

# Parents' Information Booklet on the Teaching of Mathematics in Ashbourne CNS



5<sup>th</sup> & 6<sup>th</sup> Class

## Table of Contents

Introduction .....	3
What is included in the booklet? .....	3
4. Fifth and Sixth Class .....	3
4.1 Maths Approaches to Teaching Number .....	3
4.2 Recommended Websites .....	1111
4.3 Maths Vocabulary .....	12

## Introduction

The Numeracy Committee have compiled the information in this booklet to assist you and your child/ren when supporting their learning in mathematics in primary school. The booklet aims to simplify how Number is taught in Ashbourne CNS, and to clarify the methods, strategies and language that the staff of Ashbourne CNS employ to teach adding, subtracting, multiplying and dividing.

### What is included in the booklet?

1. Simple instructions with visual examples and video links for each of the four operations.
2. Links to websites so that you and your child/ren can practise key concepts that are being taught in class in a fun and interactive way at home. These websites have been collated according to class level of the pupil. Please note that games from class streams above or below may also be accessed depending on the ability of your child.
3. A list of maths vocabulary that the children are using for each topic of maths. These lists may be very useful to you and your child/ren when they are learning a new concept in maths. As you will notice the language gets progressively more difficult as the children move up the school, so it is imperative that they have a good understanding of maths vocabulary at every stage in their development to facilitate them in solving word problems in mathematics.

The Numeracy Committee hope that you find the information contained in this booklet practical and useful. If you have any further questions in relation to the teaching of mathematics, please contact your child/ren's class teacher.

## 4. Fifth and Sixth Class

### 4.1 Maths Approaches to Teaching Number

#### Long Multiplication

Long multiplication will be introduced as repeated addition in Third Class.

How many groups of 4 can you make out of 20?

$$4 + 4 + 4 + 4 + 4 = 20$$

$$5 \times 4 = 20$$

#### Long Multiplication Method

We are using the column method and children are encouraged to lay out their sums using one number per box in their copies. This helps with identifying correct place value of numbers.

#### Example

$$143$$

$$\underline{\times 13}$$

Step 1: Start by multiplying the units in the bottom number by the number on top. Remember to carry tens or hundreds when necessary.

$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{U} \\
 11 \quad 4 \quad 3 \\
 \times \quad 1 \quad \boxed{3} \\
 \hline
 4 \quad 2 \quad 9
 \end{array}$$

Step 2: Add your 'Magic Zero' (because we are multiplying by tens).

$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{U} \\
 11 \quad 4 \quad 3 \\
 \times \quad 1 \quad 3 \\
 \hline
 4 \quad 2 \quad 9 \\
 \phantom{4 \quad 2 \quad 9} 0
 \end{array}$$

Step 3: Multiply the tens in the bottom number by number on top. Remember to carry tens or hundreds when necessary.

$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{U} \\
 11 \quad 4 \quad 3 \\
 \times \quad \boxed{1} \quad 3 \\
 \hline
 4 \quad 2 \quad 9 \\
 1 \quad 4 \quad 3 \quad 0
 \end{array}$$

Step 4: Insert plus sign and add both lines together to get your answer. Remember to carry numbers when necessary.

$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{U} \\
 11 \quad 4 \quad 3 \\
 \times \quad 1 \quad 3 \\
 \hline
 4 \quad 2 \quad 9 \\
 + 1 \quad 4 \quad 3 \quad 0 \\
 \hline
 1 \quad 8 \quad 5 \quad 9
 \end{array}$$

Link to video demonstration: <https://www.khanacademy.org/math/arithmetic-home/multiply-divide/multi-digit-mult/v/multiplication-6-multiple-digit-numbers>

### Long Multiplication with Decimals

We are using the column method and children are encouraged to lay out their sums using one number per box in their copies. This helps students with identifying correct place value of numbers.

