Family Learning Guide

"Building Up One Another"

Family Learning Guide:

Most areas of the curriculum are taught differently today to how most adults were taught at school.

We know that lots of parents and carers find it helpful to understand how their children are taught – you will find lots of information in this guide, in particular relating to Health and Wellbeing, Numeracy and Literacy which permeate all areas of the curriculum.

The best thing that parents and carers can do for children is to have a positive attitude towards all areas of learning.

Contents

Introduction

This guide has been developed in conjunction with parents primarily to encourage effective learning and teaching methodologies in key areas of the curriculum. It is our hope that it will provide guidance to all staff, pupils and parents on how subjects, topics and contexts are delivered within our school. It is hoped that pupils and parents will refer to this booklet should uncertainty arise when learning at home.

Section One
How We Teach Health and Wellbeing in HSA

1.1 Introduction

Health and Wellbeing is taught both as a subject within itself and across the curriculum at all levels within the Curriculum for Excellence Framework. *Without a focus on health and wellbeing, learning cannot properly take place.*

It is a huge subject, which permeates all aspects of school life and covers mental, emotional, social and physical health and wellbeing both now and in the future.

Our focus and ethos at Howden St Andrew's is to Build Up One Another. We teach that if we live this motto, then we will help our children develop into kind, resilient adults who have a strong sense of self and community.

1.2 Curriculum for Excellence Levels

All topics and contexts in Health and Wellbeing span all primary school levels, with content appropriate to age and stage to ensure a progressive curriculum where learners can confidently learn and build upon prior skills and knowledge:

Topic	Early	First	Second
My Rights and the Rights Of Others	✓	✓	✓
Me As An Individual	✓	✓	✓
Me & My Talents	✓	✓	✓
Friendships	✓	✓	✓
The Human Body	✓	✓	✓
Managing Safety & Risk	✓	✓	✓
Skills For Life	✓	✓	✓
Relationships	✓	✓	✓
Phyical Education, Physical Activity & Sport	✓	✓	✓
Food & Health	✓	✓	✓
Substance Misuse	✓	✓	✓
Emotions & Feelings	✓	✓	✓

1.3 The Language Of Health and Wellbeing

Throughout school life, there are particular words and terms we strive to teach and embed:

Resilience: that is, coping skills. Coping skills help children manage failure and uncertainty and recover from upsets big and small.

Mental Health/Mental Wellbeing: that is, having a healthy mind. It's all about the ability to think positively about yourself and situations you come across, and about being able to make sense of things and to manage stress.

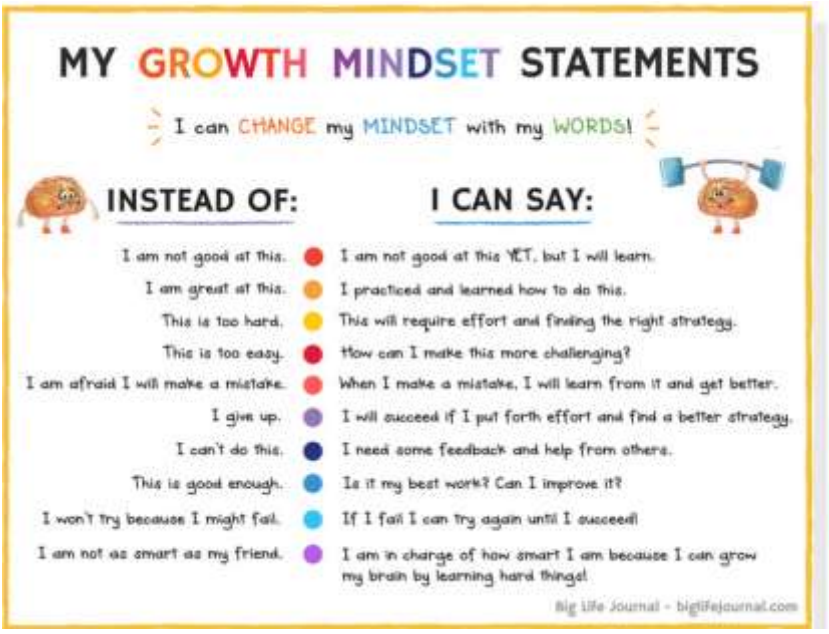
Emotional Wellbeing: that is, being able to recognise, understand and manage our feelings in situations. It's linked to Emotional Intelligence which is about how you can read people's body language, words, tone of voice and actions too.

