



Whole School Plan

For

Maths



AN ROINN
OIDEACHAIS AGUS SCILEANNA
DEPARTMENT OF
EDUCATION AND SKILLS



Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

General				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Aims and Objectives	<p>The aims of the primary mathematics curriculum are:</p> <ul style="list-style-type: none"> • to develop a positive attitude towards mathematics and an appreciation of both its practical and its aesthetic aspects • to develop problem-solving abilities and a facility for the application of mathematics to everyday life • to enable the child to use mathematical language effectively and accurately • to enable the child to acquire an understanding of mathematical concepts and processes to his/her appropriate level of development and ability • to enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts <p>Broad objectives:</p> <p>When due account is taken of intrinsic abilities and varying circumstances, my mathematics curriculum will enable the child to develop the skills to:</p> <ul style="list-style-type: none"> • apply mathematical concepts and processes, and plan and implement solutions to problems, in a variety of contexts • communicate and express mathematical ideas, processes and results in oral and written form • make mathematical connections within mathematics itself, throughout other subjects, and in applications of mathematics in practical everyday contexts 			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> • reason, investigate and hypothesise with patterns and relationships in mathematics • implement suitable standard and non-standard procedures with a variety of tools and manipulatives recall and understand mathematical facts <p>Number</p> <p>understand, develop and apply place value in the denary system</p> <ul style="list-style-type: none"> • understand and use the properties of number • understand the nature of the four number operations and apply them appropriately • approximate, estimate, calculate mentally and recall basic number facts • use acquired concepts, skills and processes in problem-solving <p>Algebra</p> <ul style="list-style-type: none"> • explore, perceive, use and appreciate patterns and relationships in numbers • acquire an understanding of properties and rules concerning algebraic expressions • solve simple linear equations <p>Shape and space</p> <ul style="list-style-type: none"> • develop a sense of spatial awareness • investigate, recognise, classify and describe the properties of lines, two-dimensional and three-dimensional shapes • deduce informally relationships and rules about shape • combine, tessellate and partition two-dimensional shapes • draw, construct and manipulate two-dimensional and three-dimensional shapes • identify symmetry in shapes and identify shape and symmetry in the
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>environment</p> <ul style="list-style-type: none"> describe direction and location using body-centred (left/right, forward/back) and simple co-ordinate geometry use acquired concepts, skills and processes in problem-solving <p>Measures</p> <ul style="list-style-type: none"> know, select and use appropriate instruments of measurement estimate, measure and calculate length, area, weight, capacity using non-standard and appropriate metric units of measurement estimate, measure and calculate time and money using nonstandard and appropriate units of measurement recognise and appreciate measures in everyday use use acquired concepts, skills and processes in problem-solving <p>Data</p> <ul style="list-style-type: none"> collect, classify, organise and represent data using concrete materials and diagrammatic, graphical and pictorial representation read, interpret and analyse tables, graph diagrams & bar charts, use acquired concepts, skills and processes in problem-solving.
<p>Language – Concepts/ Skills</p>	<p>There is a strong link between language and concept acquisition. We feel it is important to have a common approach to the terms used and the correct use of symbol names. This language has been agreed at whole school level in order to ensure consistency from one class to the next and also to help avoid confusion for children having difficulties with Mathematics. Our agreed strategies/language are the following;</p> <p>Juniors: <i>Addition-</i> No signs used , language; and, makes, add, is the same as, altogether makes</p> <p>Seniors:</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>Addition</i> - Introduction of sign + =, vocabulary; plus, equals</p> $\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$ <p>Top down: 2 plus 1 equals 3 2 + 1 equals 3</p> <p>2+1 =3 reads 2 plus 1 equals 3 or 2 and 1 makes 3</p> <p>First Class: <i>Subtraction</i> - is introduced as a symbol in First class Language: take away, less than, left</p> $\begin{array}{r} 16 \\ - 4 \\ \hline 16 \end{array}$ <p>Vertical: start from the top using the words ‘take away’ take away four equals</p> <p>5 – 1= Horizontal: Read from left to right using the words ‘take away’ 5 take away 1 equals</p> <p>Second Class: <i>Addition;</i> 7+3+8= 18 7 plus 3 plus 8 equals 18 (7plus 3 equals 10 plus 8 equals 18)</p> $\begin{array}{r} 6 \\ + 3 \\ \hline 9 \end{array}$ <p>6 plus 3 plus 6 encourage 6 + 6 + 3</p> <p><i>Subtraction;</i> Language :regrouping, borrow, subtraction, decrease, subtract, take away, from, less than, minus, difference</p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

27

$\begin{array}{r} -187 \\ \text{take away } 8 \\ \hline \end{array}$ I cannot do so I change a 'ten' to ten units, $7+10=17$. 17 take 8 equals 9. 1 take away 1 leaves 0 (*Handy rhyme-More on the top, No need to stop, More on the floor, Borrow next door*)

Third/Fourth Class:

Rounding: Rhyme

1, 2, 3 and 4 hey, ho, down we go

5, 6, 7 8 and 9 hey, ho up we go

Half way there which way we go?

Round me up hey, ho, ho.

Multiplication/ Division

÷ and x are introduced as symbols in Third Class. The following vocabulary will be used:

÷ division, divide, divided by, split, share, shared between, group, how many in ...

X multiplication, multiply, times, of

Short multiplication

Multiply top row by single digit in order, starting with units, then tens, then 100's

Long multiplication

From bottom, units first. Language as above. Carry box used to distinguish the number carried over to be added, from the number being multiplied.

Multiply by 10

When multiplying by 10, move digit one place to the left and replace the space with zero to show that the number was

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>increased exponentially to the power of 10.</p> <p><i>Multiply by 100</i></p> <p>Add two zeros</p> <p><i>Division</i></p> <p>Language: Divisible by/ not divisible by, share among</p> <p>$12 \div 4$ all signs used \div, / etc. 12 shared among 4 12 divided by groups of 4 Repeated subtraction.</p> <p><i>Fractions</i></p> <p>$\frac{1}{4}$ of 32 $\frac{7}{2}$ Share 32 among 4 and/or 32 divided by 4 7 divided by 2</p> <p>$\frac{1}{2}$ is equivalent to $\frac{2}{4}$ (4th class) $\frac{1}{2}$ is the same as $\frac{2}{4}$ $\frac{1}{2}$ is equal to $\frac{2}{4}$</p> <p><i>Decimals</i></p> <p>$\frac{1}{10}$ is equal to 0.1 $\frac{1}{100}$ is equal to 0.01 <i>Include zero before decimal point</i></p> <p><i>Tesselation</i></p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Fit together with no spaces

Fifth and Sixth Class

Number: Multiplication/Division

Language: square, prime, composite, rectangular numbers.

Finding common multiples by listing numbers

Finding common factors by listing factors

The words 'product' and 'quotient' are introduced. Problems involving sum, difference, products, quotients

Fractions:

All children are taught to MEMORISE TABLE OF EQUIVALENT FRACTIONS, DECIMALS AND PERCENTAGES (see attached) ??

Numerator, denominator

$$\frac{1}{2} + \frac{1}{4} = \frac{\quad}{4} + \frac{\quad}{4} = \frac{\quad}{4}$$

$$\frac{1}{2} - \frac{1}{4} = \frac{\quad}{4} - \frac{\quad}{4} = \frac{\quad}{4}$$

Mixed numbers

+ and -

$$3\frac{1}{2} - 1\frac{3}{4} =$$

Initially the children will be asked to deduce/hypothesise for themselves how to solve the addition and subtraction of mixed numbers. Those experiencing difficulties in this, through guided discovery by the teacher will be exposed to the following methods and from there will deduce the method they find logical to their thinking.

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<i>Addition of fractions</i>	<i>Subtraction of fractions</i>
	Method one:	Method one:
	(a) $1\frac{1}{2} + 2\frac{5}{8} =$	(a) $3\frac{1}{3} - 1\frac{7}{9} =$
	$1\frac{4}{8} + 2\frac{5}{8} = 3\frac{9}{8} = 4\frac{1}{8}$	$2\frac{12}{9} - 1\frac{7}{9} =$
	(b) $1\frac{1}{2}$	$1\frac{5}{9}$
	$+ 2\frac{5}{8}$	(b) $3\frac{1}{3}$
	$1\frac{4}{8}$	$\underline{1\frac{7}{9}}$
	$+ 2\frac{5}{8}$	
	$3\frac{9}{8} = 4\frac{1}{8}$	$2\frac{12}{9}$
	Method two:	$\underline{1\frac{7}{9}}$
	(a) $1\frac{1}{2} + 2\frac{5}{8} = 6/4 \text{ and } 21/8$	$1\frac{5}{9}$
	$\underline{12 + 21} = 33$	Method two:
	$8 \quad 8 = 4\frac{1}{8}$	$3\frac{1}{3} - 1\frac{7}{9} = 10/3 - 16/9$
	(b) $1\frac{1}{2} + 2\frac{5}{8} = 1\frac{4}{8} + 2\frac{5}{8}$	$\underline{30 - 16} = \underline{14} = 1\frac{5}{9}$
	$= 12/8 + 21/8 = 33/8 = 4\frac{1}{8}$	$9 \quad 9$

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Multiplication

$\frac{1}{3} \times \frac{1}{5}$ Multiply top number by top number
Bottom number by bottom number
Simplify/ break down

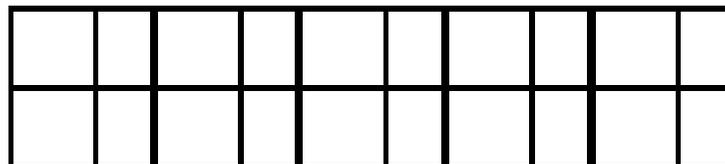
Division of whole number by fraction:

$5 \div \frac{1}{4} =$

Change your whole number into a fraction and turn your second fraction upside down and multiply.

How many quarters in 5 units $\frac{5}{1} \times \frac{4}{1} = \frac{20}{1}$

Visual aids used by teacher (see below)



Interactive board very valuable resource in teaching fractions

Decimals

$\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$ – tenths, hundredths, thousandths

Addition

Subtraction

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>to 3 decimal places (with/without calculator)</p> <p><i>Rounding decimals</i></p> <p>to the nearest whole number to 1 decimal place to 2 decimal places</p> <p><i>Multiplication of decimals</i></p> <p>Multiplying a decimal by a whole number Multiplying a decimal by a decimal Count the numbers behind the decimal points in the question and make sure that there are the same amount of numbers behind the decimal point in the answer. Multiply the divisor by 10/100 to change to whole number. If you multiply the divisor by 10/100 you must multiply the quotient by 10/100.</p> <p><i>Division by decimals</i></p> <p>You divide the numerator by the denominator (divide the top by the the bottom) or if possible you change the number to tenths/ hundredths and then convert to decimal. Look out for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{100}$</p> <p>Converting a fraction to a decimal</p> <p><i>Percentages</i> Converting a fraction to a percentage</p> <p>You multiply by a 100/1 or if possible you change the fraction to hundredths.</p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>Time</i></p> <p><i>Addition</i></p> <p>Add minutes to minutes Hours to hours and simplify (changing minutes to hours)</p> <p><i>Subtraction</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">hrs.</td> <td style="text-align: right;">mins.</td> <td style="text-align: right;">hrs.</td> <td style="text-align: right;">mins.</td> </tr> <tr> <td style="text-align: right;">3</td> <td style="text-align: right;">15</td> <td style="text-align: right;">2</td> <td style="text-align: right;">75</td> </tr> <tr> <td style="text-align: right;"><u>-2</u></td> <td style="text-align: right;"><u>33</u></td> <td style="text-align: right;"><u>-2</u></td> <td style="text-align: right;"><u>33</u></td> </tr> </table> <p>If minutes number is bigger on the bottom line, convert... Take hour and change to 60 minutes. Add to other minutes and rewrite sum.</p> <p><i>Co-ordination</i></p> <p>Introduce (x,y) axis Explain x comes before y in the alphabet. This will help them remember which comes first.</p> <p><i>Area</i></p> <p>Rectangle/ square Length x width (l x w). breadth = width</p> <p>Ares (1 Are = 100m, 1 hectare = 10,000m) Relationship of sq.m to sq.cm. Area of room from scale plan</p>	hrs.	mins.	hrs.	mins.	3	15	2	75	<u>-2</u>	<u>33</u>	<u>-2</u>	<u>33</u>
hrs.	mins.	hrs.	mins.										
3	15	2	75										
<u>-2</u>	<u>33</u>	<u>-2</u>	<u>33</u>										

