



**Westdale**  
Junior School

**Year 6**  
**Mathematics**

**Parent Guide 2023/24**

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## ADDITION

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$$\begin{array}{r}
 789 \\
 + 642 \\
 \hline
 1431 \\
 \hline
 11
 \end{array}$$

First add up the ONES:

$$9 + 2 = 11$$

The 1 is written in the ONES column and the 1 is carried into the TENS column.

You write the numbers you carry over below the answer bar.

Continue to add up the digits in the TENS and the HUNDREDS.

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## SUBTRACTION

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$$\begin{array}{r}
 8 \quad 12 \quad 1 \\
 \cancel{9} \quad \cancel{3} \quad 2 \\
 - 4 \quad 5 \quad 7 \\
 \hline
 4 \quad 7 \quad 5
 \end{array}$$

First subtract the ONES:

$2 - 7$ . You cannot do this so we need to exchange (borrow) from the number in the TENS. So, the 3 now becomes a 2 and we carry over the 1 so it is now  $12 - 7 = 5$

Next subtract the TENS:

$2 - 5$ . You cannot do this so we need to exchange again from the number in the HUNDREDS. So, the 9 becomes an 8 and we carry over the 1 so it is now  $12 - 5 = 7$ .

Finally subtract the HUNDREDS:

$$8 - 4 = 4.$$

## MULTIPLICATION

### SHORT

$$\begin{array}{r}
 342 \\
 \times 7 \\
 \hline
 2394 \\
 \hline
 21
 \end{array}$$

Multiply 7 by 2 = 14.

The 4 is written in the ONES column and the 1 is carried into the TENS column.

Next multiply 7 by 4 = 28 and then add the 1. The 9 is written in the TENS column and the 2 is carried into the HUNDREDS column.

Finally multiply 7 by 3 = 21 and then add the 2. The 3 is written in the HUNDREDS column and the 2 is written in the THOUSANDS column.

Again, any numbers, which are carried over, are placed underneath the answer bar.

### LONG

$$\begin{array}{r}
 124 \\
 \times 26 \\
 \hline
 744 \\
 2480 \\
 \hline
 3224
 \end{array}$$

Multiply by the ONES first.

$6 \times 4 = 24$ . The 4 is written in ONES column and the 2 is written on the first line (in the TENS column)

$6 \times 2 = 12$  and add on the 2. The 4 is written in the TENS column and the 1 is written on the first line (in the HUNDREDS column)

$6 \times 1 = 6$  and add on the 1. The 7 is written in the HUNDREDS column.

Now it's time to multiply by 20. Place a zero in the TENS column and then just multiply by 2.

$2 \times 4 = 8$ . Place the 8 in the TENS column.

$2 \times 2 = 4$ . Place the 4 in the HUNDREDS column.

$2 \times 1 = 2$ . Place the 2 in the THOUSANDS column.

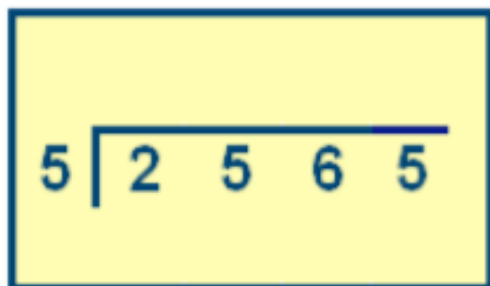
Finally, add the two rows of numbers together and place the answer in the answer bar.

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## DIVISION

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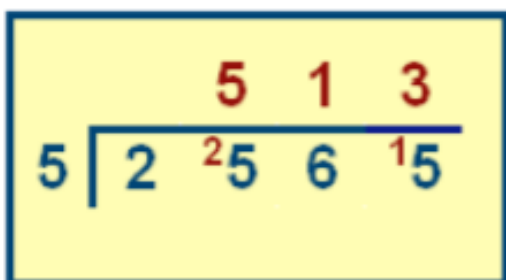
### SHORT



$$5 \overline{) 2565}$$

2565 divided by 5 is written like this.

The children may know this method as short division or 'the bus stop' method.



$$\begin{array}{r} 513 \\ 5 \overline{) 2565} \\ \underline{25} \phantom{00} \\ 6 \phantom{00} \\ \underline{15} \\ 0 \end{array}$$

To work this out, divide 5 into 2565 one digit at a time – starting with the digit 2 (which represents 2000 in 2565). The result of each division is written on the top of the line.