### Example

14.3

X 13

Step 1: Start by multiplying the units in the bottom number by the number on top. Remember to carry units or tens.

$$\begin{array}{r} 14.3 \\ \times 13 \\ \hline 429 \end{array}$$

Step 2: Add your 'Magic Zero' (because we are multiplying by tens).

$$\begin{array}{r} 14.3 \\ \times 13 \\ \hline 429 \\ 0 \end{array}$$

Step 3: Multiply the tens in the bottom number by the number on top. Remember to carry units or tens when necessary.

$$\begin{array}{r} 14.3 \\ \times 13 \\ \hline 429 \\ 1430 \end{array}$$

Step 4: Insert plus sign and add both lines together to get your answer. Remember to carry numbers when adding when necessary.

$$\begin{array}{r} 14.3 \\ \times 13 \\ \hline 429 \\ +1430 \\ \hline 1859 \end{array}$$

Step 5: Children are encouraged to check the numbers after the decimal point in the multiplication sum to figure out place value of their answer. Decimal is inserted in answer to represent this value.

$$\begin{array}{r}
 \phantom{1}^1 14.3 \\
 \times \phantom{1}^1 13 \\
 \hline
 429 \\
 +1430 \\
 \hline
 185.9
 \end{array}$$

Link to video demonstration: <https://www.khanacademy.org/math/algebra-basics/basic-alg-foundations/alg-basics-operations-with-decimals/v/multiplying-decimals>

### Long Division Method without Remainders

We are using the column method for long division. Children are encouraged to lay out their sums using one number per box in their copies. This helps with identifying correct place value of numbers.

$$15 \overline{)120}$$

Step 1: Divide 15 into 1 which goes 0 times. Write zero on top.

$$\begin{array}{r}
 0 \\
 15 \overline{)120} \\
 \underline{\phantom{0}15} \phantom{0} \\
 \phantom{0}70
 \end{array}$$

Step 2: Divide 15 into 12 which goes 0 times. Write number on top.

$$\begin{array}{r}
 00 \\
 15 \overline{)120} \\
 \underline{\phantom{00}15} \phantom{0} \\
 \phantom{00}70
 \end{array}$$

Step 3: Divide 15 into 120 and estimate how many times it will divide in. In this case we estimate that 15 will go in 8 times. Multiply 15 x 8 in rough work. Write 8 on top to show that 15 x 8 = 120.

$$\begin{array}{r}
 008 \\
 15 \overline{)120} \\
 \underline{\phantom{008}15} \phantom{0} \\
 \phantom{008}70
 \end{array}
 \quad
 \begin{array}{r}
 \text{R/W} \\
 \hline
 15 \\
 \times 8 \\
 \hline
 120
 \end{array}$$

Step 4: Subtract your answer (rough work) from 120 in long division sum to get the answer 0.

$$\begin{array}{r}
 008 \\
 15 \overline{)120} \\
 \underline{-120} \\
 000
 \end{array}$$

$15 \times 8 = 120$

Link to video demonstration: <https://www.khanacademy.org/math/cc-fourth-grade-math/division/multi-digit-division/v/long-division-without-remainder>

### Long Division Method with Remainder

We are using the column method for long division. Children are encouraged to lay out their sums using one number per box in their copies. This helps with identifying correct place value of numbers.

$$15 \overline{)125}$$

Step 1: Divide 15 into 1 which goes 0 times. Write zero on top.

$$\begin{array}{r}
 0 \\
 15 \overline{)125}
 \end{array}$$

Step 2: Divide 15 into 12 which goes 0 times. Write number on top.

$$\begin{array}{r}
 00 \\
 15 \overline{)125}
 \end{array}$$

Step 3: Divide 15 into 125 and estimate how many times it will divide in. In this case we estimate that 15 will go in 8 times. Multiply  $15 \times 8$  in rough work. Write 8 on top to show that  $15 \times 8 = 120$ .

$$\begin{array}{r}
 008 \\
 15 \overline{)125}
 \end{array}$$

R/W

$$\begin{array}{r}
 15 \\
 \times 8 \\
 \hline
 120
 \end{array}$$

Step 4: Subtract your 120 (rough work) from 125 in long division sum to get the answer 5.

$$\begin{array}{r}
 008 \\
 15 \overline{)125} \\
 -120 \\
 \hline
 005
 \end{array}$$

Step 5: Remember to write remainder as part of your answer. In this case it would be 8 R 5.

$$\begin{array}{r}
 008R5 \\
 15 \overline{)125} \\
 -120 \\
 \hline
 005
 \end{array}$$

Link to video demonstration: <https://www.khanacademy.org/math/cc-fifth-grade-math/multi-digit-multiplication-and-division/imp-multi-digit-division-2/v/dividing-by-a-two-digit-number>

### Long Division with Bigger Numbers with Remainders

We are using the column method for long division. Children are encouraged to lay out their sums using one number per box in their copies. This helps with identifying correct place value of numbers.