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>Surface area Find the area of one face. Count the faces and multiply by no. of faces. Cube and Cuboid</p> <p>Circle Radius, diameter, circumference, arc, sector, Relate the diameter of a circle to its circumference by measurement. Measure the circumference of a circle using a piece of string. Construct a circle of given radius/diameter Examine area by counting squares.</p> <p>Length</p> <p>Irregular Shapes Look for regular shapes. Divide the shape and draw diagrams. Add areas a, b and c.</p> <p>Lines and Angles Right angle, acute, obtuse, reflex, straight, degrees, protractor, ruler</p> <p>2D shapes Sum of the angles in a triangle = 180 Sum of the angles in a quadrilateral = 360 Sum of angles in a circle = 360</p> <p>3D shapes</p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	Identify regular tetrahedrons, nets, construction
Tables	<p>Addition facts up to 10 will be memorised by the end of Second Class, and multiplication facts up to 12 by the end of Fourth Class. Both will be revised up to the end of Sixth Class. Multiplication is a natural progression from extended addition e.g. 3 groups of 3, 4 groups of 3, 5 groups of 3 etc. Thus tables are recited throughout the school as follows: $3 \times 3 = 9$ (three threes nine), $4 \times 3 = 12$ (four threes 12), $5 \times 3 = 15$ (five threes fifteen). All teachers are expected to teach tables this way in order to ensure consistency and avoid confusion as children move from one class to the next.</p> <p>A variety of methods will be used including counting 2s, 3s, 4s ..., reciting, using music tapes etc. Subtraction and division tables will be taught as the inverse of addition and multiplication.</p> <p>Children from 2nd – 4th classes recite their tables regularly and tables are reinforced every day. Children are encouraged to memorise tables and tables are given every night for homework. Class teachers identify children having difficulties with tables and with them set realistic targets ensuring steady progression. Children will have their tables discretely assessed (to avoid embarrassment) using teacher observation and weekly tests. Tables are continuously revised in 5th and 6th classes both incidentally through operations of various concepts/ core objectives but also formally through evaluations and games;eg "Fizz Buzz", "Around the World! etc.</p>
Children with Different Needs	<p>The Maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying pace, content and methodologies to ensure learning for all children. Teachers are cautious not to label children as having difficulties in Mathematics especially in Junior and Senior Infants. Records are stored in line with the school's policy on Record Keeping.</p> <p>Those children who receive scores at or below the 10th percentile(Sten 3) on the standardised tests will have priority in attending the Learning Support teacher for supplementary teaching for Maths. The SEN Teachers take pupils from 2nd Class-5/6thclass each day to cover the programme with a smaller group needing extra tuition. . Arrangement will be in accordance with the recommended selection criteria as determined by the DES.</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>Class teachers of New Irish children and children from the travelling community will ensure appropriate Maths language is covered in class. Children in Junior Infants, Senior Infants and First Class do not attend Learning Support for Maths. We introduced the Ready Set Go Maths Programme in the Infant Classes in 2014.</p> <p>If a child is already attending the Learning support teacher for English, it may be possible, on occasion, for the child to receive some help with his/her Maths work as part of the supplementary teaching sessions.</p> <p>Children with exceptional ability in Maths will be given extra work based on the concept being taught in class. ICT allows children to work at their own level and challenges children of all abilities. Parents will be consulted and opportunities for further development will be explored i.e contact Centre for Talented Youth. Teachers should keep a record of the differentiated approach adopted for these children also.</p>
Time-table	Two hours and 15 minutes for Mathematics is allocated for Infant classes. Class teachers' time-tables must record this time allocation form Mathematics. There is one hour discretionary time allocated for infant classes each week and this can occasionally be used for Maths.
Maths Workshops	Maths Workshops are set up during Maths Week in October. Juniors workshop take place in the library and Seniors in the Computer room. These cover all strands and timetable is given to all classes.
Homework	Refer to Homework Policy
ICT	<p>Calculators</p> <p>From fourth class upwards children are permitted to use calculators alongside traditional paper-and-pencil methods. Calculators are particularly useful for handling larger numbers, to check answers, to explore the number system, to remove computational barriers for weaker children. They also allow the child to focus on the structure of the problem solving</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>questions. It is important that the skill of estimation is developed along with the use of the calculator. Calculators should meet the following requirements:</p> <ul style="list-style-type: none"> • Calculators (50 in total) were purchased during the 2012 – 2013 school year. It is intended that each child would have the use of a calculator at some stage during the school year. (If parents wish to buy a calculator they must ensure the calculator uses Algebraic Logic as opposed to Arithmetic Logic. Algebraic logic uses priorities in sequences of operation which we call BOMDAS -brackets, of, multiplication, division, addition and subtraction) • Keys should be of a reasonable size and have a positive click action • They must have a display of at least 8 digits and be large enough for two or three children to see • They should have a memory function
Individual Teachers' Planning	Teachers should base their yearly and short term plans on the approaches set out in this whole school plan for Maths. Work covered will be outlined in the Cuntas Míosúil which will be submitted to the principal.
Staff Development	Teachers are made aware of any opportunities for further professional development through participation in courses available in Education Centres or other venues. Skills and expertise within the school are shared and developed through inputs at staff meetings
Parental Involvement	<p>Parents are encouraged to support the school's programme for Maths. Meetings for parents take place in February. At these meeting parents will be informed of the Maths programme for the year. Particular attention will be drawn to:</p> <ul style="list-style-type: none"> • The importance of trial and error, estimation, the use of concrete materials and the role of calculators • The school's approach to e.g. subtraction, division, calculations using fractions.. • The fact that Maths homework may be used on practical activities • The use of the Homework Journals as a vehicle for two-way communication between teacher and parent on progress in Mathematics or other issues.
Success Criteria	The success of this plan will be measured using the following criteria:

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> • On-going assessment, formal and informal, will show that pupils are acquiring an understanding of mathematical concepts and a proficiency in maths skills appropriate to their age and ability. • Implementation of the school plan will be evident in teachers' preparation and monthly reports. • Teachers will know from their new classes in September that work/approaches as outlined in the plan have been covered by the previous teacher
Implementation, Review and Ratification	Progress made during the school year will be reviewed in June and September of each year and will be based on results of assessments across all classes and on teachers' views as to the effectiveness of the plan.

Targets & Actions:				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Targets	<ul style="list-style-type: none"> • To increase the percentage of pupils scoring at C and D in Numeracy Skills Rubric (N.S.R) by 5% every year over the next three years • To improve from 25% to 50% the number of pupils able to explain clearly to others how they solved a Maths problem, over 3 years • 			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> To increase the percentage of pupils scoring in the bracket 17% - 50% in Problem Solving on the Standardised Tests, from 40% by 5% each year in the 3 year plan To increase the percentage of pupils scoring in the 51%- 84% in Problem Solving on the Standardised Tests, from 38% by 5% each year in the 3 year plan
<h2>Actions</h2>	<p style="text-align: center;">Team Teaching:</p> <ul style="list-style-type: none"> Stream classes (1st-6th) into 3 groups (based on Drumcondra Maths Scores) and LS/Resource Teacher to teach one group, while the 2 class teachers take the other two groups Junior/Senior Infants – Using the <i>Planet Maths Scheme</i> while making use of the <i>Ready Set Go Maths Programme</i> Introduce the <i>Mathletics Programme</i> throughout the school: 2nd -6th Class Devise a uniform approach (continuity of language and methodologies) to develop problem solving strategies: RUDE –Read – Underline-Draw-Estimate Develop a RUCSAC Approach to problem solving in Senior Classes (Read – Understand - Choose – Solve – Answer – Check). <p style="text-align: center;">Strategy:</p> <p>Give answer to the problem first and pupils to explain /work out how it was reached (<i>Puts stress on process rather than correct answer!</i>)</p> <p>Specific Language Teaching – Oral work 5-10mins each day. Teach <i>Maths Vocabulary</i> for different class levels. (Jenny</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>Eather Math Dictionary-free online resource)</p> <p>Language Display Board in every class–symbols and meanings to be passed onto the next class teacher each year to ensure uniformity and continuity. (<i>Use of flashcards and target boards</i>)</p> <p>Group/Pair work and Collaborative Learning in every lesson. (discussion, explanation and revoicing.)</p> <p>More use of concrete resources at all class levels. Make inventory of resources in each class and set up Maths Store (Resource Room F) Invest in new resources- Wish List to be sent around all classes.</p> <p>Seek C.P.D. in relation to Problem Solving strategies. (Keep staff informed re courses on Numeracy and Problem Solving Laois Ed.Centre)</p> <p>Introduce “Problem of the Week” at all levels. Each teacher to set their own problems and rewards. Purchase Apex Maths Problem SolvingCD– (Levels 1-6).</p> <p>Set up Maths Workshops for different class levels every term.</p> <p>Carry out the Rubric Problem Solving Survey in September to get a base level for the survey.</p>
<p>Strategies and Methodologies for Improving</p>	<ul style="list-style-type: none"> • Guided discussion, (rather than just questioning) with use of mathematical language. • Hands on approach right through from Infants to Sixth Class. Build up store of equipment in the school – e.g Weight box, Length box, Capacity box, Shapes, Tangrams, Puzzles, play shop etc. <p><i>Estimation Strategies when teaching Number:</i></p>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Numeracy	<p>Teacher led to a sensible “guess”. 4 Steps;</p> <ul style="list-style-type: none"> - estimate first - write down your estimate - solve the problem - compare estimate with actual result <p>4 ways to estimate – (Curr. T.G. p32-34)</p> <ul style="list-style-type: none"> - Front End Strategy - Clustering Strategy - Rounding Strategy - Special numbers strategy <p>Problem Solving Strategies :</p> <p><i>Types of problems :</i></p> <ul style="list-style-type: none"> - word problems, - practical tasks - open ended investigation - puzzles - games - projects - maths trials <p>Strategies for solving:</p> <ul style="list-style-type: none"> - draw a diagram - construct a model - make chart/table of information - look for patterns - estimate and test it out - break down and solve each part - Write number sentence for the problem - Use appropriate equipment eg. balance, measuring instrument, calculator, blocks, shapes, etc. - Simplify the problem eg. use smaller numbers and then generalize
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Problem of the day/week (Mad Maths/Brain Teasers)

Team Teaching from second class to sixth class:

- S.E.T. Teachers take small group each day in resource rooms.

Collaborative learning – group work

Whole Class Interactive Maths Teaching -Mental Maths:

Mental Maths Strategies:-

- Unison response
- Show me
- Cover ups
- The Answer is what is the question?
- Target boards

Paired Maths?

Mathletics (see back)

Rainbow Activities/puzzles/games/worksheets.

Assessment Pack for each class (in folder- covering every strand)

Numberworld? (infants)

Riddle Me Scavenger Hunts – (Maths/No / shape/ time/fractions etc)

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>Involving parents:</i> Practical ways to help your child in everyday life, play, etc-P/T Meetings.(see leaflet)</p> <p><i>Maths Activity Day/ Parents Day?</i> – During Maths Week (October)</p> <ul style="list-style-type: none"> • Maths Workshops • Maths Trails • Maths Quiz
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Approaches and Methodologies				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Examples:	<ul style="list-style-type: none"> • Use of concrete materials • Modelling: skills, strategies and languages • Oral approach to mental maths - Active learning • Guided discovery • Talk and discussion • Problem solving • Collaborative learning • Using the environment • Skills through content • Use of ICT • Learning through play • Direct teaching 			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p style="text-align: center;">Based upon a Constructivism Philosophy:</p> <p>Constructivist approaches are central to this mathematics curriculum. To learn mathematics children must construct their own internal structures. As in reading and writing, children invent their own procedures. We accept that children must go through the invented spelling stage before they begin to develop a concept of the structures of spelling. The same is true of mathematics. Young children attempt to count or order things in the environment and they develop rules for themselves to do so. They should be encouraged to try out these personal strategies, to refine them by discussion and to engage in a wide variety of tasks.</p> <p style="text-align: center;">A constructivist approach procedure would be as follows:</p> <ul style="list-style-type: none"> • children discuss the problem • try a possible approach • further discussion • modify problem arising from the interaction • construct concepts from deductions • arrive at a solution or solutions • discuss results • record <p style="text-align: center;">This approach is combined with the direct teaching / instruction approach and both will be combined to form my approach to mathematics.</p>
<p>Guided Discussion</p>	<p>This curriculum places great emphasis on child-child and child teacher discussion. In this way the child clarifies his/her thinking and gains self confidence and self-esteem. Discussion, rather than just questioning, will be the basis of the interactions between teacher and child. This strategy encourages the development of skills and is also the arena for developing mathematical language.</p> <p>Children must be trained in discussion skills before they can effectively use them in a group. Skills such as turn-taking,</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