Social Wellbeing: that is, being in relationships with family, friends and your community and feeling secure within these. It's about knowing that you belong, that what you do is important and helps your community and society.

Self-Esteem/Self Worth: that is, the way we feel about ourselves, the way we feel about our abilities and how we value and take care of ourselves.

Physical Wellbeing: that is, the health and wellbeing of our physical bodies and how we keep them safe and in tip top condition, both inside and out.

Growth Mindset: that is, believing that intelligence and abilities can be developed through effort, persistence, trying different strategies and learning from mistakes. Children (and adults!) believe that they can get better at something by practising, so when they're faced with a challenge, they become more and more determined to succeed, wanting to persevere and overcome knockbacks. They tend to feel as if they're in control, and are not threatened by hard work or failure. This is the philosophy that we teach daily. Building a **growth mindset** helps children at school; making them more motivated, more engaged in the classroom and likely to receive higher marks and greater rewards from their work.



1.4 The Wellbeing Indicators

We talk about Wellbeing Indicators in school, across all stages. This is about pupils' rights to be Safe, Healthy, Active, Nurtured, Achieving, Respected, Responsible and Included. It covers our whole holistic approach to Health and Wellbeing, and can include:

S Safe	H Healthy	A Achieving	N Nurtured	A Active	R Respected	R Responsible	I Included
Training Qualifications Experience Child Protection First Aid infection control smoke free clean and tidy comfortable Hygiene Risk Assessments Maintained Regulated Hazard Checks Fire Safety Emergency Evacuation Procedure Cleaning Schedule Use, Storage & Administration of Medicine Logbooks awareness of danger Health & Safety Road Safety Internet Safety security systems Registers	Illness Policy Cater for food allergies and intolerances special diet requirements Special Needs Training Working in Partnership with Parents nutrition healthy food menu planners well-balanced diet food hygiene Healthy Eating healthy choices Nutritional Guidance dental health self-care skills physically active regular access to outdoors fresh air exercise My Body Sports	life skills child development milestones individual attention support encouraged Equal Opportunities observations next steps planning work hard excel positive role models give praise recognise achievements reward behave well try hard positive attitudes self- esteem belief in ability involve participate influence feel included valued opportunities interact social skills work together progress	Praise Encourage warm affection feelings opinions recognise achievements reward comfort cuddles Physical Contact strong relationships attachment feel welcome happy talk listen value opinions supported to develop personal care timetables monitor assess needs routines opinions experience look after Self Care Skills help themselves healthy choices regular exercise Healthy Eating	Routine active play outdoors / indoors child development physical co-ordination timetables gross motor skills balance range of resources play parks opportunity large play equipment Encourage curious explore environment garden outings activity planning sensory positive stimulation our world safe supervised participate group activities games join in hobbies & interests experiences	recognised unique individual needs respect dignity Equal Opportunities attention concern Working in Partnerships with Parents supported listened to decisions involve discussions opportunity express views opinions Conversation questionnaires Feedback Child-Led Planning evaluate informed choices free Confidential secure private Child Protection views	Encourage Work together co-operate participate group activities share take turns rules taking turns behave join in respect for others lead by example role model teach feelings emotions Guide right and wrong support behaviour Anti-Bullying self- control consequences show remorse make amends promote positive safety responsibility do things for themselves life skills	involve additional support care Special Needs observe Working in Partnership with Parents discuss part of the community participate encourage join in incorporate listen to different choices views opinions suggestions family participation feedback planning influence valued supported diversity cultures celebrated Respect feel good differences unique individual

Section Two
This Is Our Faith

2.1 Introduction
2.2 Catholic Education Curriculum

2.1 Introduction

At Howden St Andrew's we are proud of our status as a school which teaches and promotes Catholic Education. We consider ourselves not to be a school for Catholics, rather, a Catholic school. That is to say, we are inclusive of all learners, promote a strong community of faith and treat others, always, as we would like to be treated, with Jesus at the centre of our school.

