

The Devonshire Hill Primary School – Calculation Policy – Year 6

Addition

Pencil and paper procedures

Partition

$445 + 212 = 657$

$445 + 212 = (400 + 200) + (40 + 10) + (5 + 2) = 600 + 50 + 7 = 657$

Column addition

$$\begin{array}{r} 56 \\ + 67 \\ \hline 123 \\ \hline \end{array}$$

Expanded column addition

984
+ 757
11
130
1600
1741

Subtraction

Pencil and paper procedures

The counting-up method

$8000 - 673 = 7327$

Column subtraction

$$\begin{array}{r} 3 \overset{1}{4}54 \\ - 172 \\ \hline 282 \end{array}$$

Revert to expanded methods if the children have difficulty

Multiplication

Pencil and paper procedures

Partition

$$\begin{array}{r} 30 + 8 \\ \times 7 \\ \hline 210 \\ 56 \\ \hline 266 \end{array}$$

$30 \times 7 = 210$
 $8 \times 7 = 56$

Column multiplication

$$\begin{array}{r} 12 \\ 73 \\ \times 48 \\ \hline 584 \\ 2920 \\ \hline 3504 \end{array}$$

1 2
7 3

Multiply the units in the multiplier by the units in the multiplicand, writing any tens digits above the tens column. In this case, $3 \times 8 = 24$, so the tens digit (2) is written above the tens column. Multiply the tens in the multiplier by the units in the multiplicand. In this case, $70 \times 8 = 560 + 2 \text{ tens } (20) = 580$. Now multiply the units and tens in the multiplier by the tens in the multiplicand. Calculate the total of the two parts to find the answer.

Expanded column multiplication

The part products are set out vertically below the calculation. They are then totalled to give the answer.

$$\begin{array}{r} 46 \\ \times 32 \\ \hline 1200 \quad (40 \times 30) \\ 180 \quad (6 \times 30) \\ 80 \quad (40 \times 2) \\ 12 \quad (6 \times 2) \\ \hline 1472 \end{array}$$

Chinese method

				2	7	8	
	0	6	2	1	2	4	3
	0	8	2	8	3	2	4
9	4	5	2				

$278 \times 34 = 9,452$

Division

Pencil and paper procedures

Short division

e.g. $2565 \div 5$

Chunking

e.g. $977 \div 36$

$$\begin{array}{r} 977 \\ - 360 \quad (10 \times 36) \\ \hline 617 \\ - 360 \quad (10 \times 36) \\ \hline 257 \\ - 180 \quad (5 \times 36) \\ \hline 77 \\ - 72 \quad (2 \times 36) \\ \hline 5 \end{array}$$

10+10+5+2=27
Answer: 27 r5

Refine to 20 groups instead of two groups of 10

Long division

15 into 8 doesn't go, so look at the next digit.

15	8	6	4	0
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15 goes into 86 five times, so put a 5 above the 6.
 $15 \times 5 = 75$

15	5	8	6	4	0
-	7	5			
	1	1			

Take that 75 away from the 86 to get your remainder.
 $86 - 75 = 11$

Next, carry the 4 down to make 114.

15 goes into 114 seven times, so put a 7 above the 4.
 $15 \times 7 = 105$

15	5	7	8	6	4	0
-	7	5				
	1	1	4			
-	1	0	5			
			9			

Take 105 from the 114 to get your remainder.
 $114 - 105 = 9$

Carry the 0 down to make 90.

15 goes into 90 exactly 6 times, so put a 6 above the 0.
 $15 \times 6 = 90$

15	5	7	6	8	6	4	0
-	7	5					
	1	1	4				
-	1	0	5				
			9	0			

$8,640 \div 15 = 576$