<p>and Discussion Skills</p>	<p>responding positively to the opinion of others and having the confidence to put forward an opinion of their own are essential skills that transfer both throughout the curriculum and into real life. Children must be secure in the knowledge that others will listen to their opinion and treat it with respect.</p> <p>Discussion skills can be summarized as follows:</p> <ol style="list-style-type: none"> 1. turn-taking 2. active listening 3. positive response to the opinions of others 4. confidence in putting forward an opinion 5. ability to explain clearly their point of view
<p>Using a hands-on approach</p>	<p>A hands-on approach is essential if children are to understand mathematical concepts. The child's mathematical development requires a substantial amount of practical experience to establish and to reinforce concepts and to develop a facility for their everyday use. He/she develops a system of mathematics based on experiences and interactions with the environment. The experience of manipulating and using objects and equipment constructively is an essential component in the development of both mathematical concepts and constructive thought throughout the strands of the mathematics programme.</p> <p>This approach is important right through to sixth class and will require access to a considerable amount of equipment. Working with equipment can be done individually, in pairs or in groups, and the allocation of the equipment is organised both on a class and school basis.</p>
<p>Developing Mathematical Language</p>	<p>When children use mathematical language it is important that they use it accurately. Understanding mathematical language leads to the correct interpretation of mathematical symbols and accurate reading of algorithms or word problems. This helps the child to choose the correct operation for the task.</p> <p>Discussing and interpreting symbols in the environment is a good starting-point for introducing mathematical symbols as well as being a learning exercise in itself. Signs often have words on them, while symbols are usually pictorial representations of a statement, for example the no smoking sign, road signs, poison and cleaning instructions on clothes. These are internationally</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>recognised symbols and indicate to the child that these symbols carry a meaning with them, as do mathematical symbols.</p>
<p>Estimation strategies for number</p>	<p>In maths emphasis will be placed on the development of estimation strategies. Estimation is the process of taking an existing problem and changing it into a new form that is easier to compute mentally and gives an approximate answer. This skill is essential for real-life mathematics, for example shopping or measuring time and distances.</p> <p>Estimation procedure:</p> <ul style="list-style-type: none"> • estimate first • write down your estimate • solve the problem • compare your estimate with the actual result <p>Estimation Strategies include:</p> <ul style="list-style-type: none"> • Front-end strategy • Clustering strategy • Rounding strategy • Special numbers strategy
<p>Problem-</p>	<p>The child's attempts to solve a problem require him/her to call on many skills. Problems in mathematics have often been seen as textbook examples at the end of a section on a particular topic. Problems in life are rarely that simple, and there is often more than one way to find a solution. Problem-solving experiences should develop the ability to plan, take risks, learn from trial and error, check and evaluate solutions and think logically. Discussion and acceptance of the points of view of others are central to the development of problem-solving strategies. Problems can be classified in many ways. They can be presented concretely, diagrammatically or in written form. They can</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

solving

be open or closed. They can relate to one particular content area or include elements from more than one strand. A written problem may be difficult to solve because of readability or because it has multiple steps to the solution procedure. Large and awkward numbers often frighten a child away from attempting a problem, and if the information is not presented in the order in which it is to be used some children just give up without trying. I will teach the children to analyse the problem carefully and extract the relevant information. Often it is much easier to solve than it appeared at first.

Mathematical problems will include:

- word problems
- practical tasks
- open-ended investigation
- puzzles
- games

Problem-solving strategies:

- examine the problem: what does it tell me? what does it ask me to do? how will I do it?
have I all the information I need?
- solve the problem
- have I done what I was asked to do?

Problem-solving strategies must be varied and the children given ample opportunity to try them out concretely, orally or in a written task. Many children fail at mathematics because their mathematical vocabulary is insufficient to cope with the terminology of problems. Development of the necessary vocabulary in a consistent manner must be stressed.

Some strategies that will be taught to children are:

- drawing a diagram to illustrate a problem
- making a chart or table of the information
- looking for patterns in a problem

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> • making a guess and testing it out • breaking the problem down and solving each part • writing a number sentence for the problem • using appropriate equipment to solve the problem, for example balance, measuring instrument, calculator, blocks • solving a simpler version of the problem, for example using smaller numbers.
Using Technology	<p>Some uses of ICT in mathematics include:</p> <ul style="list-style-type: none"> • drill and practice: an attractive alternative to pen & pencil, useful for weaker pupils • adventure programs: require pupils to solve specific mathematical problems to progress • databases: a very effective use if ICT, excellent for representing data • using the internet to access materials and information (Refer to Maths folder in ‘Favourites’)

Skills Development				
The Child Will Be Enabled To:				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Applying and problem-solving	<ul style="list-style-type: none"> • select appropriate materials and processes for mathematical tasks and applications • apply concepts and processes in a variety of contexts • select and apply appropriate strategies for completing a task or solving a problem • analyse and recognise solutions to problems 			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> reflect upon and evaluate solutions to problems
Communicating and expressing	<ul style="list-style-type: none"> listen to and discuss other children's mathematical descriptions and explanations discuss and explain mathematical activities discuss and record the results of mathematical activities using diagrams, pictures and symbols discuss problems presented pictorially or orally
Integrating and connecting	<ul style="list-style-type: none"> connect informally acquired mathematical ideas with formal mathematical ideas recognise mathematics in the environment recognise the relationship between verbal, concrete, pictorial and symbolic modes of representing numbers carry out mathematical activities that involve other areas of the curriculum understand the mathematical ideas behind the procedures he/she uses
Reasoning	<ul style="list-style-type: none"> classify objects into logical categories make guesses and carry out experiments to test them recognise and create mathematical patterns and relationships justify the processes and results of mathematical activities make hypotheses and carry out experiments to test them
Implementing	<ul style="list-style-type: none"> devise and use mental strategies and procedures for carrying out mathematical tasks use appropriate manipulatives to carry out mathematical tasks and procedures execute procedures efficiently

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Understanding and Recalling	<ul style="list-style-type: none"> understand and recall terminology and facts.
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Linkages and Integration				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Examples:	<ul style="list-style-type: none"> Physical Education Music Science Visual arts S.E.S.E 			

Differentiation				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Examples:	<ul style="list-style-type: none"> Short-term goals Presentation Instructions Demonstrating and modelling 			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> • Questioning • Wait time • Revision • Practice • Assistance • Work Output • Activities • Student-teacher interaction • In group work set tasks appropriate to ability of pupils, tasks of various complexities • Work in mixed ability groups where accessory • Use a range of questions from simple recall to more complex, comparative or analytical • Record work and opinions in either oral or written form • Intervening when and where necessary- target particular groups/pupils • Questions will be asked to less able pupils more often to ensure they understand and are able to keep up
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Assessment				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
	<p>Teacher observation:</p> <p>Accumulation of Incidental observations will give me an overview of the individual's mathematical development and will have an important contribution to make to the overall</p>			

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Examples:	<p>pupil profile. They also provide me with information on the child's attitudes to the subject. It is not possible to document every detail of the child's behaviour or responses, but short comments that are written into a notebook will assist in planning the next stage of the work. This will be more formally recorded on the individual child's 'Pupil Record Sheet' and stored in a folder for easy reference. Such information can also be conveyed to parents so that they can help the child with homework.</p> <p>Teacher-designed tasks and tests:</p> <p>Tasks are set for children in every mathematics lesson. I will provide work cards and worksheets and set problems for the children to solve. Many of these tasks are in themselves a form of assessment. When a child is asked to measure a table or the cover of a book the response indicates to me whether that child has acquired the concept of length. Tests that focus on a unit of work just completed help to evaluate what should be done next. The Action Maths scheme has tests that focus on task analysis built in at the end of the units of work (Termly assessments).</p> <p>Work samples, portfolios and projects:</p> <p>I have a folder in which samples of pupil's work are kept. Completed worksheets and books can also be referred to, as they provide a concrete example of the child's work.</p> <p>Standardised testing:</p> <p>Norm-referenced and criterion referenced tests are useful in obtaining an overview of the child's mathematical development. They are administered to the whole class during the summer term and provide accurate information that can be added to the pupil profile and communicated to the next class teacher.</p> <p>5th and 6th Class:</p> <p>Assessment and Record Keeping:</p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>Self-assessment: Rubrics and questionnaires used across the curriculum so that the children can reflect on their own work by asking themselves:</p> <ul style="list-style-type: none"> • What did I do well? • Where did I have difficulties? • What can I do better next time? <p>Conferencing: On a one to one/ in small groups teachers and pupils chat about work carried out and reflect on how they feel it went.</p> <ul style="list-style-type: none"> • What did you find easy to do? • Where do you think you may need some extra help? <p>Portfolio: keeping samples of work completed/ completed questionnaires/ rubrics etc. Evaluations/ teacher – tasks have also been kept on file adding to individual student portfolios. Visual Art and creative writing pieces will also be added.</p> <p>Concept-mapping: 5th/6th : Concept maps are formulated in copies of individual students. White boards are also used for this activity. Concept maps are used at the beginning and end of a unit of work.</p> <p>Questioning: A variety of questions used to assess students’ developing understanding of new learning; ranging from closed questions: i.e. <i>What’s the name of this 3D shape?</i> to open questions that encourage higher order thinking i.e. <i>Can you identify any 2D shapes with lines of symmetry in the classroom?</i></p> <p>Teacher observation: 5th/6th observation directed at all forms of learning and social interaction between the students both inside and outside the classroom. Most observations are mentally noted but on occasions brief notes are taken and kept on file or noted in a child’s file/ teacher’s note book .</p> <p>Teacher-designed tasks/tests: Tasks and tests are frequently set for children. The data is used to gather further evidence of a child’s learning. Learning tasks are set across the curriculum. Occasionally these tasks/tests are filed in portfolios but results and data are recorded by the teacher.</p> <p>Pupil-profile: A pupil’s profile is gathered throughout the year from the above assessment tools and methodologies. This profile is presented in the ‘School Report’ form at the end of the year in written format and to parents/guardians orally at parent/teacher meetings. A copy of individual school reports are kept in individual pupil files and kept on file for 10 years after the child has left 6th class.</p> <p>Standardised testing: The Sigma-T or Drumcondra Tests are administered in May/June of every year in accordance with the</p>
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	school plan. Results are kept in individual pupil files: booklets kept for one year, scoring sheets kept for 10 years on file. Results are shared with parents at the parent/teacher meetings and end of year reports. Results also put up on Aladdin.
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Resources				
	Juniors/Seniors	First/Second	Third/Fourth	Fifth/Sixth
Examples:	<p style="text-align: center;">Juniors:</p> <p>Maths Curriculum and Teacher Guidelines Planet Maths bears</p> <p style="text-align: center;">Seniors:</p> <p>Planet Maths Bears attribute blocks buttons measuring snakes clocks water clocks sand timers balances coins</p>	<p style="text-align: center;">1st Class:</p> <p>Planet Maths Mental Maths Interactive Whiteboard posters of topics lollipop sticks bricks blocks straws colours copies</p> <p style="text-align: center;">2nd Class:</p> <p>Maths Curriculum and Teacher Guidelines Cracking Maths 2 Planet Maths Table Champion</p>	<p>Cracking Maths 3/4 New Wave Mental Maths Workbook (Prim Ed) Interactive Whiteboard computers rulers fraction chart metre stick Number fact charts 2D and 3D shapes 100 squares calculators clocks timetables units of measurement table books posters of topics lollipop sticks</p>	<p>Cracking Maths 5/6 New Wave Mental Maths Workbook (Prim Ed) Interactive Whiteboard computers rulers fraction chart metre stick Number fact charts 2D and 3D shapes 100 squares calculators clocks timetables units of measurement table books posters of topics lollipop sticks bricks</p>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	number lines and ladders, measuring jugs photographs posters dice shapes money	Mental Maths Files Teacher designed worksheets Hundred squares Dienes blocks Euro coins Shapes poster Concrete materials: scissors, paper, posters (See poster press)	bricks blocks straws colours copies Teacher designed worksheets	blocks straws colours copies Teacher designed worksheets
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We acknowledge the importance of concrete materials in the development of mathematical concepts for children in all classes. Each class is supplied with Maths equipment suitable for that class level. The class teacher is responsible for checking these resources at the end of the year. A list of items that have to be repaired/replaced or additional items needed should be sent to Ms. Mary Kieran (Maths Co-ordinator).

- An inventory of all Maths equipment in each class room.
- All Maths equipment bought with school funds remains the property of the school.
- Teachers may borrow equipment from other classes but must make sure that it is returned promptly.
- Mathematical books are stored in the staff room. Items must be signed for and returned within a week. Shared mathematical equipment for Senior Classes is stored in the large storage unit in the Computer Room. Items must be signed out and also returned within a week. Infant teachers store Maths equipment in individual classrooms but share resources purchased for the ***Ready Set Go Maths Programme***.

Textbooks are in line with the content objectives for each class level. Textbooks reinforce the concept taught and give adequate practice in each activity.

- Teachers should not use the text chosen for the next class-level in the same scheme as this may lead to difficulties in terms of continuity and progression in the following year.

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

- Where a teacher deems it necessary supplementary materials may be designed/supplied.