#### Example

$$24 \overline{)6423}$$

Step 1: Divide 24 into 6 which goes 0 times. Write zero on top.

$$\begin{array}{r}
 0 \\
 24 \overline{)6423} \\
 \hline
 \end{array}$$

Step 2: Divide 24 into 64 which goes 2 times. Multiply 24 x 2 to get 48.

$$\begin{array}{r}
 02 \\
 24 \overline{)6423} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 R/W \\
 24 \\
 \times 2 \\
 \hline
 48
 \end{array}$$

Step 3: Subtract 48 from 64.



$$\begin{array}{r} 02 \\ 24 \overline{) 6423} \\ \underline{-48} \\ 16 \end{array}$$

Step 4: Bring down tens digit. In this case it would be 2.

$$\begin{array}{r} 02 \\ 24 \overline{) 6423} \\ \underline{-48} \downarrow \\ 162 \end{array}$$

Step 5: Divide 24 into 162 and estimate how many times it will divide in. In this case we estimate that 24 will go in 6 times. Multiply 24 x 6 in rough work. Write 6 on top to show that 24 x 6 = 144.

$$\begin{array}{r} 026 \\ 24 \overline{) 6423} \\ \underline{-48} \downarrow \\ 152 \\ \underline{-144} \\ 08 \end{array} \quad \begin{array}{|l} \hline \text{RW} \\ \hline 24 \\ \times 6 \\ \hline 144 \\ \hline \end{array}$$

Step 6: Subtract your 144 (rough work) from 162 in long division sum.

$$\begin{array}{r} 026 \\ 24 \overline{) 6423} \\ \underline{-48} \downarrow \\ 152 \\ \underline{-144} \\ 018 \end{array}$$

Step 7: Remember to write remainder as part of your answer. In this case it would be 26 R 18.

$$\begin{array}{r} 026 \text{ R } 18 \\ 24 \overline{) 6423} \\ \underline{-48} \downarrow \\ 152 \\ \underline{-144} \\ 018 \end{array}$$

Link to video demonstration: <https://www.khanacademy.org/math/cc-fifth-grade-math/multi-digit-multiplication-and-division/imp-multi-digit-division-2/v/long-division-with-remainder-example>

## Long Division with Decimals

We are using the column method for long division. Children are encouraged to lay out their sums using one number per box in their copies. This helps with identifying correct place of numbers.

### Example

$$51 \overline{)173.4}$$

Step 1: Divide 51 into 1 which goes 0 times. Write zero on top.

$$\begin{array}{r} 0 \\ 51 \overline{)173.4} \\ \hline \end{array}$$

Step 2: Divide 51 into 17 which goes 0 times. Write number on top.

$$\begin{array}{r} 00 \\ 51 \overline{)173.4} \\ \hline \end{array}$$

Step 3: Divide 51 into 173 and estimate how many times it will divide in. In this case we estimate that 51 will go in 3 times. Multiply 51 x 3 in rough work. Write 3 on top to show that 51 x 3 = 153.

$$\begin{array}{r} 003 \\ 51 \overline{)173.4} \\ \hline \end{array} \quad \begin{array}{|c|} \hline \text{RW} \\ \hline 51 \\ \times 3 \\ \hline 153 \\ \hline \end{array}$$

Step 4: Subtract your 153 (rough work) from 173 in long division sum to get the answer 20.

$$\begin{array}{r} 003 \\ 51 \overline{)173.4} \\ - 153 \\ \hline 020 \end{array}$$

Step 5: Bring down 4 to make the number 204.

$$\begin{array}{r} 003 \\ 51 \overline{)173.4} \\ - 153 \\ \hline 020 \boxed{4} \end{array}$$

Step 6: Divide 51 into 204 and estimate how many times it will go in. In this case, we estimate that it will go 4 times. 51 x 4 = 204. Write up 4 on top.

$$\begin{array}{r}
 003.4 \\
 51 \overline{)173.4} \\
 \underline{-153} \downarrow \\
 020\boxed{4} \\
 \underline{-204} \leftarrow
 \end{array}$$

Step 7: Subtract 204 from 204 to get an answer of 0.

