Four Operations

Knowledge Organiser

Key Vocabulary

Add and Subtract Whole Numbers

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

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Column Method

 4
 5
 8
 6
 4

 +
 2
 3
 4
 9
 7

 6
 9
 3
 6
 1

 1
 1
 1
 1

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

	3	5	67	13 / 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

Order of Operations

		5	3	8	2	
		×		7	5	
			9 4	1 ₁	0	(5382 × .
3	7 2	6 5	7 ₁	4	0	(5382 ×
4	0	3	6	5	0	
1	1	1				

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

Common Factors

Factors of 48

Factors of 30

actors of 50									
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

7	14	21	28	35	42

Common multiples: 21, 42...

Four Operations

So $4680 \div 15 = 312$

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Division Using Factors

The factor pairs of 15 are 3 and 5. 4680 ÷ 15 = 4680 ÷ 3 ÷ 5 4680 ÷ 3 = 1560 1560 ÷ 5 = 312

Short Division

Start from the left.

			4		r6
12	5	⁵ 2	⁴ 8	6	

Long Division

		2	5	r12	Method 1 - using multiples
15	3	8	7		muniples
-	3	0	0		(15 × 20)
		8	7		
	-	7	5		(15 × 5)
		1	2		

		1	9	1	r7	Method 2
14	2	6	8	1		2681 ÷ 14 =
-	1	4	Ţ			191 r9
	1	2	8			or
-	1	2	6			$191\frac{7}{14} = 191\frac{1}{2}$
			2	1		
		-	1	4		
				7		

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

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

Reason from Known Facts

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Mental Calculations and Estimation

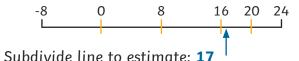
Change the order of calculations:

$$50 \times 34 \times 2 = 50 \times 2 \times 34 = 100 \times 34 = 3400$$

Adjust Numbers:

£8.99 + £3.49 = £12.48 Use £9 + £3.50 = £12.50 and subtract 2p

Estimate on a number line:



Divisibility Rules

A number is divisible by:

2 if the ones digit is even

3 if the digit sum is a multiple of 3

4 if the ones digit is even when the number is halved

5 if the ones digit is 0 or 5

6 if it is divisible by both 2 and 3

10 if the ones digit is 0