Jun. Sen. Infants: Planet Maths
1st/2nd classes: Planet Maths and New Wave Mental Maths
3rd – 6th classes: Planet Maths

A pencil only is used for writing numbers, and problems in Maths right up until the end of 6th class. Children are allowed to use erasers. A biro is introduced in 3rd class for correction purposes only

Strand	
All teachers are familiar with the strands, strand units and content objectives in the Maths Curriculum and refer to them regularly when planning for their classes ensuring all strands and strand units are covered.	
Strands	Strand Units
Early Mathematical Activities (Infants)	Classifying, Matching, Comparing Ordering
Number	Counting, Comparing and Ordering, Analysis of Number (introduced in Infants) Numeration, Place Value, Operations: Addition, Subtraction, Fractions (introduced in 1st 2nd) Multiplication, Division, Decimals (introduced in 3rd/4th) Percentages, Number theory (introduced in 5th/6th)

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Algebra	Extending patterns (introduced in Infants) Extending and using patterns (introduced in 1st/2nd) Number patterns and sequences, Number sentences (introduced in 3rd/4th) Directed numbers, Rules and properties, Variables, Equations (introduced in 5th/6th)
Shape and Space	Spatial Awareness, 2D shapes 3D shapes (introduced in Infants) Symmetry, Angles (introduced in 1st/2nd) Lines and angles (introduced in 3rd/4th)
Measures	Length, Weight, Capacity, Time, Money (introduced in infants) Area (introduced in 1st/2nd)
Data	Recognising and interpreting data (introduced in Infants) Chance (introduced in 3rd /4th)

Strand Number:		
The Child Will be Enabled to:		
Strand Units:	Juniors	Seniors
Classifying	<ul style="list-style-type: none"> classify objects on the basis of one attribute, such as colour, shape, texture or size identify the complement of a set (i.e. elements not in a set) 	<ul style="list-style-type: none"> classify objects on the basis of one attribute, such as colour, shape, texture or size sort collections of objects <i>add similar objects to a clearly defined set</i> identify the complement of a set (i.e. elements not in a set) categorise objects such as things I like/don't like, red things/things that are not red.

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

<p>Matching</p>	<ul style="list-style-type: none"> match equivalent and non-equivalent sets using one-to-one correspondence 	<ul style="list-style-type: none"> match equivalent and non-equivalent sets using one-to-one correspondence match pairs of identical objects in one-to-one correspondence: lollipop sticks, Unifix cubes <i>match pairs of related objects in one-to-one correspondence: putting out knives and forks, buttoning coats, putting lids on pans</i> match equivalent and non-equivalent sets to establish the concept of more than, less than, enough, as many as.
<p>Comparing</p>	<ul style="list-style-type: none"> compare objects according to length, width, height, weight, quantity, thickness or size compare sets without counting 	<ul style="list-style-type: none"> compare objects according to length, width, height, weight, quantity, thickness or size. Compare pairs of identical objects that differ in length, noting the need for a baseline or common starting point compare pairs of pencils <i>how does each differ from the next? long/short, longer/shorter</i> compare sets without counting more than and less than
<p>Ordering</p>	<ul style="list-style-type: none"> order objects according to length or height 	<ul style="list-style-type: none"> order sets without counting order objects according to length
<p>Counting</p>	<ul style="list-style-type: none"> count the number of objects in a set, 1-10 	<ul style="list-style-type: none"> count the number of objects in a set, 1-10 <i>count objects, pushing them aside while counting count regular arrays or rows before random groups</i> count the number of objects in a set, 0-20 <i>count the same set several times, starting with a different object each time present different patterns and arrays of the same number.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

<p>Comparing & Ordering</p>	<ul style="list-style-type: none"> • compare equivalent and non-equivalent sets 1-5 by matching without using symbols • order sets of objects by number, 1-5 • use the language of ordinal number: first, last 	<ul style="list-style-type: none"> • compare equivalent and non-equivalent sets 0-10 by matching without using symbols use one-to-one matching to determine equality and inequality (more than/less than/same as) <i>record by drawing</i> • order sets of objects by number, 0-10 <i>arrange sets of objects in ascending order</i> <i>order rods and number strips by length</i> <i>order number cards; match them with sets and number patterns</i> • use the language of ordinal number: first, last <i>who is first/last in the line?</i> <i>the first colour is red, the last colour is blue</i> • compare equivalent and non-equivalent sets 0-10 by matching name the inequality: I have 2 more than you; 3 is less than 5 • order sets of objects by number, 0-10 use the language of ordinal number: first, second, third, last use ordinal numbers to describe position in a line use this language when ordering numbers.

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

<h2>Analysis of Number:</h2>	<p style="text-align: center;">Combining</p> <ul style="list-style-type: none"> • explore the components of number 1-5 • combine sets of objects, totals to 5 • numeration read, write, and order numerals, 1-5 • identify the empty set and the numeral zero • subitise (tell at a glance) the number of objects in a set, 1-5 • develop an understanding of the conversation of number, 1-5 • solve simple oral problems, 0-5 	<p style="text-align: center;">Combining:</p> <ul style="list-style-type: none"> • explore the components of number, 1-5 <i>identify the ways in which the numbers can be modelled using concrete objects: 4 and 1, 2 and 2, 1 and 2 and 1</i> <i>identify pairs of related facts: 1 and 2 is the same as 2 and 1</i> • combine sets of objects, totals to 5 <i>add one more to a set</i> <i>combine two sets, state total</i> • explore the components of number, 1-10 • combine sets of objects, totals to 10 <i>use appropriate strategies: counting all, counting on</i> <i>counting on on the number strip</i> <i>start at 5, count on 3, where am I?</i> <i>oral counting without the number strip</i> <i>combine two or more sets,</i> • <i>state total record</i> <p style="text-align: center;">Partitioning:</p> <ul style="list-style-type: none"> • partition sets of objects, 1-5 <i>partition sets of objects with a pencil or straw to show component parts</i> <i>record pictorially.</i>
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Strand Number

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

The Child Will be Enabled To:		
Strand Units:	First	Second
Counting & Numeration	<ul style="list-style-type: none"> count the number of objects in a set count the same set several times, starting with a different object each time (regular and random arrays)re-count rearranged sets and arrays to determine that number does not change read, write and order numerals, 0-99 match a numeral to a set and vice versa write numerals to correspond to sets count on and back from a given number, using concrete materials, number line and hundred square / state the number that follows or precedes a number estimate the number of objects in a set 0-20 compare a known set with other sets, check by counting describe different sets of cubes as less than, more than or about the same as the known set. 	<ul style="list-style-type: none"> count the number of objects in a set <i>estimate first and check by counting e.g. the number of marbles in a jar</i> read, write and order numerals 0-199 <i>state the number that comes before and after a random number fill in missing numbers on the hundred square</i> estimate the number of objects in a set 0-20.
Comparing & Ordering	<ul style="list-style-type: none"> compare equivalent and non-equivalent sets 0-20 name the inequality I have 5 more than you; 7 is less than 10, 6 is less than 9 by how many? order sets of objects by number use the language of ordinal number, first to tenth when ordering sets and numbers, describing patterns, taking turns. 	<ul style="list-style-type: none"> compare equivalent and non-equivalent sets <i>record using < > and =</i> use the language of ordinal number <i>e.g. using the calendar.</i>
Place Value	<ul style="list-style-type: none"> explore, identify and record place value 0-99 group and count in tens and units using cubes, counters, lollipop sticks and coins(1c and 10c, 1 cent and 10 cents), base ten materials and notation boards 	<ul style="list-style-type: none"> explore, identify and record place value 0-199 <i>extend grouping and renaming activities to include the hundred, in tens rename numbers as one hundred, tens and units represent numbers using place value material: coins, number cards, word</i>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> express groups of counters as units or as tens and units / record pictorially and on the abacus. 	<p><i>cards, number line.</i></p>
<p>Addition</p>	<ul style="list-style-type: none"> develop an understanding of addition by combining or partitioning sets, use concrete materials 0-20 find all the addition combinations to make up a given number: $11 + 1 = 12$, $2 + 6$ $__ + 4 = 12$ record addition: orally, pictorially, in number sentences, in jumps on the number line explore, develop and apply the commutative, associative and zero properties of addition commutative property: $6 + 2 = 8$, $2 + 6 = 8$ associative property: $(2 + 3) + 5 = 10$, $2 + (3 + 5) = 10$ zero property: $7 + 0 = 7$ develop and/or recall mental strategies for addition facts within 20 use concrete materials to count on using commutative property, zero property, counting in twos, doubles and near doubles, pairs of numbers that total 10 ($6 + 4 = 10$); complement numbers to 10 ($3 + \square = 10$); orally memorise addition facts using strategies construct number sentences and number stories; solve problems involving addition within 20 construct and tell a number story, record pictorially, as a number sentence or as a written story solve written problems; pupils can also devise problems for each other add numbers without and with renaming within 99 estimate sum by adding the tens, check estimates using manipulatives add numbers using concrete materials, notation 	<ul style="list-style-type: none"> develop an understanding of addition by combining or partitioning sets explore, develop and apply the commutative, associative and zero properties of addition develop and recall mental strategies for addition facts within 20 <i>discuss different strategies for combining numbers:</i> $9 + 8 = 10 + 8 - 1$ or $8 + 8 + 1$ or $9 + 9 - 1$ <i>memorise and record addition facts using strategies</i> construct number sentences and number stories; solve problems involving addition within 99 add numbers without and with renaming within 99 <i>estimate simple sums within 99</i> <i>use mental calculations record using notation boards, number lines, number sentences and algorithm</i> <i>emphasise addition of 10 to multiples of 10, to other numbers ($36 + 10$)</i> <i>add multiples of 10 to numbers ($45 + 20$)</i> explore and discuss repeated addition and group counting <i>in practical situations, e.g. buying a number of identical articles</i> <i>10 sweets in a packet; how many in 5 packets?</i> $10 + 10 + 10 + 10 + 10 = 50$ sweets

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>boards, number lines and hundred squares / use mental calculations</p> <ul style="list-style-type: none"> • record using number lines, number sentences and algorithm • explore and discuss repeated addition and group counting • counting in twos, fives, tens <p>count children in the line, 2, 4, 6, 8</p>	
<p>Subtraction</p>	<ul style="list-style-type: none"> • develop an understanding of subtraction as deducting, as complementing and as difference 0-20 • <u>deducting</u>: I had 10 sweets, I ate 3. How many have I left? • <u>complementing</u>: There are 10 stickers in a set. I have 4. How many more do I need to make a full set? • <u>difference</u>: I have 12 crayons. Mary has 6 crayons. How many more have I? How many fewer has Mary? • focus on subtraction as the inverse of addition • record subtraction: concretely, orally, pictorially, in number sentences, in jumps on the number line, and on notation boards • develop and/or recall mental strategies for subtraction 0-20 • counting back/on, using doubles/near doubles, using zero, using knowledge of 10 facts, add to check results • construct number sentences and number stories; solve problems involving subtraction 0-20 • construct and tell a number story; record pictorially, as a number sentence, or as a written story • solve written problems • pupils can also devise problems for each other • estimate differences within 99 <p>by subtracting the tens</p>	<ul style="list-style-type: none"> • develop an understanding of subtraction as deducting, as complementing and as difference • develop and recall mental strategies for subtraction 0-20 • <i>discuss different strategies for subtracting numbers</i> • construct number sentences involving subtraction of whole numbers; solve problems involving subtraction • estimate differences within 99 • <i>use rounding strategies</i> • subtract numbers without and with renaming within 99 • <i>estimate difference using tens</i> • <i>written calculations after plenty of practical and mental calculations</i> • <i>check answers using hundred square, number line or addition</i> • use the symbols +, -, =, <, > • solve one-step and two-step problems involving addition and subtraction.

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>check estimates using manipulatives</p> <ul style="list-style-type: none"> • subtract numbers without renaming within 99 • estimate difference use concrete materials, number lines and hundred squares <p>use mental calculations</p> <ul style="list-style-type: none"> • record using number lines, number sentences and algorithms • use the symbols +, -, = • formal introduction of the symbols should occur only after sufficient oral and exploratory work has been completed • the meaning of the symbols will have to be discussed frequently <p>the equals sign does not signal ‘the answer comes next: equals means ‘the same’ or equivalent / explore using a number balance</p> <ul style="list-style-type: none"> • solve one-step problems involving addition or subtraction. 	
Fractions	<ul style="list-style-type: none"> • establish and identify half of sets to 20 • share sets of objects equally between two people <p>record pictorially</p>	<ul style="list-style-type: none"> • establish and identify halves and quarters of sets to 20

Strand: Number
The Child Will Be Enabled To:

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Strand Units:	Third	Fourth
Place Value	<ul style="list-style-type: none"> Review numbers from 0 to 199. Use manipulatives to review groups of tens and units Review multiples of one hundred up to 999 and introduce number words to 99. Use manipulatives to represent amounts beyond 199 to 999, paying attention to zero. Represent amounts up to 999 using the abacus or notation board paying attention to zero Count in multiples of 100 to 999. Position numbers up to 999 on number line Discuss number which comes before or after a number. Sequence a series of numbers up to 999 Make a number from 3 digit cards and say which digit has the greatest value Review renaming of numbers as hundreds, tens and units, e.g. 365=3 hundreds + 6 tens + 5 units Using number line, round numbers to the nearest 10 and 100. 	<ul style="list-style-type: none"> Explore, identify and record place value to 9999; read, write and order four-digit numbers. Develop 3rd class work using four digit numbers and solve simple problems.
Addition	<ul style="list-style-type: none"> Review addition facts to 20. Review addition with and without renaming to 99 Estimate sums by rounding to nearest ten and hundred. Apply to word problems 	<ul style="list-style-type: none"> Add numbers to 9999 with and without renaming Estimate sums and differences know and recall addition facts and solve word problems involving addition
Subtraction	<ul style="list-style-type: none"> Review subtraction facts to 20. Review subtraction with and without renaming to 99 Estimate differences by rounding to nearest ten and hundred Apply to word problems 	<ul style="list-style-type: none"> Subtract numbers with and without renaming within 9999 Estimate sums and differences know and recall subtraction facts and solve word problems involving subtraction
Multiplication	<ul style="list-style-type: none"> Review repeated addition in twos, using manipulatives, number line, hundred square Record as addition sentences Count in twos on number line and on part of hundred square 	<ul style="list-style-type: none"> Develop 3rd class work but introduce expanding form. Multiplication as repeated addition of groups; explore, understand and apply the properties of multiplication, develop multiplication facts within 10; multiply a two digit number by a one- digit number or a two -digit number.