$$\begin{array}{r}
 003.4 \\
 51 \overline{)173.4} \\
 \underline{-153} \downarrow \\
 020\boxed{4} \\
 \underline{-204} \leftarrow \\
 000
 \end{array}$$

Link to video demonstration: <https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-arithmetic-operations/cc-6th-dividing-decimals/v/dividing-a-whole-number-by-a-decimal>

#### 4.2 Recommended Websites

Fifth/Sixth Class
<a href="https://www.topmarks.co.uk/Search.aspx?Subject=16">https://www.topmarks.co.uk/Search.aspx?Subject=16</a> <a href="http://www.math-drills.com">http://www.math-drills.com</a> <a href="https://www.ictgames.com/mobilePage/index.html">https://www.ictgames.com/mobilePage/index.html</a> <a href="https://www.jmathpage.com/wpjmp/">https://www.jmathpage.com/wpjmp/</a> <a href="http://www.ict.mic.ul.ie/maths.html">http://www.ict.mic.ul.ie/maths.html</a> <a href="https://www.senteacher.org/printables/mathematics/">https://www.senteacher.org/printables/mathematics/</a> <a href="http://nces.ed.gov/nceskids/createagraph/default.aspx">http://nces.ed.gov/nceskids/createagraph/default.aspx</a> <a href="http://www.superkids.com/aweb/tools/math/">http://www.superkids.com/aweb/tools/math/</a> <a href="http://www.homeschoolmath.net/worksheets/">http://www.homeschoolmath.net/worksheets/</a> <a href="http://www.aplusmath.com/Worksheets/index.html">http://www.aplusmath.com/Worksheets/index.html</a> <a href="http://themathworksheetsite.com/">http://themathworksheetsite.com/</a> <a href="https://nrich.maths.org/10334">https://nrich.maths.org/10334</a> <a href="https://www.haveyougotmathseyes.com/">https://www.haveyougotmathseyes.com/</a> <a href="https://ttrockstars.com/page/interactivetools">https://ttrockstars.com/page/interactivetools</a> <a href="https://www.arcademics.com/">https://www.arcademics.com/</a> <a href="http://www.xtramath.org/">http://www.xtramath.org/</a> <a href="https://lichess.org/">https://lichess.org/</a> <a href="https://ec.europa.eu/programmes/erasmus-plus/project-result-content/0c2dbd0a-9ddd-45cd-950c-0edbbe848894/50%20Chess%20and%20Mathematics">https://ec.europa.eu/programmes/erasmus-plus/project-result-content/0c2dbd0a-9ddd-45cd-950c-0edbbe848894/50%20Chess%20and%20Mathematics</a>

## 4.3 Maths Vocabulary

Fifth Class	Sixth Class
<b><i>Strand: Number</i></b>	<b><i>Strand: Number</i></b>
<p><b><u>Place Value</u></b></p> <ul style="list-style-type: none"> <li>• Expanded form</li> <li>• Write in words</li> <li>• Tens of thousands</li> <li>• 'combination'</li> <li>• What combination can you make with these numbers</li> <li>• Represent on an abacus</li> <li>• Put in ascending/descending order</li> <li>• What value is underlined digits (number)?</li> <li>• Number words and how to read e.g. One thousand, three and fifty-eight</li> <li>• Notation board</li> <li>• Abacus</li> <li>• Base 10 materials</li> </ul> <p><b><u>Addition</u></b></p> <ul style="list-style-type: none"> <li>• Increase by</li> <li>• How many more?</li> <li>• Altogether</li> <li>• Total</li> <li>• Sum of</li> <li>• Calculate</li> <li>• Regrouping</li> <li>• carry</li> </ul> <p><b><u>Subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Difference between</li> <li>• How many more apples are there than oranges?</li> <li>• How many more do you need?</li> <li>• Empty number line</li> <li>• Subtract</li> <li>• Take away</li> <li>• Less</li> <li>• Less than</li> <li>• Left</li> </ul>	<p><b><u>Place Value</u></b></p> <ul style="list-style-type: none"> <li>• Expanded form</li> <li>• Write in words</li> <li>• hundreds of thousands</li> <li>• 'combination'</li> <li>• What combination can you make with these numbers</li> <li>• Represent on an abacus</li> <li>• Put in ascending/descending order</li> <li>• What value is underlined digits (number)?</li> <li>• Number words and how to read e.g. Twenty-one thousand, three and fifty-eight</li> <li>• Notation board</li> <li>• Abacus</li> <li>• Base 10 materials</li> </ul> <p><b><u>Addition</u></b></p> <ul style="list-style-type: none"> <li>• Increase by</li> <li>• How many more?</li> <li>• Altogether</li> <li>• Total</li> <li>• Sum of</li> <li>• Calculate</li> <li>• Regrouping</li> <li>• carry</li> </ul> <p><b><u>Subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Difference between</li> <li>• How many more apples are there than oranges?</li> <li>• How many more do you need?</li> <li>• Empty number line</li> <li>• Subtract</li> <li>• Take away</li> <li>• Less</li> <li>• Less than</li> </ul>

