Four Operations — Knowledge Organiser

Key Vocabulary

Add
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	$^{6}\cancel{7}$	$^{13}\cancel{4}$	$^{1}2$
-		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

1	$\cancel{3}$	$\cancel{2}$	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.

154 × 6 = 924

154 × 20 = 3080

3080 + 924 = 4004

Order of Operations

B	Brackets	10 × (4 + 2) = 10 × 6 = 60
O	Order	5 + 2^2 = 5 + 4 = 9
D	Division	10 + 6 ÷ 2 = 10 + 3 = 13
M	Multiplication	10 - 4 × 2 = 10 - 8 = 2
A	Addition	10 × 4 + 7 = 40 + 7 = 47
S	Subtraction	10 ÷ 2 - 3 = 5 - 3 = 2

Pre-teach poster
Year 6
Autumn 1

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Short Division

Start from the left.

		4	4	0	5
12	5	$^{5}2$	$^{4}8$	6	$^{6}0$

5 ÷ 12 = 0 r5

52 ÷ 12 = 4 r4

48 ÷ 12 = 4

6 ÷ 12 = 0 r6

Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48

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

Multiples of 7

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 × 5 = 25):

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

Cube numbers result from a number being multiplied by itself twice (2 × 2 × 2 = 8):

1, 8, 27, 64, 125

Mental Calculations and Estimation

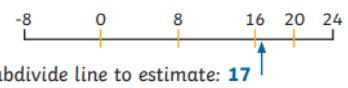
Order of calculations:

50 × 34 × 2 = 50 × 2 × 34 = 100 × 34 = 3400

Money: £8.99 + £3.49 = £12.48

Use £9 + £3.50 = £12.50 and subtract 2p

Estimate on a number line



Subdivide line to estimate: **17**

Reason from Known Facts

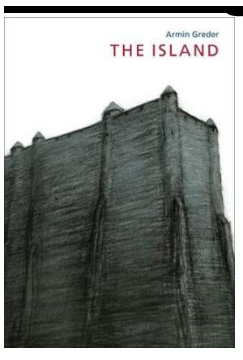
90 ÷ 10 = 9 **so 90 ÷ 20 = 4.5 and 90 ÷ 5 = 18**

16 × 9 = 144 **so 1.6 × 9 = 14.4**

4352 ÷ 17 = 256
so 256 × 18 = 4352 + 256 = 4608

3786 + 2850 = 6636
so 4786 + 2850 = 7636
and 2786 + 3850 = 6636
and 8636 – 3786 = 4850

Writing



stranger, unwelcome, unknown, disturbed, impoverished, disadvantaged, unrepresented, mysterious, biased, narrow minded, prejudiced, opinionated, conscience, commotion, responsibility, presence, lectured

Skill: clause structures

Reading

migrant, refugee, rover, fugitive, chaos, pandemonium, havoc, border, guard, frightened, enormous, boarded, capsize, migrating, voyaging

Skill: inferencing