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> Record addition sentences as multiplication sentences. Present groups of two using objects Follow a similar approach with groups of 4, 8, 3, 6, 9, 5, 10 and 7 Explore the commutative property of multiplication using manipulatives and the number line ie. $3 \times 4 = 4 \times 3$. Explore the distributive property of multiplication using manipulatives and the number line ie. $5 \times 6 = (3 \times 6) + (2 \times 6)$. Explore the zero property of multiplication using manipulatives and the numberline Use properties of multiplication and strategies to develop ability to recall facts Use horizontal and vertical representation of multiplication Explore multiplication of multiples of ten by 0-10 using manipulatives eg. $4 \times 20 = 8$ tens Use repeated addition to develop multiplication of 2-digit numbers by 0-10 Use the conventional approach to multiply a 2-digit number by a 1-digit number Estimate amount by first rounding the 2-digit number to the nearest ten Apply to problems 	<ul style="list-style-type: none"> Multiply a two digit or three digit numbers by a one or two digit number Develop mental strategies for multiplication Estimate products represent multiplication in expanded form – $26 \times 37 = [20 \times 37] + [6 \times 37]$ Explore, understand and apply the zero, commutative, distributive and associative properties of multiplication. Use a calculator to check estimates Solve and complete practical tasks involving multiplication of whole numbers
<p style="text-align: center;">Division</p>	<ul style="list-style-type: none"> Develop concept of division as sharing a set of objects equally between 2 people Extend to sharing a set of objects between 4 people Use repeated subtraction in twos or fours with similar examples to develop the concept of division Divide sets into groups of 2-9 using manipulatives Use number sentences Develop recall of number facts by linking with multiplication Use other ways of recording division Explore remainders using repeated subtraction with 	<ul style="list-style-type: none"> Division as sharing and as repeated subtraction of groups, with and without remainders; develop and recall division facts within 100; divide a two- digit number by a one-digit number, with and without remainders Division as sharing with and with-out remainders; divide a two or three digit number by a one- digit number; solve practical tasks and problems

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>manipulatives eg. $13-4-4-4=1$, 1 left over</p> <ul style="list-style-type: none"> • Divide 2-digit numbers by 1-digit numbers, with and without remainders • Estimate amount by first rounding the 2- digit number to the nearest ten • Apply to problems 	
Fractions	<ul style="list-style-type: none"> • Review work on halves and quarters. Introduce eights and tenths and explore the relationship with half and quarter using paper folding • Explore shapes divided into eight/ten equal parts. Recognise shapes divided into eights and tenths • Find the whole number when given the fraction • Develop relationship between fractions and division • Position fractions on the number line • Order and compare fractions using the fraction wall and number line • Apply to problems 	<ul style="list-style-type: none"> • Identify fractions and equivalent forms of fractions with denominators of 3, 6, 9, 12, 5 and 10. • compare and order fractions and position on the number line • calculate a fraction of a set • calculate a number given a multiple fraction of the number • solve practical tasks and problems • construct and cut out simple fractions out of regular shapes • record using diagrams and/or fraction charts
Decimals	<ul style="list-style-type: none"> • Divide unit strip into ten equal parts identifying each as $1/10$ and renaming each as 0.1 • Express fractions as decimal fractions and vice versa • Identify decimal fractions shaded into shapes • Introduce the unit as ten tenths or as ten 0.1s • Position decimals on the number line • Order and compare decimals using the fraction wall and number line • Apply to problems 	<ul style="list-style-type: none"> • Express tenths and hundredths as fractions and decimals • identify place value of whole numbers and decimals to two places and write in expanded form • order decimals on the number line

Strand Number

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

The Child Will Be Enabled To:		
Strand Units	Fifth	Sixth
Place Value	<ul style="list-style-type: none"> • <i>read, write and order whole numbers and decimals</i> extend previous conceptual and practical work to include larger numbers and decimals • <i>identify place value in whole numbers and decimals</i> extend previous conceptual and practical work to include larger numbers and decimals • <i>round whole numbers and round decimals</i> round whole numbers to nearest ten, hundred, thousand round decimals to nearest whole number 	<ul style="list-style-type: none"> • Read, write and order whole numbers • Identify place value in whole numbers • Round whole numbers
Operations	<ul style="list-style-type: none"> • <i>estimate sums, differences, products and quotients of whole numbers</i> use strategies for estimation, e.g. front-end estimation, rounding, clustering, special numbers estimate calculations and compute answers with a calculator e.g. $450 \times 9 = 4500$ (estimation based on 450×10) estimate first, then use calculator to get actual result • <i>add and subtract whole numbers and decimals (to three decimal places) without and with a calculator</i> develop and extend the use of existing algorithms • <i>multiply a decimal (up to three places) by a whole number, without and with a calculator</i> develop and extend the use of existing algorithms 8.125×9 • <i>divide a three-digit number by a two-digit number, without and with a calculator</i> explore the concept of division with concrete materials 	<ul style="list-style-type: none"> • Add and subtract whole numbers • Divide a four digit number by a two digit number • Divide a decimal by a whole number • Divide a decimal number by a decimal • Multiply a decimal by a decimal • Multiply a decimal by a whole number

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>develop the long division algorithm from repeated subtraction and multiples of repeated subtraction</p> <ul style="list-style-type: none"> • <i>divide a decimal number by a whole number, without and with a calculator</i> <p>explore the concept of division of decimals with concrete materials, money and measurement extend the algorithm in conjunction with place value 75.6 divided by 4.</p>	
<h2>Fractions</h2>	<ul style="list-style-type: none"> • <i>compare and order fractions and identify equivalent forms of fractions with denominators 2 - 12</i> explore, compare and record simple equivalence using concrete materials, paper folding, and fraction charts • <i>express improper fractions as mixed numbers and vice versa and position them on the number line</i> establish equivalence by using concrete materials explore, compare and record simple improper fractions and mixed numbers diagrammatically, numerically and on the number line • <i>add and subtract simple fractions and simple mixed numbers</i> use equivalent fractions to simplify calculations • <i>multiply a fraction by a whole number</i> develop concepts with concrete materials, paper folding and fraction charts four x three quarters of a pizza is how many pizzas? • <i>express tenths, hundredths and thousandths in both fractional and decimal form</i> explore and compare using concrete materials 	<ul style="list-style-type: none"> • Compare and order fractions and identify equivalent forms of fractions • Express improper fractions as mixed numbers and vice versa and position them on a number line • Add and subtract simple fractions and simple mixed numbers • Multiply a fraction by a fraction • Express tenths, hundredths and thousandths in fractional form • Divide a whole number by a unit fraction • Understand and use simple ratios

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	express as fractions and as decimals.	
Decimals & Percentages	<ul style="list-style-type: none"> • <i>develop an understanding of simple percentages and relate them to fractions and decimals</i> express percentages as fractions and as decimals, and vice versa calculate simple percentages, e.g. 50%, 25% 10% • <i>compare and order fractions and decimals</i> explore, compare and record using concrete materials and money order diagrammatically or on the number line • <i>solve problems involving operations with whole numbers, fractions, decimals and simple percentages use diagrams; estimate and compute answers with a calculator, include simple discount and increase examples 10% off all jeans, 20% extra free</i> 	<ul style="list-style-type: none"> • Identify place value in decimals • Round decimals • Relate decimals to fractions • Estimate sums and differences of decimals • Add and subtract decimals to three places • Use percentages and relate them to fractions and decimals • Compare and order percentages of numbers • Solve problems involving percentages, profit, loss, increases and decreases
Number Theory	<ul style="list-style-type: none"> • <i>identify simple prime and composite numbers</i> define a prime number, i.e. a number greater than 1 with exactly two divisors, itself and 1 identify simple prime numbers by trial and error, e.g. 2, 5, 7, 11 • identify and record primes with Sieve of Eratosthenes define a composite number, i.e. a number that has more than two divisors, e.g. 4, 6, 9 • identify and record composite numbers using number facts and/or a calculator • investigate relationship with odd and even numbers • <i>identify square and rectangular numbers</i> 	<ul style="list-style-type: none"> • Identify simple prime and composite number • Identify and explore square numbers • Explore and identify simple square roots • Identify common factors and multiples • Write whole numbers in exponential form

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p>construct diagrams on geoboards, pegboards and squared paper to illustrate simple square and rectangular numbers explore, compare and record these numbers</p> <ul style="list-style-type: none"> • <i>identify factors and multiples</i> identify factors and multiples from basic multiplication facts. 	
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Strand Algebra		
The Child Will Enabled To:		
Strand Units	Juniors	Seniors
Extending Patterns	<ul style="list-style-type: none"> • identify, copy and extend patterns in colour, shape and size 	<ul style="list-style-type: none"> • identify, copy and extend patterns in colour, shape and size using a range of objects, e.g. cubes or threading beads continue the pattern, what comes next? <i>pupils make their own patterns using gummed paper shapes; two colours, two shapes, two sizes</i>

Strand Algebra

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

The Child Will Be Enabled To:		
Strand Units	First	Second
Extending Patterns	<ul style="list-style-type: none"> recognise pattern, including odd and even numbers <i>count in twos on the hundred square; colour each number you stop at</i> <i>construct sets that increment in twos, starting with 0 (0, 2, 4, 6 ...), starting with 1 (1, 3, 5, 7 ...)</i> <i>discuss and record pictorially</i> <i>use two colours to identify odd and even numbers on the hundred square; discuss results</i> <i>extend activities to group counting with fives and tens</i> explore and use patterns in addition facts <i>notice patterns that make up tens ($9 + 1 = 10$, $2 + 8 = 10$, $18 + 2 = 20$) and the effect of adding 10 to a given number: e.g. $3 + 10 = 13$, $13 + 10 = 23$</i> understand the use of a frame to show the presence of an unknown number <i>e.g. $3 + 5 = _$, $2 + _ = 6$.</i> 	<ul style="list-style-type: none"> recognise patterns and predict subsequent numbers <i>counting on the hundred square:</i> <i>start on 2, count on 5 $2 + 5 = 7$</i> <i>start on 12, count on 5 $12 + 5 = 17$</i> <i>explore other number patterns, including odd and even</i> <i>number patterns, on the hundred square</i> <i>group count in threes, fours and sixes</i> <i>discuss the results</i> explore and use patterns in addition facts understand the use of a frame to show the presence of an unknown number $24 + 6 = \square$, $14 + \square = 20$, $2 + 4 + \square = 12$.