Our Religious Education Curriculum is twofold. There is an emphasis and focus on Catholic Education which permeates our teaching, aims. values and ethos. Additionally, beliefs, values and issues, practices and traditions, and development of beliefs and values are taught relating to Christianity and World Religions.

2.2 Catholic Education Curriculum

*In **Primary One**, the following topics are covered:*

Belonging
Family; church; saints; God's beautiful world; people who care for me; Jesus; praying)

Getting Ready
Advent; Christmas

Gifts From God
There's only one me; Boys and girls; God loves us all; Friends and helpers of God; Love; God's eyes; Everything from God.

God's Holy Book
God makes the earth; The flood; Moses; A good person helps; Jesus teaches us; Someone is made well.

God's World
God's love; All About Me; Psalms; Weather & Seasons; Senses

In **Primary Two**, the following topics are covered:

God Calls
God calls his people; Jesus calls his people.

God Loves/God Creates
My gifts and talents.

God Sends
Messengers; Human family and Holy family.

Growing and Changing
Growing/changing; Life forever; Special events; Hail Mary.

Our Father
All about the Our Father

In **Primary Three**, the following topics are covered:

Community
Jesus the Shepherd; People who care; Forgiving and healing; The Sacraments.

God's Plan For Me
Choices; Saying yes to God; Mary.

God's Creation
The creation story; St Francis.

Chosen
12 special friends; St Andrew; Jesus' life.

Son of God, Son of Man
Waiting; Joseph; Herod.

In **Primary Four**, the following topics are covered:

Jesus and the Sabbath
Festivals; Sabbath; Love God/Love your neighbour.

The Greatest Commandment
Loving God; Acts of Kindness; Class rules.

Build My Church
Peter; The Pope; Bishops; Missio; Celebrations.

God's Word
Listening; Serving; Praying; Following Jesus.

Visitors
The Magi; The star; The Feast.

In **Primary Five**, the following topics are covered:

What Is The Bible
The Word of God; Jesus Actions & Miracles

Jesus God and Man
Jesus; Mary; God's covenant

The Life of Jesus and Mary
People in the time of Jesus; The Angelus; Litanies; Lourdes; The Rosary.

Sacraments of Healing
The Seven Sacraments; Jesus as Healer; Penance; Anointing of the Sick; The Eucharist and Healing.

Taking Part In Mass
Respect; Confession; Belief; The Homily; Praying.

In **Primary Six**, the following topics are covered:

Chosen People
Freedom; Moses; 10 Commandments; God's Promises; Jesus

Discipleship
Effective prayer; Jesus Teaches; Trust; Gathering; Fasting & Giving; The Call of the Disciples; Jesus Calls Us

Faith Journey
Prophets; Saints and Holy People; Relationship With God; Journey of Faith; Blessings; Messiah; Passover; God's Promises

Jesus Preacher and Healer
Parables; Healing; Forgiving Sins; Scribes & Pharisees; Justice, Compassion & Care

Mission
SCIAF; Missio; Our Earth; Poverty; Saints

In **Primary Seven**, the following topics are covered:

Decisions & Choices
Using prayer in decision making; Asking & Listening; The Holy Spirit; Peace & Forgiveness; Sin & God's Grace.

Good News To The Poor
Jesus brings Good News; Jesus Reached Out; Prayer and Jesus; Prayer and Mary; Zechariah; Simeon; Women Disciples.

Prayer & Action
My Baptism; Martha & Mary; St Therese; The Carmelite Convent; Peacemakers.

Saint and Pilgrims
Saints; Disciples & Servants; Pier Giorgio; Kateri Tekakwitha; Young Saints; Men & Women of God.