- Fewer
- Operation
- Decrease
- Renaming
- If there are more on the floor, go next door and get ten more
- Numbers the same, zero your game

### **Multiplication**

- Method
- Long multiplication
- Decimal multiplication up to 3 places
- Times
- Count up in ...
- Make numbers 10 times bigger etc...
- multiples of
- times
- sets
- groups
- multiply by
- product
- magic zero

### **Division**

- Divisor
- Inverse
- How many ... are in ...
- Divisible by
- Share equally
- Remainder
- Divides equally into
- Split
- Distribute
- Share among
- Go into (long division)
- Division family (Dad divides, Mam multiplies, Sister subtracts, Brother bring down and Rover repeats)
- Rough work
- Estimate
- Round
- Calculator
- Check answers

### **Fractions**

- Equal piece of a whole

- Left
- Fewer
- Operation
- Decrease
- Renaming
- If there are more on the floor, go next door and get ten more
- Numbers the same, zero your game

### **Multiplication**

- Method
- Long multiplication
- Decimal multiplication up to 3 places
- Times
- Count up in ...
- Make numbers 10 times bigger etc...
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- groups
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### **Division**

- Divisor
- Inverse
- How many ... are in ...
- Divisible by
- Share equally
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- Divides equally into
- Split
- Distribute
- Share among
- Go into (long division)
- Division family (Dad divides, Mam multiplies, Sister subtracts, Brother bring down and Rover repeats)
- Rough work
- Estimate
- Round
- Calculator
- Check answers

### **Fractions**

- Compare fractions
- Improper fractions
- Mixed numbers
- Proper fractions
- Common denominator
- Lowest common denominator
- Express ... as a fraction of ...
- Convert
- Simplify
- Cancel
- Equivalent
- Find the whole number if a one quarter equals 3.
- Greater than
- Less than

### Decimals

- Column headings – hundreds of thousands (hth), tens of thousands (tth), thousands (th), hundreds (h), tens (t) and Units(u) decimal point (.) tenths ( $1/10$ ), hundredths ( $1/100$ ) and thousandths ( $1/1000$ ).
- Line up decimal points

### Percentages

- Percent
- Percentage
- Conversion table
- Express
- Discount
- Interest rate
- VAT
- Shrink
- Sale

### Number theory

- Odd and even
- Factor
- Product
- Number sentence
- Prime and composite
- Square number
- Rectangular number
- Triangular
- Exponential form
- To the power of

- Equal piece of a whole
- Compare fractions
- Improper fractions
- Mixed numbers
- Proper fractions
- Common denominator
- Lowest common denominator
- Express ... as a fraction of ...
- Convert
- Simplify
- Cancel
- Equivalent
- Find the whole number if a one quarter equals 3.
- Greater than
- Less than

### Decimals

- Column headings – millions (m), hundreds of thousands (hth), tens of thousands (tth), thousands (th), hundreds (h), tens (t) and units(u) decimal point (.) tenths ( $1/10$ ), hundredths ( $1/100$ ) and thousandths ( $1/1000$ ).
- Line up decimal points

### Percentages

- Percent
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### Number theory

- Odd and even
- Factor
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- Number sentence
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- Square number
- Rectangular number
- Triangular