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Algebra		
The Child Will Be Enabled To:		
Strand Units	Third	Fourth
Extending and using pattern	<ul style="list-style-type: none"> • Use the hundred square to explore pattern in odd and even numbers • explore pattern in addition and multiplication facts • Explore, recognise and record patterns 0-999 • extend and describe sequences beyond 100 to explore the addition and subtraction facts • describe sequences (explain rule for) and extend accordingly 	<ul style="list-style-type: none"> • Explore, recognise and record patterns 0-9999 • explore, extend and describe sequences • use patterns as an aid for memorisation of number facts
Number Sequences	<ul style="list-style-type: none"> • Use stories to develop link between word problems and their written or symbolic representation • allow pupils to make up their own stories for written number sentences • use manipulatives to help explain and support the use of frames • explain use of brackets and link to word problems 	<ul style="list-style-type: none"> • Translate an addition, subtraction, multiplication or division number sentence with a frame into a word problem • translate a one step word problem into a number sentence; solve one step problems

Strand Algebra
The Child Will Be Enabled To:

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Units	Fifth	Sixth
<p>Directed Numbers</p>	<ul style="list-style-type: none"> identify positive and negative numbers in context <i>examine and discuss money affairs, video counters and calculator displays, sports reports, golf scores, temperature, sea level and lifts, leading to the need to distinguish between amounts above and below zero refer to positive and negative numbers as 'positive seven' and 'negative three' record positive and negative numbers with + or - signs raised e.g. + 7, - 3</i> <i>rewind a video tape</i> <i>pupils draw and label a thermometer, mark in temperatures, consult weather forecasts in newspapers.</i> 	<ul style="list-style-type: none"> Identify positive and negative numbers on the number line Add simple positive and negative numbers on the number line
<p>Rules & Properties</p>	<ul style="list-style-type: none"> explore and discuss simple properties and rules about brackets and priority of operation <i>identify, discuss and compute expressions with brackets in a variety of positions</i> $10 + (4 + 7) = _$ $(10 + 4) + 7 = _$ $(8 - 1) + 4 = _$ $8 - (1 + 4) = _$ $(3 \times 4) + 5 = _$ $3 \times (4 + 5) = _$ $8 \text{ divided by } (2 + 2) = _$ $(8 \text{ divided by } 2) + 2 = _$ <i>what is the significance of the positions of the brackets?</i> <i>identify, discuss and compute expressions with brackets excluded</i> 	<ul style="list-style-type: none"> Know simple properties and rules about brackets and priority of operation Identify relationships and record symbolic rules for number patterns

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p> $4 + 3 \times 5 = _$ $12 \times 6 + 3 = _$ 2.45 divided by 5 - 0.75 = $_$ 96 divided by 8 - 12 = $_$ what is the significance of starting operations at different points? e.g. 4 + 3 before 3 3 5 or vice versa in 4 + 3 3 5 establish the value of brackets, leading to the priority of multiplication and division over addition and subtraction explore these properties and rules without and with a calculator </p> <ul style="list-style-type: none"> identify relationships and record verbal and simple symbolic rules for number patterns <i>identify and discuss rules for simple number sequences</i> 2.0, 3.5, 5.0, 6.5 ... i.e. sequence increases by adding 1.5 81, 27, 9 ... decreases by dividing by 3 1, 4, 9, 16, 25, 36 ... 	
<p style="text-align: center;">Equations</p>	<ul style="list-style-type: none"> translate number sentences with a frame into word problems and vice versa <i>create number stories to describe a given number sentence</i> <i>how many teams of four can the teacher make for relays from a class of twenty-eight children?</i> $28 / 4 = _$ <i>a man has twenty-eight windows to clean; it takes him an hour to clean four; how long will it take him altogether?</i> <i>construct number sentences to describe mathematically</i> 	<ul style="list-style-type: none"> Translate word problems with a variable into number sentences Solve one-step number sentences and equations

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p><i>a given word problem</i></p> <ul style="list-style-type: none"> • solve one-step number sentences and equations $75 - 43 = _$ $3.5 \times _ - 14$ $25\% \text{ of } _ = 15.$ • 	
Variables	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Explore the concept of a variable in the context of simple patterns, tables and simple formulae and substitute values for variables •

Strand Shape & Space		
The Child Will Be Enabled To:		
Strand Units	Juniors	Seniors
2D Shape	<ul style="list-style-type: none"> • sort and name 2-D Shapes; square, circle, triangle, rectangle • solve problems involving shape 	<ul style="list-style-type: none"> • sort and name 2-D shapes: square, circle, triangle, rectangle <i>directed sorting of 2-D shapes with different criteria, e.g. round/not round, thick/thin</i> • use suitable structured materials to create pictures • solve problems involving shape <i>which two shapes go together to cover a solve tasks and problems involving shape.</i> • sort, describe and name 2-D shapes: square, circle, triangle, rectangle

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

		<p><i>collect and sort different shapes</i> <i>e.g. straight, curved, flat, side, corner</i> <i>make shapes with art straws, on geoboard</i> <i>draw shapes found in the environment</i></p> <ul style="list-style-type: none"> combine and divide 2-D shapes to make larger or smaller shapes <i>cut paper shapes into 2 or 4 pieces and discuss the results</i> solve problems involving shape and space <i>make a shape with 7 blocks</i> <i>how many different shapes can you make with 5 blocks?</i> give simple moving and turning directions.
3D Shape	<ul style="list-style-type: none"> sort 3-D shapes, regular and irregular 	<ul style="list-style-type: none"> sort 3-D shapes, regular and irregular <i>things that do/do not roll, do/do not fit together</i> <i>make constructions with 3-D shapes and discuss them</i> solve tasks and problems involving shape
Spatial Awareness		<ul style="list-style-type: none"> explore, discuss, develop and use the vocabulary of spatial relations position: over, under, up, down, on, beside, in directions: moving in straight/curved lines, in a circle

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Shape & Space		
The Child Will Be Enabled To:		
Strand Units	First	Second
2D Shapes	<ul style="list-style-type: none"> • sort, describe, compare and name 2-D shapes: square, rectangle, triangle, circle, semicircle <i>describe shapes, referring to size, corners, number and length of sides</i> • <i>sort shapes: 4-sided/not 4-sided, curved/not curved</i> • construct and draw 2-D shapes <i>use templates, stencils, geostrips, geoboards</i> • combine and partition 2-D shapes <i>combine shapes to make new shapes and patterns</i> <i>make pictures and mosaic patterns by combining shapes</i> <i>fit many examples of identical shapes together to cover surface</i> • identify halves of 2-D shapes <i>fold paper shapes in half and cut to make new shapes</i> • identify and discuss the use of 2-D shapes in the environment <i>in furniture, classroom objects, own possessions.</i> 	<ul style="list-style-type: none"> • sort, describe, compare and name 2-D shapes: square, rectangle, triangle, circle, semicircle, oval <i>note similarities and differences between shapes</i> • construct and draw 2-D shapes • combine and partition 2-D shapes • identify half and quarter of shapes <i>discuss the relationship between halves and quarters</i> • identify and discuss the use of 2-D shapes in the environment <i>look for examples of tiling in the environment.</i>
3D Shapes	<ul style="list-style-type: none"> • describe, compare and name 3-D shapes, including cube, cuboid, cylinder and sphere <i>collect, sort and describe shapes, referring to number and shapes of faces, edges, vertices (corners on 3-D shape)</i> 	<p><i>make prints with the surfaces of 3-D shapes and discuss results</i> <i>dismantle boxes and examine constituent shapes</i></p> <ul style="list-style-type: none"> • discuss the use of 3-D shapes in the

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>identify shapes that stack, roll or slide</i></p> <ul style="list-style-type: none"> discuss the use of 3-D shapes in the environment <i>boxes, packets, containers, fish-tank</i> solve and complete practical tasks and problems involving 2-D and 3-D shapes <i>use boxes, cardboard packs or containers in construction activities</i> explore the relationship between 2-D and 3-D shapes 	<p>environment</p> <ul style="list-style-type: none"> solve and complete practical tasks and problems involving 2-D and 3-D shapes explore the relationship between 2-D and 3-D shapes.
Spatial Awareness	<ul style="list-style-type: none"> explore, discuss, develop and use the vocabulary of spatial relations between, underneath, on top of, around, through, left, right <i>explore closed shapes (e.g. circle), so that one walks from one point back to the same point without having to turn around</i> <i>explore open shapes (e.g. V-shape), where one has to turn around to get back to the starting point</i> <i>make body shapes</i> give and follow simple directions within classroom and school settings <i>from desk to window</i> <i>from classroom to school hall</i> <i>from classroom to school yard</i> <i>explore and solve practical problems.</i> 	<ul style="list-style-type: none"> explore, discuss, develop and use the vocabulary of spatial relations give and follow simple directions within classroom and school settings, including turning directions, using half and quarter turns <i>turning on the spot to face in different directions</i> <i>take 2 steps forward, do a half turn, take 3 steps forward</i> <i>pupils give instructions to other pupils</i> <i>use mazes, grids, board games, computer</i> <i>explore and solve practical problems.</i>
Symmetry	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> identify line symmetry in shapes and in the environment <i>fold shapes in half, blob and fold paintings</i> <i>complete shapes or pictures symmetrically</i> <i>collect and sort objects on the basis of symmetry.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Angles	•	<ul style="list-style-type: none"> • explore and recognise angles in the environment <i>investigate things that turn: door handles, wheels</i> <i>make full, half and quarter turns in yard or hall</i> <i>investigate angles as corners; use a right angle made from card to 'measure' corners on 2-D shapes; discuss</i> • relate square corner to quarter turn
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Strand Shape & Space		
The Child Will Be Enabled To:		
Strand Units	Third	Fourth
2D Shape	<ul style="list-style-type: none"> • identify, describe and classify 2-D shapes: square, rectangle, triangle, hexagon, circle, semicircle, oval and irregular shape • explore, describe and compare the properties (sides, angles, parallel and non-parallel lines) of 2-D shapes • construct and draw 2-D shapes use templates, stencils, geostrips, geoboards 	<ul style="list-style-type: none"> • Identify, describe and classify 2D Shapes; explore, describe and compare the properties of 2D shapes • construct and draw 2D shapes • identify the use of 2D shapes in the environment

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<ul style="list-style-type: none"> combine, tessellate and make patterns with 2-D shapes cover surfaces with 2-D shapes that tessellate or do not tessellate identify properties that facilitate or hinder tessellation combine shapes to make patterns; identify the use of 2-D shapes in the environment buildings, road signs, printing, household objects solve and complete practical tasks and problems involving 2-D shape 	
3 D Shape	<ul style="list-style-type: none"> identify, describe and classify 3-D shapes, including, cube, cuboid, cylinder, cone, sphere, triangular prism, pyramid explore, describe and compare the properties of 3-D shapes number and shape of faces, number of edges and corners, ability to roll, slide or stack explore and describe the relationship of 3-D shapes with constituent 2-D shapes identify constituent 2-D shapes by observation and deconstruction and compile a table of results construct 3-D shapes trace around nets and cut out use straws or pipe cleaners; solve and complete practical tasks and problems involving 2-D and 3-D shapes 	<ul style="list-style-type: none"> 3D introduction of triangular prism, pyramids- making nets and tessellations identify, describe and classify 3D shapes and solving practical tasks and problems
Lines & Angles	<ul style="list-style-type: none"> identify line symmetry in the environment identify and draw lines of symmetry in two dimensional shapes 	<ul style="list-style-type: none"> Identify, describe and classify oblique and perpendicular lines; draw, discuss and describe intersecting lines and their

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<ul style="list-style-type: none"> • fold paper shapes or use a mirror to identify lines of symmetry • use fold lines to draw and record lines of symmetry • classify 2-D shapes according to their number of lines of symmetry 	<p>angles; classify angles as greater than, less than or equal to a right angle; right angles, acute and obtuse angles, parallel, horizontal, vertical and perpendicular lines</p>
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Strand Shape & Space		
The Child Will Be Enabled To:		
Strand Units	Fifth	Sixth
2 D Shape	<ul style="list-style-type: none"> • make informal deductions about 2-D shapes and their properties • use angle and line properties to classify and describe triangles and quadrilaterals <i>name, explore and compare a wide variety of three and four-sided figures in terms of size and number of angles, type and number of sides e.g. trapezium, scalene triangle, regular hexagon</i> • identify the properties of the circle <i>explore and compare circles of various unit diameters measure and identify the relationship of diameter to radius examine area by counting square units</i> • construct a circle of given radius or 	<ul style="list-style-type: none"> • Make deductions about shapes and their properties • Use angle and line properties to classify and describe triangles and quadrilaterals • Construct triangles from given sides or angles • Tessellate combinations of 2-D shapes • Classify 2-D shapes according to their lines of symmetry • Plot simple coordinates and apply where appropriate • Use 2-D shapes and properties to solve problems • Identify the properties of the circle • Construct a circle of a given radius or diameter

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>diameter <i>draw using a compass</i></p> <ul style="list-style-type: none"> tessellate combinations of 2-D shapes classify 2-D shapes according to their lines of symmetry <i>explore, compare and record lines of symmetry in 2-D shapes</i> use 2-D shapes and properties to solve problems <i>make a specified shape with Tangram shapes.</i> 	<ul style="list-style-type: none"> Calculate the area of a circle
3 D Shape	<ul style="list-style-type: none"> identify and examine 3-D shapes and explore relationships, including tetrahedron (faces, edges and vertices) <i>explore, compare and record the number of faces of 3-D shapes</i> <i>identify number of edges and vertices of 3-D shapes</i> <i>name the shape of the faces deconstruct 3-D shapes into nets; examine and discuss</i> draw the nets of simple 3-D shapes and construct the shapes <i>discuss and draw simple net including flaps where necessary</i> <i>construct 3-D shapes from nets.</i> 	<ul style="list-style-type: none"> Identify and examine 3-D shapes and explore relationships Draw nets of simple 3-D shapes and construct them
	<ul style="list-style-type: none"> recognise, classify and describe angles and relate angles to shape and the environment 	<ul style="list-style-type: none"> Recognise, classify and describe angles and relate angles to shape