Teacher & Healer
Jesus Heals & Helps; Faith.

Section Three

How We Teach Numeracy in HSA

3.1 Introduction

Why More Than One Method?

You will find that in some topics more than one method has been included. The method used to solve a problem will depend on how difficult it is and the numbers involved. Moreover, both calculator and non-calculator (mental) methods have been included in a number of cases. We cannot stress enough how important it is that pupils work hard to develop their mental skills rather than look for a calculator at the earliest opportunity. This skill is supported during class time through Number Talks, where efficient mental processes are explicitly taught and fully discussed.

What Else Can Be Done To Improve Numeracy? Practise! Mathematics and numeracy are practical subjects. Without practice it is very difficult to fully comprehend the methods and strategies required to apply numeracy across the curriculum and in life beyond school. It is often the case that one area of numeracy relies upon another; therefore it is imperative that solid foundations are established early in a child's education upon which to build the essential skills required to be confident in numeracy. We hope you find this guide useful; happy reading!

3.2 Curriculum for Excellence Levels

The table below is a guide to the Curriculum for Excellence Level at which a pupil should expect to see the topics covered within this booklet in their primary class.

Topic	Early	First	Second
Place Value	✓	✓	✓
Addition	✓	✓	✓
Subtraction	✓	✓	✓
Multiplication from 1 to 10		✓	✓
Multiplication by a Multiple of 10		✓	✓
Long Multiplication			✓
Division		✓	✓
Integers			✓
Order Of Operations			✓
Fractions	✓	✓	✓
Equivalent Fractions		✓	✓
Decimals		✓	✓
Percentages			✓
Rounding			✓
Time	✓	✓	✓
Area	✓	✓	✓
Angles			✓
Co-ordinates			✓
Scale & Grid References			✓
Graph Work		✓	✓
Measurement	✓	✓	✓

3.3 Place Value

Place value is the learning and knowledge associated with our counting system.

Hundreds	Tens	Units	Decimal Point	Tenths	Hundredths
3	1	2	.	6	8

This is the number three hundred and twelve point six eight (312.68).

Note that the decimal point is located between the units and tenths columns and **does not move**.

Multiplication by 10, 100 and 1000

For multiplication by 10, 100 and 1000 the digits move to the left by 1, 2 and 3 places, respectively.

Thousands	Hundreds	Tens	Units	Decimal Point	Tenths	Hundredths
			5	.	8	3
		5	8	.	3	
	5	8	3			
5	8	3	0			

Division by 10, 100 and 1000

For division by 10, 100 and 1000 the digits move to the right by 1, 2 and 3 places, respectively.

T Thousands	Hundreds	Tens	Units	Decimal Point	Tenths	Hundredths
			5	.	8	3
		5	8	.	3	
	5	8	3			
5	8	3	0			

The pattern continues in this way for powers of 10 larger than 1000.

