Year 6 – Addition, Subtraction, Multiplication and Division

Knowledge Organiser

Key Vocabulary bbA Total Make Plus Sum More Altogether Difference Leave Subtract Difference between Less Minus Take away Mentally, Orally Column Addition Column Subtraction

Estimate
Inverse operation

Solve problems

Number facts
Place Value

Complex

Add and Subtract Whole Numbers

Column Method

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

Starting with the ones, add each column in turn.
Regroup tens, hundreds, thousands, ten thousands as required.

	3	5	⁶ 7	¹³ //	¹ ½ ′
_		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn.
Exchange tens, hundreds, thousands and/or ten thousands as required.

Multiply up to 4-digit by 2-digit

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

Start with the ones.

$$154 \times 20 = 3080$$

Order of Operations

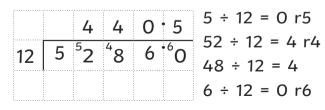
В	Brackets	10 × (4 + 2) = 10 × 6 = 60
0	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	10 + 6 ÷ 2 = 10 + 3 = 13
М	Multiplication	10 - 4 × 2 = 10 - 8 = 2
Α	Addition	10 × 4 + 7 = 40 + 7 = 47
S	Subtraction	10 ÷ 2 - 3 = 5 - 3 = 2

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Short Division

Start from the left.



Common Factors

Factors of 48

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Factors of 30

1	2	3	5	6	10	15	30

Common factors: 1, 2, 3, 6

Common Multiples

Multiples of 3

	3		18	21	24		39	42
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Multiples of 7

				i e	
7	14	21	28	35	42

Common multiples: 21, 42...

Long Division

		1	2	0	r	3
14	1	6	8	3		
	1	4	0	0		
		2	8	3		
		2	8	0		
				3		

Primes

A prime number has only 1 and itself as factors: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 33, 37, 41, 43

A composite number has factors other than 1 and itself.

Squares and Cubes

Square numbers result from a number being multiplied by itself (e.g. $5 \times 5 = 25$):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Reason from Known Facts

 $16 \times 9 = 144 \text{ so } 1.6 \times 9 = 14.4$

Cube numbers result from a number being multiplied by itself twice $(2 \times 2 \times 2 = 8)$: 1, 8, 27, 64, 125

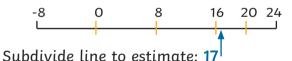
 $90 \div 10 = 9$ so $90 \div 20 = 4.5$ and $90 \div 5 = 18$

Mental Calculations and Estimation

Order of calculations:

Money: £8.99 + £3.49 = £12.48

Use £9 + £3.50 = £12.50 and subtract 2p Estimate on a number line



4352 ÷ 17 = 256 so 2