How many 5s are in 2? – There are none so the 2 is carried over into the next column. Now how many 5s are in 25? - There are 5. So, the 5 is written on top of the line.

Next: How many 5s are in 6? – There is 1. So, the 1 is written on top of the line. But there is 1 left over (a remainder) so this is carried over into the next column.

Finally, how many 5s are in 15? – There are 3. So, the 3 is written on top of the line.

2565 divided by 5 = 513.

## DIVISION

### LONG

$$15 \overline{) 8640}$$

This is the traditional way of long division. It is set out just like a short division (bus stop method)

Please note: we recommend that the children create a fact box to help them. As we are dividing by 15, the children would write down the 15 times table.

$$\begin{array}{r} 5 \\ 15 \overline{) 8640} \\ - 75 \\ \hline 11 \end{array}$$

To start, how many 15s are in 8? There are none so we look at the next digit.

How many 15s are in 86? There are 5. So, the 5 is written on the top line.

$15 \times 5 = 75$ . So, take 75 away from 86.  
 $86 - 75 = 11$ .

$$\begin{array}{r} 57 \\ 15 \overline{) 8640} \\ \underline{75} \phantom{0} \\ 114 \\ \underline{105} \\ 9 \end{array}$$

Next, carry the 4 down to make 114.

How many 15s are in 114? There are 7. So, the 7 is written on the top line.

$15 \times 7 = 105$ . So, take 105 away from 114.  
 $114 - 105 = 9$

$$\begin{array}{r} 576 \\ 15 \overline{) 8640} \\ \underline{75} \phantom{0} \\ 114 \\ \underline{105} \\ 90 \\ \underline{90} \\ 0 \end{array}$$

Next, carry the 0 down to make 90.

How many 15s are in 90? There are 6. So, the 6 is written on the top line.

$15 \times 6 = 90$ . So, take 90 away from 90.  
 $90 - 90 = 0$ .

ANSWER: 8640 divided by 15 = 576.

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## FACTORS, MULTIPLES AND PRIME NUMBERS

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**Factors** are numbers that divide exactly into another number. E.g. Factors of 12 include 1, 2, 3, 4, 6 and 12.

**Multiples** are really just extended times tables. Multiples of 2 always end in 0, 2, 4, 6, and 8.

**Prime numbers** are numbers that can only be divided by itself and 1. E.g. 2, 3, 5, 7, 11, 13, 17.

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## RATIO AND PROPORTION

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**Ratio** compares part: part



E.g. Yellow: Red = 2:5    Red: Yellow = 5:2

You can also **simplify** ratios. E.g. 6:4 can be simplified to 3:2,    12:18 can be simplified to 2:3

**Proportion** compares the part in relation to the whole. This is expressed as a fraction.



E.g. Proportion of triangles is 4 out of 11 =  $\frac{4}{11}$

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## ALGEBRA

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**Algebra** is all about solving puzzles with letters, numbers and symbols. It is about finding the unknown by using whatever information you are given.

$$a = 5 \text{ and } b = 3$$

$$3a + b = 18 \quad (3 \times 5 = 15 \quad 15 + 3 = 18)$$

$$5a - 3b = 16 \quad (5 \times 5 = 25 \quad 3 \times 3 = 9 \quad 25 - 9 = 16)$$

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## FRACTIONS

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A **denominator** is the bottom number of a fraction.

A **numerator** is the top number of a fraction.

**Equivalent** means the fractions are the same size or amount.

A **mixed number** has a whole number and a fractional part.

An **improper fraction** is when the numerator is larger than the denominator.

