

## 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	<del>6</del> 7	<del>13</del> 4	<del>1</del> 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	<del>3</del>	<del>2</del>	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.  
 $154 \times 6 = 924$   
 $154 \times 20 = 3080$   
 $3080 + 924 = 4004$

## Order of Operations

<b>B</b>	<b>Brackets</b>	$10 \times (4 + 2) = 10 \times 6 = 60$
<b>O</b>	<b>Order</b>	$5 + 2^2 = 5 + 4 = 9$
<b>D</b>	<b>Division</b>	$10 + 6 \div 2 = 10 + 3 = 13$
<b>M</b>	<b>Multiplication</b>	$10 - 4 \times 2 = 10 - 8 = 2$
<b>A</b>	<b>Addition</b>	$10 \times 4 + 7 = 40 + 7 = 47$
<b>S</b>	<b>Subtraction</b>	$10 \div 2 - 3 = 5 - 3 = 2$

## Short Division

Start from the left.

		4	4	0	· 5	$5 \div 12 = 0 \text{ r}5$
12	5	<sup>5</sup> 2	<sup>4</sup> 8	6	<sup>6</sup> 0	$52 \div 12 = 4 \text{ r}4$
						$48 \div 12 = 4$
						$6 \div 12 = 0 \text{ r}6$

## Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48
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Factors of 30

1	2	3	5	6	10	15	30
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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
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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, 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

## Mental Calculations and Estimation

Order of calculations:

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

Money:  $\pounds 8.99 + \pounds 3.49 = \pounds 12.48$

Use  $\pounds 9 + \pounds 3.50 = \pounds 12.50$  and subtract 2p

Estimate on a number line



Subdivide line to estimate: 17

## Reason from Known Facts

$$90 \div 10 = 9 \quad \text{so } 90 \div 20 = 4.5 \text{ and } 90 \div 5 = 18$$

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

$$4352 \div 17 = 256$$

$$\text{so } 256 \times 18 = 4352 + 256 = 4608$$

$$3786 + 2850 = 6636$$

$$\text{so } 4786 + 2850 = 7636$$

$$\text{and } 2786 + 3850 = 6636$$

$$\text{and } 8636 - 3786 = 4850$$