<ul style="list-style-type: none"> <li>• Squared <sup>2</sup></li> <li>• Cubed <sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Exponential form</li> <li>• To the power of</li> <li>• Squared <sup>2</sup></li> <li>• Cubed <sup>3</sup></li> </ul>
<b><i>Strand: Algebra</i></b>	<b><i>Strand: Algebra</i></b>
<p><b><u>Directed numbers</u></b></p> <ul style="list-style-type: none"> <li>• Positive / negative numbers</li> <li>• Increase /decrease</li> <li>• Temperatures / degrees</li> <li>• Thermometers</li> <li>• Plus / minus</li> </ul> <p><b><u>Rules and Properties</u></b></p> <ul style="list-style-type: none"> <li>• Operations</li> <li>• Calculations</li> <li>• Symbols</li> <li>• B (Brackets) O (Order) M (Multiplication) D (Division) A (Addition) S (Subtraction) – BOMDAS</li> </ul> <p><b><u>Equations</u></b></p> <ul style="list-style-type: none"> <li>• Equation</li> <li>• Mathematical sign</li> <li>• X,y,...</li> <li>• value of Solve Term[s]</li> </ul>	<p><b><u>Directed numbers</u></b></p> <ul style="list-style-type: none"> <li>• Positive / negative numbers</li> <li>• Increase /decrease</li> <li>• Temperatures / degrees</li> <li>• Thermometers</li> <li>• Plus / minus</li> </ul> <p><b><u>Rules and Properties</u></b></p> <ul style="list-style-type: none"> <li>• Operations</li> <li>• Calculations</li> <li>• Symbols</li> <li>• B (brackets) O (Order) M (Multiplication) D (Division) A (Addition) S (Subtraction) – BOMDAS</li> </ul> <p><b><u>Equations</u></b></p> <ul style="list-style-type: none"> <li>• Equation</li> <li>• Mathematical sign</li> <li>• X,y,...</li> <li>• value of Solve Term[s]</li> </ul>
<b><i>Strand: Shape and Space</i></b>	<b><i>Strand: Shape and Space</i></b>
<p><b><u>2D Shapes</u></b></p> <ul style="list-style-type: none"> <li>• Polygon</li> <li>• Nonagon (9 sided)</li> <li>• Decagon (10 sided)</li> <li>• Dodecagon (12 sided)</li> <li>• Edge</li> <li>• Corners</li> <li>• Quadrilateral</li> <li>• Angles</li> <li>• Tessellate</li> <li>• Properties</li> <li>• Regular</li> <li>• Irregular</li> <li>• Equilateral triangle</li> </ul>	<p><b><u>2D Shapes</u></b></p> <ul style="list-style-type: none"> <li>• Polygon</li> <li>• Nonagon (9 sided)</li> <li>• Decagon (10 sided)</li> <li>• Dodecagon (12 sided)</li> <li>• Edge</li> <li>• Corners</li> <li>• Quadrilateral</li> <li>• Angles</li> <li>• Tessellate</li> <li>• Properties</li> <li>• Regular</li> <li>• Irregular</li> <li>• Equilateral triangle</li> </ul>

- Scalene triangle
- Isosceles triangle

### The Circle

- Circumference
- Centre point
- Radius
- Radii
- Diameter
- Arc
- Chord
- sector
- Minor chord
- Major chord
- Compass
- $\pi$  (pi) = 3.14
- Circumference = diameter x 3.14

### 3D shapes

- Tetrahedron
- Polyhedron
- Congruent
- Vertex
- Vertices
- Lines
- Face
- Perspective
- Properties

### Symmetry

- Symmetrical
- Asymmetrical
- Lines of symmetry
- Horizontal
- vertical

### Lines and Angles

- Outer scale
- Inner scale
- Protractor
- Straight angle
- Obtuse angle
- Reflex angle

- Scalene triangle
- Isosceles triangle

### The Circle

- Circumference
- Centre point
- Radius
- Radii
- Diameter
- Arc
- Chord
- sector
- Minor chord
- Major chord
- Compass
- $\pi$  (pi) = 3.14
- Circumference = diameter x 3.14

### 3D Shapes

- Tetrahedron
- Polyhedron
- Congruent
- Vertex
- Vertices
- Lines
- Face
- Perspective
- Properties
- Dodecahedron
- Decahedron

