problems written in different colors. The notes are scattered across a white background with faint horizontal lines. The problems include simple arithmetic like addition and subtraction, and some division problems. The text 'Stage One...' is prominently displayed in a red and blue gradient rounded rectangle in the center.

Stage One...

Compact Method

$$\begin{array}{r} 19 \\ \hline 5 \overline{)945} \end{array}$$

9 tens divided by 5 is 1 ten.

There are 4 tens left over ??

45 divided by 5 is 9.

There is no remainder.

$$\begin{array}{r} 23.5 \\ 4 \overline{)91420} \end{array}$$

9 tens divided by 4 is 2 tens.

There is 1 ten left over.

14 divided by 4 is 3.

There is a remainder of 2.

2 units divided by 4 is 0.5.

Stage Two...

**Dividing by tens and
units**

$$12 \overline{)2612}$$

$$12 \times 2 = 24$$

$$12 \times 4 = 48$$

$$12 \times 10 = 120$$

$$12 \times 5 = 60$$