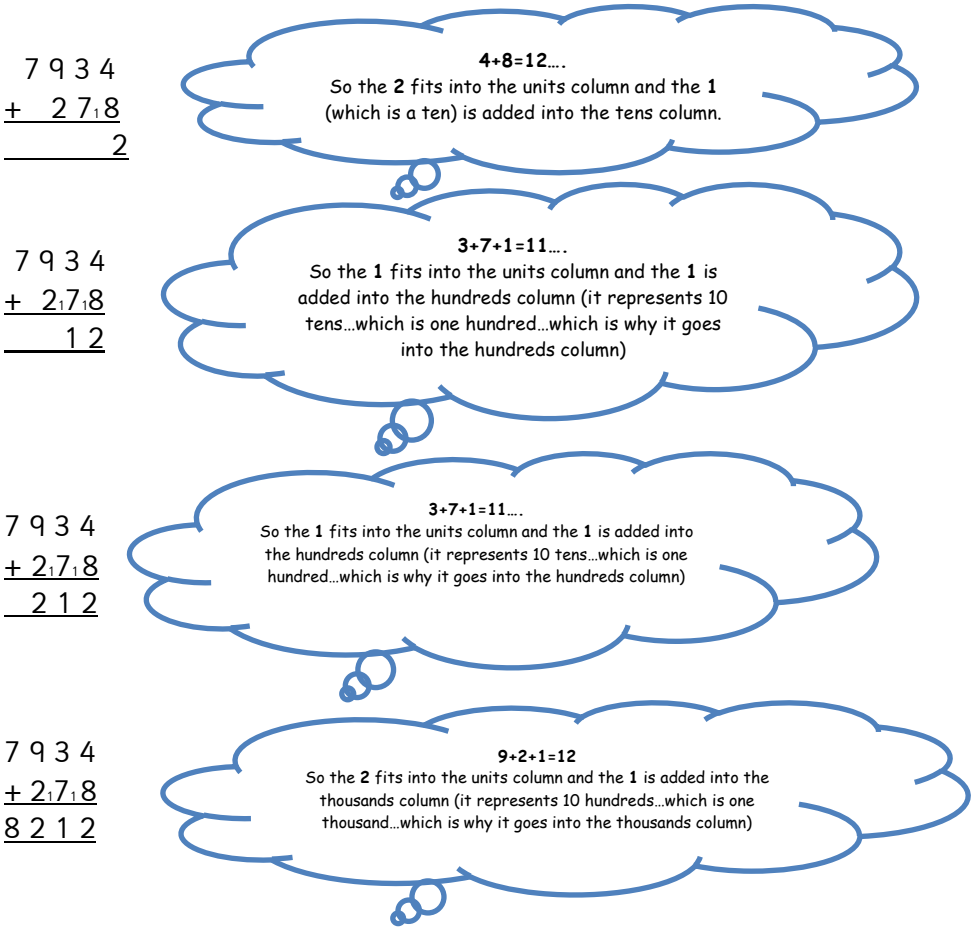
We **do not say** "add a zero" for multiplication and "take off a zero" for division as this can cause problems when decimals are involved

3.4 Addition

Written Method

When adding numbers, ensure that they are lined up correctly according to their place value. Start at the right hand side, write down the units and then carry tens to the next column on the left.

Example Add 7934 and 278



Mental Strategies

This is not an exhaustive list of mental strategies for addition and which strategy you choose may vary depending on the question.

Example: **Find 38 + 57**

Method 1: Add tens, add units and add together.

30 + 50 = 80 8 + 7 = 15 80 + 15 = 95.

Method 2: Split one number into units and tens and then add in two steps.

38 + 50 = 88 88 + 7 = 95.

Method 3: Round up one number to the next ten and then subtract.

38 + 60 = 98 (60 is 3 too many so now subtract 3)
98 – 3 = 95.

3.5 Subtraction

Written Method

After aligning digits by their place value we use decomposition for subtraction; we do not use "borrow and pay back".

Example Subtract 425 from 9143

$$\begin{array}{r} 9\,1\,4\,3 \\ -\ \underline{4\,2\,5} \\ 8\,7\,1\,8 \end{array}$$

This subtraction was completed using the following steps:

1) In the units column try 3 subtract 5 – we can't do this here because it would result in a negative number.

2) From the tens column we have exchanged 1 ten for 10 units (i.e. 40 becomes 30 + 10 units)

3) The 10 units are added on to the units column to make 13 – 5 = 8

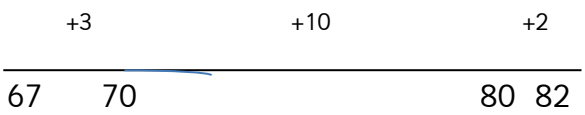
4) The subtraction in the tens column is now 3 – 2 = 1.

5) We repeat this process in the hundreds column to complete the subtraction.

Mental Strategies

Example Calculate 82 - 67

Method 1 "Count On"



3 + 10 + 2 = 15

Method 2 Decompose the number to be subtracted

67 = 60 + 7 so subtract 60 then subtract 7

82 – 60 = 22 22 – 7 = 15.

