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# Maths: Parent Workshop

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# Expectations at the end of year 6

With the person next to you can write down what children would need to know to answer this year 6 SATS question.

18

A cat sleeps for 12 hours each day.

50% of its life is spent asleep.



Write the missing percentage.

A koala sleeps for 18 hours each day.

%

of its life is spent asleep.



1 mark



Calculation Policy Guidance

Year 3

Calculation policy

**Addition**

ns and missing numbers

tens and ones

Use numbers (use units exceed 10)

a near multiple of 10 to a two-digit number

Continue as in Year 2 but with appropriate numbers, e.g. 35 + 19 is the same as 35 + 20 - 1

**Formal written methods introduced**

83 + 24 = 125

Children to work with HTU (3 digits)

Children to begin to use formal written methods down the page.

Addition sign on the left of the problem. Add numbers with up to 3 digits, using formal written methods of column addition

Add numbers mentally, including: a three-digit number and 1s, a three-digit number and 10s, a three-digit number and 100s.

Estimate answers and use inverse operations to check answers

Solve problems, including missing number problems, using number facts, place value, and more complex addition.

+ and = signs and missing numbers

Continue using a range of equations as in Year 1 and 2 but with appropriate larger numbers.

**Subtraction**

- signs and missing numbers

Continue using a range of equations as in Year 2 but with appropriate numbers.

Find a small difference by counting up

Continue as in Year 2 but with appropriate numbers e.g. 102 - 97 = 5

Subtract mentally a 'near multiple of 10' to or from a two-digit number

Continue as in Year 2 but with appropriate numbers e.g. 78 - 49 is the same as 78 - 50 + 1

Subtracting pairs of 2-digit numbers on a number line:

47 - 23 = 24 Partition the second number and subtract it in tens and units, as below:

Teaching children to bridge through ten can help them to become more efficient, for example 42 - 25:

Mental strategy - subtract numbers close together by counting on:

42 - 38 = 4

Any mental strategies are taught. Children are taught to recognise that when numbers are close together, it is more efficient to count on the difference. They need to be clear about the relationship between addition and subtraction.

**Formal Written methods**

No exchange

With exchange

Consolidate number facts and calculation strategies from Year 3

Children to

begin to use formal written methods down the page

Subtraction sign on the left of the problem

**Multiplication**

x = signs and missing numbers

Continue using a range of equations as in Year 2 but with appropriate numbers.

Number lines

6 x 3

Arrays and repeated addition

Continue to understand multiplication as repeated addition and continue to use arrays (as in Year 2).

Doubling multiples of 5 up to 50

35 x 2 = 70

Introduce the grid method for multiplying 2-digit by single-digits:

Eg. 23 x 8 = 184

160 + 24 = 184

Reintroduce the grid method with children physically making an array to represent the calculation (e.g. make 8 lots of 23 with 10s and 1s place value counters), then translate this to grid method format (see video clip).

Doubling three digit numbers and multiples of 5, 10 and 100

Partition

35 x 2 = 70

30 x 2 = 60

5 x 2 = 10

60

+10

70

**Division**

÷ = signs and missing numbers

Continue using a range of equations as in Year 2 but with appropriate numbers.

Understand division as sharing and grouping (repeated subtraction) eg 36 ÷ 4 = 9 can be modelled as: 36 can be shared between 4 people, how many do they have each?

\* Equally the inverse can be taught where pupils jump up\*

Grouping and remainders linked to times tables

How many 3's make 16? How many left over? 16 ÷ 3 = 5 r 1

Halving even numbers up to 100 and multiples of 10

Half of 480 = 240

Children to use informal written methods and formal written methods. Divisibility rules - for the 2, 3, 4, 5, 8, 10 and 100 times tables. Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

**Short division**

98 ÷ 7 becomes

1 4

7 9 8

Answer: 14



+

addition

X

multiplication

The four operations

-

subtraction

÷

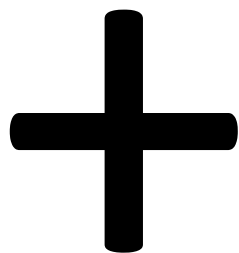
division



# How we teach addition

Formal written method

Column method



$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \end{array}$$
$$\begin{array}{r} 3587 \\ + 675 \\ \hline * * * \end{array}$$