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

<h2 style="text-align: center;">Lines & Angles</h2>	<p><i>explore and compare a wide variety of angles and shapes measure and record angles as acute, obtuse, reflex or right angles, and determine the number of such angles in relation to common regular shapes</i></p> <ul style="list-style-type: none"> recognise angles in terms of a rotation <i>examine, measure and record the angles (including the reflex angle) formed by the hands of a clock at a variety of different times</i> <i>extend by using manipulatives, e.g. straws, lollipop sticks, Meccano, string, 360; protractor, LOGO computer language if available</i> estimate, measure and construct angles in degrees <i>measure and record a wide variety of angles using a protractor</i> <i>construct angles of various sizes using a protractor</i> <i>estimate angle sizes and check by measuring with a protractor</i> explore the sum of the angles in a triangle <i>cut off the three corners of a paper triangle and put them together to make 180 degrees</i> <i>measure the angles in a variety of triangles using a protractor</i> <i>calculate and record their sum</i> 	<ul style="list-style-type: none"> Recognise angles in terms of rotation Estimate, measure and construct angles in degrees
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Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

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Strand Measure		
The Child Will Be Enabled To:		
Strand Units	Juniors	Seniors
Length	<ul style="list-style-type: none"> • Develop an understanding of the concept length through exploration discussion, and use of appropriate vocabulary : long, short, tall, wide • Compare and order objects according to height or length 	<ul style="list-style-type: none"> • Develop an understanding of the concept length through exploration discussion, and use of appropriate vocabulary : long, short, tall, wide • Compare and order objects according to height or length • Estimate and measure length in non-standard units • Select and use appropriate non-standard units to measure length , width, height • Discuss reasons for choice
Weight	<ul style="list-style-type: none"> • compare objects according to weight • develop an understanding of the concept of weight through exploration, handling of objects, and use of appropriate vocabulary 	<ul style="list-style-type: none"> • develop an understanding of the concept of weight through exploration, handling of objects, and use of appropriate vocabulary <i>heavy/light, heavier/lighter, balance, weigh sort objects into heavy or light sets handle and describe objects using the vocabulary of weight</i> • compare objects according to weight <i>present simple problems, e.g. pupils estimate (guess) by handling which object is heavier or lighter?check using balance; discuss</i>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

		<p><i>compare pairs of objects that look alike but are different in weight, e.g. golf ball and plastic squash ball.</i></p> <ul style="list-style-type: none"> • develop an understanding of the concept of weight through exploration, handling of objects and use of appropriate vocabulary • compare and order objects according to weight compare objects that differ in size, shape and weight by handling <i>check using balance; discuss</i> <i>compare an object with a collection of objects</i> <i>compare a collection of objects with another collection of objects</i> <i>order three objects according to weight by handling;</i> <i>check using balance; discuss</i> • estimate and weigh in non-standard units <i>check using balance</i> <i>present simple problems:</i> <i>how many apples do you think will balance your lunchbox?</i> • select and use appropriate non-standard units to weigh objects <i>present simple problems:</i> <i>How can we find the weight of a stone?</i> <i>Which unit will we use (matchsticks or conkers)?</i> <i>discuss reasons for choice.</i>
	<ul style="list-style-type: none"> • develop an understanding of the concept of capacity through 	<ul style="list-style-type: none"> • develop an understanding of the concept of capacity through exploration and the use of

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

<h2>Capacity</h2>	<p>exploration and the use of appropriate vocabulary</p> <ul style="list-style-type: none"> compare containers according to capacity 	<p>appropriate vocabulary <i>full/nearly full/empty/holds more/holds less/holds as much as fill and empty containers of various sizes, discuss</i> <i>use smaller containers to fill larger containers</i></p> <ul style="list-style-type: none"> compare containers according to capacity <i>use a variety of containers; discuss emphasise that full means full to the top present simple problems:</i> <i>do you think the jar holds more sand than the cup?</i> <i>will all the water from the jug go into the</i> develop an understanding of the concept of capacity through exploration and the use of appropriate vocabulary compare and order containers according to capacity <i>fill one container and pour contents into another</i> <i>compare the capacity of two very different containers, noting that both can hold the same amount</i> <i>compare three containers; arrange in order of capacity; label, e.g. holds more/holds most</i> estimate and measure capacity in non-standard units <i>present simple problems:</i> <i>estimate (guess) how many spoons or egg-cups of sand or dried peas will fill the cup</i> <i>how many jugs of water will fill the bucket?</i> <i>use the same unit to fill two different containers; check by measuring</i> <i>record results using one counter for each cup or jug</i>
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Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

		<p><i>poured children work in pairs</i></p> <ul style="list-style-type: none"> select and use appropriate non-standard units to measure capacity <i>glass?</i>
<h2>Time</h2>	<ul style="list-style-type: none"> develop an understanding of the concept of time through the use of appropriate vocabulary sequence daily events or stages in a story 	<ul style="list-style-type: none"> develop an understanding of the concept of time through the use of appropriate vocabulary <i>morning/evening, night/day, lunchtime, bedtime, early/late, days of the week, school days, weekends</i> <i>use the language of time to discuss events</i> <i>record weather for each day on a chart</i> sequence daily events or stages in a story <i>pupils state the order of familiar events</i> <i>order pictures in correct time sequence</i> <i>sequence events in familiar stories and rhymes.</i> develop an understanding of the concept of time through the use of appropriate vocabulary <i>yesterday/today/tomorrow/seasons/soon/not yet/birthday</i> <i>significant events, festivals, holidays</i> sequence daily and weekly events or stages in a story <i>discuss significant times in the day</i> <i>record orally and pictorially the time sequence of four events in the school day</i> <i>make scrapbooks of 'My Day'</i> <i>sequence pictures representing stages of development</i> <i>pupils identify errors in a sequence; discuss</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

		<ul style="list-style-type: none"> • read time in one-hour intervals.
Money	<ul style="list-style-type: none"> • recognise and use coins (up to 5 cents) 	<ul style="list-style-type: none"> • recognise and use coins (up to 5c) sort and name 1c, 2c and 5c coins <i>select appropriate coins in simple shopping activities,</i> <i>use correct vocabulary: buy, sell, spend, coins, pence, how much?</i> • solve practical tasks and problems using recognise coins up to 20 cents and use coins up to 10 cents <i>exchange a number of coins for a single coin of equal value and vice versa</i> <i>use coins in shopping activities, tender appropriate coins, calculate change</i> solve practical tasks and problems using money <i>which items can be bought with a given coin?</i> • <i>spend the same amount of money in two different ways.</i> • money.

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Measure		
The Child Will Be Enabled To:		
Strand Units	First	Second
Length	<ul style="list-style-type: none"> • estimate, compare, measure and record length using non-standard units <i>lollipop sticks, pencils, spans, strides</i> • select and use appropriate non-standard measuring units and instruments <i>choose a measuring unit from a selection available in the classroom (e.g. selecting either a cube, lollipop stick or a stride to measure the room)</i> <i>discuss which units are best for measuring long objects and which are best for measuring short objects</i> • estimate, measure and record length using standard unit (the metre) length, width, height, measure, metre, nearly a metre, a bit more than/a bit less than a metre <i>discuss the need for standard units</i> <i>collect sets of objects longer than, shorter than or the same length as a metre</i> • solve and complete practical tasks and problems involving length <i>suggest ways of measuring around a tree-trunk or other irregular object</i> <i>suggest ways of comparing objects at</i> 	<ul style="list-style-type: none"> • estimate, compare, measure and record length using non-standard units • select and use appropriate non-standard measuring units/instruments <i>select and use units/instruments for measuring tasks</i> <i>discuss which instrument is best for short objects and which is best for long objects</i> • estimate, measure and record length using metre and centimetre • <i>through counting and recording, explore relationship between metre and centimetre measure using 10 cm rods, half-metre stick, metre stick, and trundle wheel</i> • solve and complete practical tasks and problems involving length <i>find the height of each child in a group who is the shortest/tallest?</i> <i>graph results.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p><i>home</i> <i>who has the widest gate?</i> <i>measure with string and bring the string to school for comparison and discussion</i></p>	
<p>Weight</p>	<ul style="list-style-type: none"> estimate, compare, measure and record weight using non-standard units heavy, heavier, heaviest; light, lighter, lightest; balance <i>sort objects into heavy or light by hand</i> <i>find objects that are lighter or heavier than given object</i> <i>estimate comparative weight of two objects by sight</i> <i>compare weights by hand weighing</i> <i>check using balance</i> select and use appropriate non-standard measuring units and instruments choose a measuring unit from a selection available in the classroom, e.g. selecting either stones, cubes or beads to weigh school bag <i>discuss which units are best for weighing various objects</i> estimate, measure and record weight using standard unit (the kilogram) and solve simple problems <i>discuss the need for standard units</i> <i>collect sets of objects lighter than, heavier than or then same weight as a kilogram</i> 	<ul style="list-style-type: none"> estimate, compare, measure and record weight using non-standard units select and use appropriate non-standard measuring units and instruments estimate, measure and record weight using kilogram, half kilogram and quarter kilogram and solve simple problems <i>measuring with pan balance, kitchen scales, bathroom scales</i> <i>how many kilograms do you weigh?</i> <i>graph the weights of a group of children</i> explore and discuss instances when objects or substances that weigh 1 kg vary greatly in size <i>fill bags or containers with 1 kg of sand, flour, polystyrene strips, beads.</i>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>find the largest packet and the smallest packet that weighs a kilogram make two objects (two balls of Plasticine) weigh the same.</i></p>	
<p>Capacity</p>	<ul style="list-style-type: none"> • estimate, compare, measure and record capacity using non-standard units pour, fill, full, empty, holds more, less or the same amount as <i>find the capacity of a larger container by using teaspoons, egg-cups, cups find containers that hold more or less than a given container; estimate, and check by measuring</i> • select and use appropriate non-standard measuring units and instruments <i>choose a measuring unit from a selection which container is best for filling the bucket? why?</i> • estimate, measure and record capacity using standard unit (the litre) and solve simple problems <i>discuss the need for standard units collect sets of containers that hold more than, less than or about the same as a litre collect litre containers of different shapes and sizes; label; check capacity by pouring from one to the other how many</i> 	<ul style="list-style-type: none"> • estimate, compare, measure and record the capacity of a wide variety of containers using non-standard units <i>estimate comparative capacity of two containers by sight; check by measuring and discuss results fill several containers using the same unit and arrange in order of capacity; discuss make a collection of different-shaped containers that hold the same amount</i> • select and use appropriate non-standard measuring units and instruments • estimate, measure and record capacity using litre, half-litre and quarter-litre bottles and solve simple problems <i>make collections of bottles of differing shapes but similar capacity compare capacity of litre, 1-2 litre and 1-4 litre containers ask the children to suggest reasons why some liquids are sold in a variety of different-sized or different-shaped cartons.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p><i>children could have a full cup of water from a litre bottle?</i></p>	
<p>Time</p>	<ul style="list-style-type: none"> • use the vocabulary of time to sequence events <i>sequence events associated with different times of the day, days of the week, months of the year</i> • discuss characteristics of seasons, of months of the year, day before, day after • read time in hours and half-hours on 12-hour analogue clock <i>become familiar with clock face, movement of hands</i> <i>record positions at hours and half-hours</i> <i>record activities at these times</i> <i>examine television schedules to find programmes that begin on hour and half-hour</i> <i>state what time it will be one hour later, half an hour later</i> • read day, date and month using calendar <i>read today's day, date and month</i> <i>discuss birthdays and other significant dates</i> <i>identify from the calendar the day of the week on which a given date occurs.</i> 	<ul style="list-style-type: none"> • use the vocabulary of time to sequence events • read and record time using simple devices • read time in hours, half-hours and quarter-hours on 12-hour analogue clock • read time in hours and half-hours on digital clock • read day, date and month using calendar and identify the season <i>discuss the passing of time: 24 hours in a day, 7 days in a week, numbers of days in the month.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Money	<ul style="list-style-type: none"> recognise, exchange and use coins up to the value of 50 cents <i>practise tendering and receiving amounts of money</i> <i>calculate and give change</i> <i>exchange a coin or coins for others of equal value</i> <i>calculate how many items may be bought with a given sum</i> 	<ul style="list-style-type: none"> recognise, exchange and use coins up to the value of €2 write the value of a group of coins; record money amounts as cents and later as euro : <i>135 cents may be written as €1.35.</i>
Area	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> estimate and measure area using non-standard units <i>how many playing-cards, postcards or workbooks cover the table?</i> <i>which shape is the most suitable?</i> <i>measure the area of the same surface several times with different units</i> <i>which surface has more wood, the table-top or the window-sill?</i> <i>children suggest ways of finding out</i> <i>estimate, discuss, measure and record.</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Measure		
The Child Will Be Able To:		
Strand Units	Third	Fourth
Length	<ul style="list-style-type: none"> Review the metre; estimate and measure items with metre stick, review the centimetre estimate and measure items in metres and centimetres rename units of length as metres and centimetres; use practical tasks to introduce addition and subtraction of units of length 	<ul style="list-style-type: none"> Estimate, measure, compare and record length using appropriate metric units rename units of length in decimal or fraction form understand, estimate and measure the perimeter of regular 2D shapes Addition and subtraction of metres and centimetres; Measure hall, playground, rooms in the school and record results Problem solving exercises.
Weight	<ul style="list-style-type: none"> Review the kilogram; Estimate and measure items with kilogramme/bag of sugar Review the need for half kilogrammes and quarter kilogrammes Introduce the gramme, list items in the classroom which are heavier than/ about/ lighter than a gramme estimate and measure items with grammes discuss the relationship between weight and size use practical tasks to introduce addition and subtraction of units of weight 	<ul style="list-style-type: none"> Estimate, compare, measure and record weight using appropriate units; rename units of weight using decimal and fraction form solve practical tasks and problems addition, subtraction, multiplication and division using units only measure weight of common foodstuffs using kitchen scales
Capacity	<ul style="list-style-type: none"> estimate, compare, measure and record the capacity of a wide variety of objects using appropriate metric units (l, ml) <i>use cartons, spoons, cups, jugs, plastic bottles and other common containers</i> 	<ul style="list-style-type: none"> Estimate, compare, measure and record capacity using appropriate metric units rename units of capacity using decimal or fraction form solve practical problems and tasks

