

YEAR 6 MATHS, ADDITION & SUBTRACTION, MULTIPLYING & DIVIDING

Four Operations		Knowledge Organiser																																															
Key Vocabulary		Add and Subtract Whole Numbers																																															
Add	Column Method <table><tr><td></td><td>4</td><td>5</td><td>8</td><td>6</td><td>4</td></tr><tr><td>+</td><td>2</td><td>3</td><td>4</td><td>9</td><td>7</td></tr><tr><td></td><td>6</td><td>9</td><td>3</td><td>6</td><td>1</td></tr><tr><td></td><td></td><td>1</td><td>1</td><td>1</td><td></td></tr></table> Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required. <table><tr><td></td><td>3</td><td>5</td><td>⁶7</td><td>¹³4</td><td>¹2</td></tr><tr><td>-</td><td></td><td>3</td><td>4</td><td>7</td><td>6</td></tr><tr><td></td><td>3</td><td>2</td><td>2</td><td>6</td><td>6</td></tr></table> Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.		4	5	8	6	4	+	2	3	4	9	7		6	9	3	6	1			1	1	1			3	5	⁶ 7	¹³ 4	¹ 2	-		3	4	7	6		3	2	2	6	6						
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Column Subtraction																																																	
Estimate																																																	
Inverse operation																																																	
Solve problems																																																	
Number facts																																																	
Place Value																																																	
Complex																																																	
		Multiply up to 4-digit by 2-digit	Order of Operations																																														
		<table><tr><td>1</td><td>8</td><td>2</td><td></td></tr><tr><td></td><td>1</td><td>5</td><td>4</td></tr><tr><td>×</td><td></td><td>2</td><td>6</td></tr><tr><td></td><td>9</td><td>2</td><td>4</td></tr><tr><td>3</td><td>0</td><td>8</td><td>0</td></tr><tr><td>4</td><td>0</td><td>0</td><td>4</td></tr><tr><td>1</td><td>1</td><td></td><td></td></tr></table> Start with the ones. 154 × 6 = 924 154 × 20 = 3080 3080 + 924 = 4004	1	8	2			1	5	4	×		2	6		9	2	4	3	0	8	0	4	0	0	4	1	1			<table><tr><td>B</td><td>Brackets</td><td>10 × (4 + 2) = 10 × 6 = 60</td></tr><tr><td>O</td><td>Order</td><td>5 + 2² = 5 + 4 = 9</td></tr><tr><td>D</td><td>Division</td><td>10 + 6 ÷ 2 = 10 + 3 = 13</td></tr><tr><td>M</td><td>Multiplication</td><td>10 - 4 × 2 = 10 - 8 = 2</td></tr><tr><td>A</td><td>Addition</td><td>10 × 4 + 7 = 40 + 7 = 47</td></tr><tr><td>S</td><td>Subtraction</td><td>10 ÷ 2 - 3 = 5 - 3 = 2</td></tr></table>	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
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Four Operations

Short Division

Start from the left.

		4	4	0	5	$5 \div 12 = 0 \text{ r}5$
12	5	⁵ 2	⁴ 8	6	⁶ 0	$52 \div 12 = 4 \text{ r}4$
						$48 \div 12 = 4$
						$6 \div 12 = 0 \text{ r}6$

Long Division

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



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

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.

Mental Calculations and Estimation

Order of calculations:

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

$$\text{Money: } £8.99 + £3.49 = £12.48$$

$$\text{Use } £9 + £3.50 = £12.50 \text{ and subtract 2p}$$

Estimate on a number line



Subdivide line to estimate: **17**

Knowledge Organiser

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...

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

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

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

$$4352 \div 17 = 256 \quad \text{so } 256 \times 18 = 4352 + 256 = 4608$$

$$3786 + 2850 = 6636$$

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

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

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