### Symmetry

- Symmetrical
- Asymmetrical
- Lines of symmetry
- Horizontal
- vertical

### Lines and Angles

- Outer scale
- Inner scale
- Protractor
- Straight angle
- Obtuse angle



<ul style="list-style-type: none"> <li>• Right angle</li> <li>• Full/half/quarter rotation</li> <li>• degrees°</li> <li>• Rotate clockwise/anti clockwise</li> <li>• Perpendicular</li> <li>• Parallel</li> <li>• Construct</li> <li>• 3 angles of a triangle = 180°</li> </ul>	<ul style="list-style-type: none"> <li>• Reflex angle</li> <li>• Right angle</li> <li>• Full/half/quarter rotation</li> <li>• degrees°</li> <li>• Rotate clockwise/anti clockwise</li> <li>• Perpendicular</li> <li>• Parallel</li> <li>• Construct</li> <li>• 3 angles of a triangle = 180°</li> </ul>
<p><b><i>Strand: Measures</i></b></p>	<p><b><i>Strand: Measures</i></b></p>
<p><b><u>Length</u></b></p> <ul style="list-style-type: none"> <li>• Millimetres (mm)</li> <li>• Centimetres (cm)</li> <li>• Metres (m)</li> <li>• Kilometres (km)</li> <li>• instrument of measurement</li> <li>• distance</li> <li>• units of measurement – ruler, metre stick, metre strip, trundle wheel</li> <li>• Converting</li> <li>• Dimensions</li> <li>• Perimeter</li> <li>• Length</li> <li>• Width</li> </ul> <p><b><u>Area</u></b></p> <ul style="list-style-type: none"> <li>• Area = Amount of space taken up by an item’s surface</li> <li>• Compound shape</li> <li>• cm<sup>2</sup>, m<sup>2</sup> and km<sup>2</sup></li> <li>• squared units</li> <li>• partition (each shape)</li> <li>• Area = length x breadth</li> </ul> <p><b><u>Weight</u></b></p> <ul style="list-style-type: none"> <li>• spring balance</li> <li>• weighbridge</li> <li>• unit of measurement – grams (g) and kilograms (kg)</li> <li>• lighter/lightest</li> <li>• heavier/heaviest</li> </ul>	<p><b><u>Length</u></b></p> <ul style="list-style-type: none"> <li>• Millimetres (mm)</li> <li>• Centimetres (cm)</li> <li>• Metres (m)</li> <li>• Kilometres (km)</li> <li>• instrument of measurement</li> <li>• distance</li> <li>• units of measurement – ruler, metre stick, metre strip, trundle wheel</li> <li>• Converting</li> <li>• Dimensions</li> <li>• Perimeter</li> <li>• Length</li> <li>• width</li> </ul> <p><b><u>Area</u></b></p> <ul style="list-style-type: none"> <li>• Area = Amount of space taken up by an item’s surface</li> <li>• Compound shape</li> <li>• cm<sup>2</sup>, m<sup>2</sup> and km<sup>2</sup></li> <li>• squared units</li> <li>• partition (each shape)</li> <li>• Area = length x breadth</li> </ul> <p><b><u>Weight</u></b></p> <ul style="list-style-type: none"> <li>• spring balance</li> <li>• weighbridge</li> <li>• unit of measurement – grams (g) and kilograms (kg)</li> <li>• lighter/lightest</li> <li>• heavier/heaviest</li> </ul>