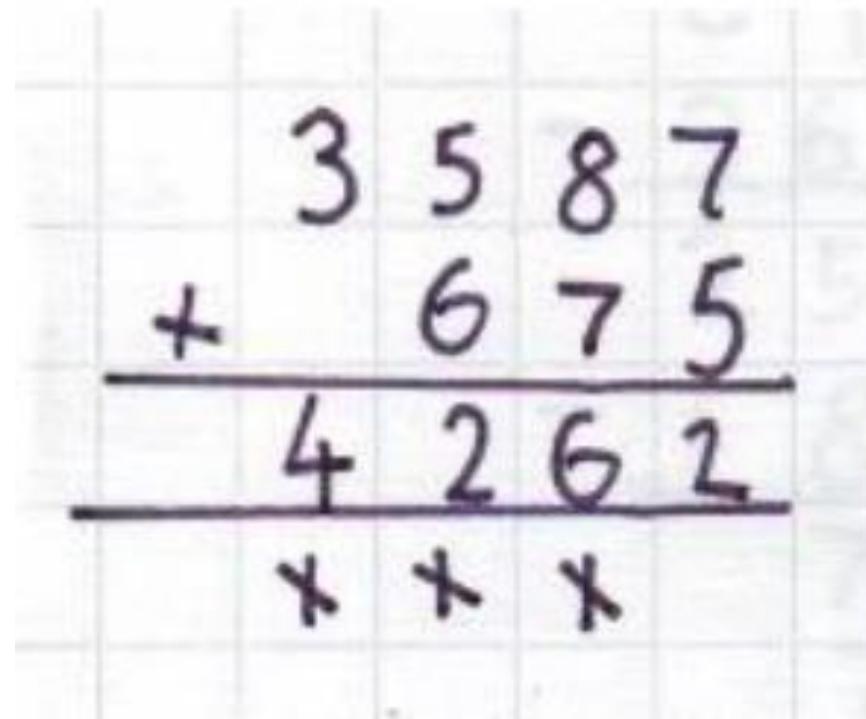
Tower method



$5674 + 679 = \blacksquare$

$4768 + 3475 = \blacksquare$

$1,567,879 + 24,343 = \blacksquare$





# How we teach subtraction

Formal written method

Column method

	<del>5</del> <sup>5</sup>	<del>3</del> <sup>3</sup>	1	6	7
-	2	6	8	4	
<hr/>					
	3	7	8	3	
<hr/>					

Tower method



$4537 - 479 = \blacksquare$

$6000 - 1287 = \blacksquare$

$567,000 - 29390 = \blacksquare$

	<del>4</del> <sup>5</sup>	<del>3</del>	6	7
-	2	6	8	4
<hr/>				
	3	7	8	3
<hr/>				





# How we teach multiplication

Short  
multiplication

$$\begin{array}{r} 146 \\ \times \quad 4 \\ \hline 584 \\ \hline 12 \end{array}$$

**X**

Long  
multiplication

$$\begin{array}{r} 372 \\ \times \quad 24 \\ \hline 1488 \\ \hline 7440 \\ \hline 8928 \end{array}$$



$547 \times 9 = \blacksquare$

$647 \times 87 = \blacksquare$

$5674 \times 78 = \blacksquare$

$$\begin{array}{r} 146 \\ \times \quad 4 \\ \hline 584 \\ \hline \end{array}$$

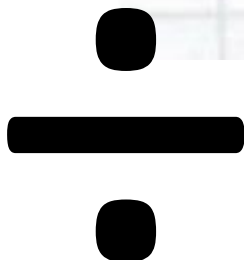
$$\begin{array}{r} 372 \\ \times \quad 24 \\ \hline 1488 \\ \underline{7440} \\ \hline 8928 \end{array}$$



# How we teach division

Short division  
(bus stop method)

$$\begin{array}{r} 36 \text{ r } 4 \\ 7 \overline{) 2356} \end{array}$$



432 ÷ 15 becomes

$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ 132 \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer:  $28 \frac{4}{5}$

Long division



$588 \div 6 = \blacksquare$

$446 \div 5 = \blacksquare$

$6816 \div 12 = \blacksquare$

$$\begin{array}{r} 336 \text{ r } 4 \\ 7 \overline{) 2356} \end{array}$$

432  $\div$  15 becomes

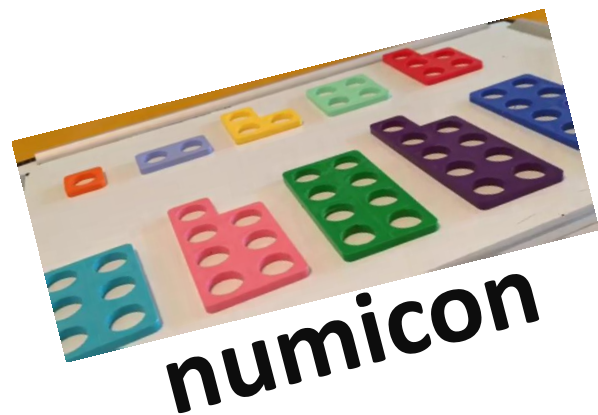
$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ 132 \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$$

$$\frac{\cancel{12}}{\cancel{15}} = \frac{4}{5}$$

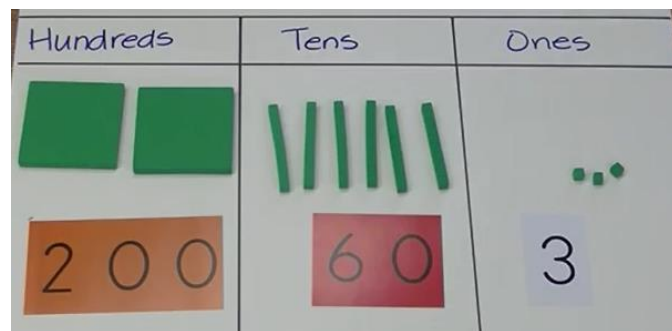
Answer:  $28 \frac{4}{5}$



# Resources



**numicon**



**Place value grids**

[www.nrich.maths.org](http://www.nrich.maths.org)

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

[www.ncetm.org.uk](http://www.ncetm.org.uk)

<https://www.tes.com/teaching-resources/whiterosemathshub>



**Base ten**