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p><i>use litre, 250 ml and 500 ml measuring containers</i> <i>use tall, low, wide and narrow containers;</i></p> <ul style="list-style-type: none"> • solve and complete practical tasks and problems involving the addition and subtraction of units of capacity (l, ml) <p><i>confine to totals that can be readily checked by measuring.</i></p>	<ul style="list-style-type: none"> • measure capacity of common kitchen liquids using litres and millilitres • addition and subtraction of litres and millilitres • problem solving activities- computation
Time	<ul style="list-style-type: none"> • Review language of time. Review and sequence events in terms of time of the day, days of the week, seasons of the year, annual events • read, recognise and record time in five-minute intervals on analogue clocks • read and interpret simple timetable • rename minutes as hours and minutes • use a calendar to read the day, date, month and season • Express weeks as days and vice versa 	<ul style="list-style-type: none"> • Consolidate and develop a further sense of time passing • read time in one- minute intervals on analogue and digital clocks • express digital time as analogue time and vice versa • read and interpret simple timetable • rename hours as hours and minutes • practical work with 12/24 hr clock, digital a.m./p.m.; addition and subtraction of hours/minutes/seconds.
Money	<ul style="list-style-type: none"> • Review coins previously covered by recognising coins up to 2 euro, exchanging them for others of an equal value and using them to solve problems • calculate change • rename coins • write amounts in cent as euro and cent and vice versa • discuss how to use the decimal point when there is no full euro • use practical tasks to introduce addition and subtraction of money 	<ul style="list-style-type: none"> • Rename amounts of euro or cent and record using symbols and decimal point • solve one step and two step problems involving addition and subtraction • Recognise and exchange coins up to a euro • change euro into cents and vice versa • extend to multiplication and division using units only • problem solving exercises weekly
Area	<ul style="list-style-type: none"> • Use a variety of 2-D shapes to cover surfaces • measure the area of various regular and 	<ul style="list-style-type: none"> • Estimate, compare and measure the area of regular and irregular shapes

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p>irregular shapes and objects using cut out non-standard square units</p> <ul style="list-style-type: none"> Estimate area of objects using non-standard square units before measuring 	<ul style="list-style-type: none"> define area calculate the length, knowing the area or given the perimeter and length find the width
Symmetry	<ul style="list-style-type: none"> identify line symmetry in the environment identify and draw lines of symmetry in two dimensional shapes; <i>fold paper shapes or use a mirror to identify lines of symmetry</i> <i>use fold lines to draw and record lines of symmetry</i> <i>classify 2-D shapes according to their number of lines of symmetry</i> 	<ul style="list-style-type: none"> Identify line symmetry in the environment identify lines of symmetry as horizontal, vertical or diagonal use understanding of line symmetry to complete missing half of a shape, picture/pattern
Chance		<ul style="list-style-type: none"> Use vocabulary of uncertainty and chance order events in terms of likelihood of occurrence identify and record outcomes of simple random processes.

Strand Measure		
The Child Will Be Enabled To:		
Strand Unit	Fifth	Sixth
Length	<ul style="list-style-type: none"> select and use appropriate instruments of measurement <i>ruler for shorter objects</i> <i>metre stick for longer objects or distances</i> 	<ul style="list-style-type: none"> Select appropriate instruments of measurement Rename measures of length Estimate and measure the perimeter of regular

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

	<p><i>trundle wheel for distances</i></p> <ul style="list-style-type: none"> estimate and measure length using appropriate metric units <i>estimate and measure a large variety of objects and places, both outdoors and indoors: books, desks, corridors, driveways, playing-pitch sidelines</i> <i>how far can you throw a ball? jump?</i> <i>run in 20 seconds?</i> <i>use appropriate measuring units</i> <i>mm (shorter objects) cm (longer objects)</i> <i>m (short distances) km (long distances)</i> estimate and measure the perimeter of regular and irregular shapes. 	<p>irregular shapes</p> <ul style="list-style-type: none"> Use and interpret scales on maps and plans
Area	<ul style="list-style-type: none"> discover that the area of a rectangle is length by breadth <i>determine by repeated experiments using rectangles with sides measured in whole centimetres and square units of one square centimetre</i> estimate and measure the area of regular and irregular 2-D shapes <i>measure a wide variety of regular and irregular shapes using square units of one square centimetre and one square metre</i> calculate area using square centimetres and square metres <i>choose appropriate measuring units:</i> <i>square centimetres (smaller objects)</i> <i>square metres (large objects or rooms)</i> compare visually square metres and square centimetres. 	<ul style="list-style-type: none"> Recognise that the length of the perimeter of a rectangular shape does not determine the area of the shape Calculate the area of regular and irregular 2- D Shapes
	<ul style="list-style-type: none"> select and use appropriate instruments of measurement <i>choose measurement instruments appropriate to given tasks,</i> 	<ul style="list-style-type: none"> Select and use appropriate instruments of measurement

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

<p>Weight</p>	<p><i>e.g. balance, kitchen scales, bathroom scales and spring balance</i></p> <ul style="list-style-type: none"> estimate and measure weight using appropriate metric units <i>estimate and measure a large variety of objects use appropriate measuring units grams (pencils and copybooks) kilograms (school bags and people).</i> 	<ul style="list-style-type: none"> Rename measures of weight
<p>Capacity</p>	<ul style="list-style-type: none"> select and use appropriate instruments of measurement <i>choose measurement instruments appropriate to given tasks graduated jugs, litre containers or fractional litre containers</i> estimate and measure capacity using appropriate metric units <i>estimate and measure a large variety of objects use appropriate measuring units millilitres (cups), litres (watering-can).</i> 	<ul style="list-style-type: none"> Select and use appropriate instruments of measurement Rename measures of capacity Find the volume of a cuboid
<p>Time</p>	<ul style="list-style-type: none"> read and interpret timetables and the 24-hour clock (digital and analogue) <i>bus, train, air, ship, films, theatre, school, class</i> interpret and convert between times in 12-hour and 24-hour format <i>10:30 p.m. = 22:30 hours</i> <i>07:50 hours = 7:50 a.m.</i> 	<ul style="list-style-type: none"> Explore the relationship between time, distance and average speed Explore international time zones

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

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Money	<ul style="list-style-type: none"> compare 'value for money' using unitary method <i>compare the cost of 6 apples costing 75 cents and 4 apples costing 50 cents</i> calculate pay, based on hourly or daily rate calculate totals of shop bills. 	<ul style="list-style-type: none"> Explore value for money Convert currencies to euro and vice versa Solve problems relating to VAT and interest

Strand Data		
The Child Will Be Enabled To:		
Strand Units	Junior	Senior
Representing and Interpreting Data	<ul style="list-style-type: none"> sort and classify sets of objects by one criterion match sets, equal and unequal represent and interpret a set of simple mathematical data using real objects, models and pictures 	<ul style="list-style-type: none"> sort and classify sets of objects by one criterion <i>sort collections on the basis of colour, shape, size, texture and function</i> match sets, equal and unequal <i>enough/more/as many/as less</i> represent and interpret a set of simple mathematical data using real objects, models and pictures <i>children represent the chosen set concretely and pictorially</i> <i>children identify the numerical correspondence between the pictures and the objects, e.g. the set of children who had an</i>

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

		<p><i>apple for lunch.</i></p> <ul style="list-style-type: none"> • sort and classify sets of objects by one and two criteria <i>sort into two groups by one criterion: with/without wheels, red/not red shapes sort by two criteria: red toys with wheels</i> • represent and interpret data in two rows or columns <i>using real objects, models and pictures pupils choose between two types of pet pupil is given picture or model of a pet pictures or models are arranged in columns or rows in one-to-one correspondence discuss and compare results discuss the need for a common baseline.</i>
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Strand Data		
The Child Will Be Enabled To:		
Strand Units	First	Second
Representing and Interpreting Data	<ul style="list-style-type: none"> • sort and classify objects by two and three criteria <i>sort blocks according to colour, shape, size and thickness identify a block in the collection from a description of its attributes</i> 	<ul style="list-style-type: none"> • sort and classify objects by two and three criteria • represent, read and interpret simple tables and charts (pictograms) <i>chart of cars passing school during a particular time</i>

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<ul style="list-style-type: none"> represent and interpret data in two, three or four rows or columns using real objects, models and pictures <i>represent concretely and pictorially the sets of children who had an apple, an orange or a banana for lunch</i> <i>identify the correspondence between the number of symbols (fruit pictures) and the people in the set</i> <i>progress to representing data using more abstract 3-D forms, e.g. coloured blocks to represent people</i> <i>construct simple pictograms.</i> 	<p><i>weather chart records</i></p> <ul style="list-style-type: none"> represent, read and interpret simple block graphs <i>construct by fixing coloured squares to large sheet of paper</i> <i>progress to drawing on squared paper.</i>
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Strand Data		
The Child Will Be Enabled To:		
Strand Unit	Third	Fourth
Representing and interpreting data	<ul style="list-style-type: none"> collect, organise and represent data using pictograms, block graphs and bar charts <i>collect data from the environment and record in tabular form</i> <i>represent data in appropriate format</i> <i>discuss strengths and limitations of the</i> 	<ul style="list-style-type: none"> Collect, organise and represent data using pictograms, block graphs, bar charts and bar line charts; read and interpret bar line graphs and simple pie charts use data sets to solve problems

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

	<p><i>format used</i> <i>use simple scale in block graphs and bar charts</i> <i>use computer applications if available to organise and represent data</i></p> <ul style="list-style-type: none"> • read and interpret tables, pictograms, block graphs and bar charts; use data sets to solve and complete practical tasks and problems <i>solve simple problems using data collected from own environment</i> 	
<p>Chance</p>	<ul style="list-style-type: none"> • use vocabulary of uncertainty and chance: possible, impossible, might, certain, not sure • order events in terms of likelihood of occurrence <i>examine and discuss the likelihood of occurrence of simple events and order from least likely to most likely</i> <i>Our school will be closed next Monday</i> <i>The sun will shine for two hours tomorrow</i> <i>The teacher will fall asleep at 11 o'clock today</i> • identify and record outcomes of simple random processes <i>toss a coin ten or twenty times and record results</i> <i>draw a cube from a bag containing, for example, 4 blue cubes and 8 red cubes a number of times, replacing the drawn cube each time; discuss results</i> 	

Title
Whole School
Junior/Senior
1 st /2 nd
3 rd /4 th
5 ^h /6 th

Strand Data		
The Child Will Be Enabled To:		
Strand Units	Fifth	Sixth
Representing and interpreting data	<ul style="list-style-type: none"> collect, organise and represent data using pictograms, single and multiple bar charts and simple pie charts <i>collect data from the environment in tabular form and represent in appropriate format discuss and explore modes of representation</i> read and interpret pictograms, single and multiple bar charts, and pie charts <i>examine and discuss class-based examples and interpret charts from newspapers, magazines and computergenerated charts</i> 	<ul style="list-style-type: none"> Collect, organise and represent data using pie charts and trend graphs Read and interpret trend graphs and pie charts Compile and use simple data sets to solve problems Explore and calculate averages of data sets Use data sets to solve problems
Chance	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Identify and list all possible outcomes of simple random processes Estimate the likelihood of occurrence of events Construct and use frequency charts and tables

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th

Ratification and Implementation.

This school plan will be ratified by the Board of Management.

It will be reviewed each June.

Ratified By BOM:

Signed: _____

Board of Management

Date: _____

Signed: _____

Principal

Date: _____

Title
Whole School
Junior/Senior
1 st /2nd
3 rd /4th
5h/6th