<ul style="list-style-type: none"> <li>• instrument of measurement – spring balance, balance scales, weighing scales</li> <li>• record</li> <li>• express</li> <li>• order</li> </ul>	<ul style="list-style-type: none"> <li>• instrument of measurement – spring balance, balance scales, weighing scales</li> <li>• record</li> <li>• express</li> <li>• order</li> </ul>
<p><b><u>Capacity</u></b></p> <ul style="list-style-type: none"> <li>• units of measurement – millilitres (ml), litres (l)</li> <li>• Instrument of measurement – bottle, jug, cup, tin etc.</li> <li>• graduated cylinder / jug</li> <li>• quantity</li> <li>• decimal fraction of a litre</li> <li>• container</li> <li>• fraction of a litre</li> </ul>	<p><b><u>Capacity</u></b></p> <ul style="list-style-type: none"> <li>• units of measurement – millilitres (ml), litres (l)</li> <li>• Instrument of measurement – bottle, jug, cup, tin etc.</li> <li>• graduated cylinder / jug</li> <li>• quantity</li> <li>• decimal fraction of a litre</li> <li>• container</li> <li>• fraction of a litre</li> </ul>
<p><b><u>Time</u></b></p> <ul style="list-style-type: none"> <li>• 24-hour clock – digital clock</li> <li>• Counting in 5-minute intervals</li> <li>• Count forward</li> <li>• count back</li> <li>• Minutes before/after ....</li> <li>• x hundred hours</li> <li>• 12-hour clock – analogue clock</li> <li>• Millennium</li> <li>• Decade</li> <li>• Fortnight</li> <li>• Months of the year</li> <li>• Days of the week</li> <li>• Times of the day -Dawn, morning, mid-morning, midday, lunchtime, afternoon, evening, dusk, night-time, midnight</li> <li>• a.m./p.m.</li> <li>• Convert/change hours into minutes and vice versa</li> <li>• timetable</li> </ul>	<p><b><u>Time</u></b></p> <ul style="list-style-type: none"> <li>• 24-hour clock – digital clock</li> <li>• Counting in 5 -minute intervals</li> <li>• Count forward</li> <li>• count back</li> <li>• Minutes before/after ....</li> <li>• x hundred hours</li> <li>• 12-hour clock – analogue clock</li> <li>• Millennium</li> <li>• Decade</li> <li>• Fortnight</li> <li>• Months of the year</li> <li>• Days of the week</li> <li>• Times of the day -Dawn, morning, mid-morning, midday, lunchtime, afternoon, evening, dusk, night-time, midnight</li> <li>• a.m./p.m.</li> <li>• Convert/change hours into minutes and vice versa</li> <li>• timetable</li> </ul>
<p><b><u>Money</u></b></p> <ul style="list-style-type: none"> <li>• unitary method</li> <li>• unit pricing</li> <li>• quantity</li> <li>• euro</li> <li>• cent</li> <li>• sale</li> <li>• change</li> </ul>	<p><b><u>Money</u></b></p> <ul style="list-style-type: none"> <li>• unitary method</li> <li>• unit pricing</li> <li>• quantity</li> <li>• euro</li> <li>• cent</li> <li>• sale</li> <li>• change</li> </ul>

<ul style="list-style-type: none"> <li>• value for money</li> <li>• hourly and daily pay rates</li> </ul>	<ul style="list-style-type: none"> <li>• value for money</li> <li>• hourly and daily pay rates</li> <li>• original price</li> <li>• sale price</li> <li>• VAT – Valued Added Tax</li> <li>• Converting currency</li> </ul>
<p><b><i>Strand: Data</i></b></p>	<p><b><i>Strand: Data</i></b></p>
<p><b><u>Representing and Interpreting Data</u></b></p> <ul style="list-style-type: none"> <li>• Single/Multiple bar line graphs</li> <li>• Pictograms</li> <li>• vertical bar chart</li> <li>• horizontal bar chart</li> <li>• Pie Charts</li> <li>• Scale interval</li> <li>• x/y axis</li> <li>• average</li> <li>• frequently</li> <li>• table</li> <li>• results table</li> <li>• display</li> </ul> <p><b><u>Chance</u></b></p> <ul style="list-style-type: none"> <li>• Likelihood of occurrences – definitely, likely, unlikely, possible, impossible</li> <li>• Heads or tails</li> <li>• Outcome Out of (5)</li> <li>• Predict</li> <li>• Combinations</li> <li>• Frequency charts and graphs</li> <li>• Tally</li> </ul>	<p><b><u>Representing and Interpreting Data</u></b></p> <ul style="list-style-type: none"> <li>• Single/Multiple bar line graphs</li> <li>• Pictograms</li> <li>• vertical bar chart</li> <li>• horizontal bar chart</li> <li>• Pie Charts</li> <li>• Trend graphs</li> <li>• Scale interval</li> <li>• x/y axis</li> <li>• average</li> <li>• frequently</li> <li>• table</li> <li>• results table</li> <li>• display</li> </ul> <p><b><u>Chance</u></b></p> <ul style="list-style-type: none"> <li>• Likelihood of occurrences – definitely, likely, unlikely, possible, impossible</li> <li>• Heads or tails</li> <li>• Outcome Out of (5)</li> <li>• Predict</li> <li>• Combinations</li> <li>• Frequency charts and graphs</li> <li>• Tally</li> </ul>