### Equivalent Fractions, Decimals and Percentages

$$1 \text{ whole} = 1.0 = 100\%$$

$$\frac{3}{4} = 0.75 = 75\%$$

$$\frac{1}{2} = 0.5 = 50\%$$

$$\frac{1}{4} = 0.25 = 25\%$$

$$\frac{1}{10} = 0.1 = 10\%$$

$$\frac{1}{100} = 0.01 = 1\%$$

**Percent** means 'out of 100' E.g. 40% = 40 out of 100 15% = 15 out of 100.

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## ANGLES

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An **acute angle** is less than  $90^\circ$

A **right angle** is exactly  $90^\circ$

An **obtuse angle** is between  $90^\circ$  and  $180^\circ$

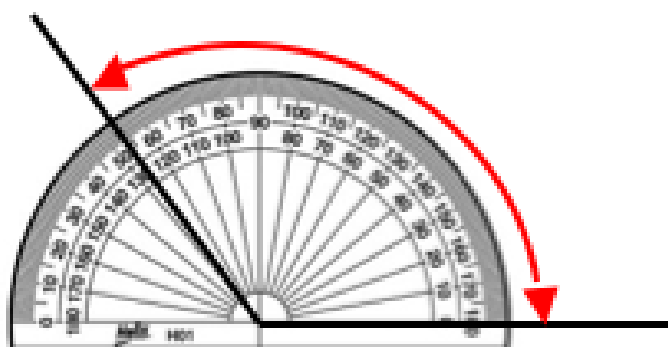
A **reflex angle** is between  $180^\circ$  and  $360^\circ$

A **complete turn** is  $360^\circ$

Angles in a **straight line** add up to  $180^\circ$

Angles in a **triangle** add up to  $180^\circ$

Use a protractor to **measure** angles accurately.



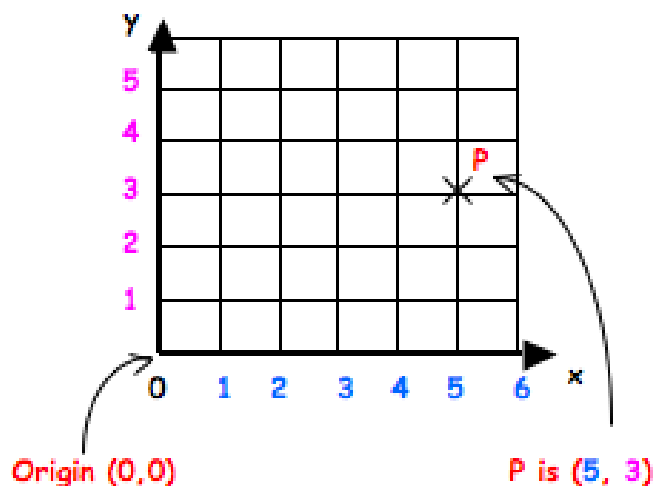
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## CO-ORDINATES

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When plotting co-ordinates, always go along the corridor first (**x axis**) then up or down the stairs (**y axis**)

Remember your brackets!




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## MEASUREMENT

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### Converting Metric Measurements

Length	Mass	Capacity	Time
10mm = 1cm	1000g = 1kg	10ml = 1 centilitre	60 seconds = 1 min
100cm = 1m	1 tonne = 1000kg	1000ml = 1 litre	60 mins = 1 hour
1000m = 1km			24 hours = 1 day

### Converting Imperial Measurements

Length	Mass	Capacity
2.5cm = 1 inch	1 ounce = 25g	1 pint = just over 1/2 litre
12 inches = 1 foot	16 ounces = 1 pound	8 pints = 1 gallon
1 foot = 30cm	1 pound = approx. 454g	1 gallon = 4.5 litres
1 mile = 1.5km		



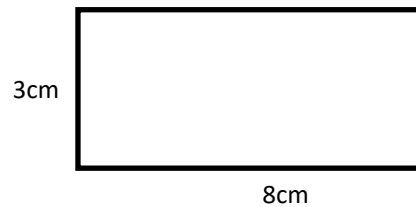
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## AREA & PERIMETER

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**Area** = length x width  
E.g.  $8 \times 3 = 24\text{cm}^2$

**Perimeter** = add all  
of the sides together  
E.g.  $8 + 3 + 8 + 3 = 22\text{cm}$



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## MEAN

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**Mean** (average) – add up all of the numbers and divide by how many numbers there are.

E.g.  $6 + 11 + 7 = 24$  24 divided by 3 = 8

## SOLVING PROBLEMS



**Read** the question. What is the important information?



**Understand** the question. What do you need to find out?



**Choose** the correct method of calculation and operation(s).



**Solve** the problem. Make sure you follow the steps.



**Answer** the question. What were you meant to find out?



**Check** your answer. Use the inverse to check your working out.