3.6 Multiplication from 1 to 10

It is essential that every pupil can recall basic multiplication tables from 1 to 10 readily.

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

8 x 7 = 56

Mental Strategies

Example Calculate 27 x 8

Method 1 Decompose any number larger than one digit.

27 = 20 + 7 so multiply 8 by 20 then 8 by 7 and add

20 x 8 = 160 7 x 8 = 56

Therefore 27 x 8 = 160 + 56 = 216

Method 2 Round to the nearest 10.

30x8= 240 but 30 is three lots of 8 too many so subtract **3x8= 24**

240 – 24 = 216.

3.7 Multiplication by a Multiple of 10

It is relatively easy to multiply by 10, 100, 1000 etc (see page 5). Therefore, given a calculation which involves multiplication by a multiple of 10 (40, 600, 3000 etc) we can quickly complete our calculation in two steps by deconstructing the number. This is often referred to as the "two step method".

Examples:

1. Calculate 14 x 50

50 = **5** x **10** so

14 x **5** = 70 and 70 x **10** = 700

2. Find 6.7 x 4000

4000 = **4** x **1000** so

6.7 x **4** = 26.8 and 26.8 x **1000** = 26800

Long Multiplication

For long multiplication we multiply by the units and then by the tens before adding the resulting answers. (For numbers larger than two digits the process continues in the same way.)

Examples:

1. Calculate 65 x 27

$$\begin{array}{r} 6\ 5 \\ \times\ 2\ 7 \\ \hline 4\ 5\ 5 \quad \leftarrow 65\times 7 \\ +\ 1\ 3\ 0\ 0 \quad \leftarrow 65\times 20 \\ \hline 1\ 7\ 5\ 5 \end{array}$$

2. Calculate 413 x 59

$$\begin{array}{r} 4\ 1\ 3 \\ \times\ \ 5\ 9 \\ \hline 3\ 7\ 1\ 7 \quad \leftarrow 413\times 9 \\ +\ 2\ 0\ 6\ 5\ 0 \quad \leftarrow 413\times 50 \\ \hline 2\ 4\ 3\ 6\ 7 \end{array}$$

3.8 Division

Division can be considered as the reverse process of multiplication. For example:

$2 \times 3 = 6$ $\quad 6 \div 2 = 3$ $\quad$ and $\quad 6 \div 3 = 2$

Essentially division tells us how many times one number (the divisor) goes into another (the dividend), or, how many groups we can split into. From above, 2 goes into 6 three times and 3 goes into 6 two times. The answer from a division is called the quotient. For more difficult divisions we use the division sign:

quotient
divisor ⟌ dividend

We start from the left of the dividend and calculate how many times the divisor divides it. This number is written above the division sign. If the divisor does not divide the digit exactly then the number left over is called the remainder. If there is a remainder then it is carried over to the next column and the process is repeated. If there is no remainder then we move directly on to the next column. At the end of the dividend if there is still a remainder then in the early stages pupils are expected to write the remainder after the quotient, however, as a pupil progresses we expect the dividend to be written as a decimal and the remainder

to be carried into the next column. It is important that digits are lined up carefully.

Examples:

1. $2 \overline{)8\,6}$ → $2 \overline{)8\,6}$ (4 3)

8 divided by 2 is 4

6 divided by 2 is 3 with no remainder

2. $3 \overline{)6\,9\,6}$ (2 3 2)

3. $5 \overline{)1_1 7_2 5}$ (0 3 5)

1 divided by 5 is zero with remainder 1 so the 1 is carried to the 7. So it's now 17 divided by 5 which is 5 remainder 2. carry the 2 and complete with 25 divided by 5.

4. $7 \overline{)5\ {}_5 0_1 6_2 1}$ (0 7 2 3)

1 4 r3

5. $4\overline{)5\,{}_{1}9}$ r3 → progressing to $4\overline{)5{}_{1}9.{}_{3}0_{2}0}$ 1 4 . 7 5

Note that the zero at the beginning of the quotient for examples 3 and 4 is not necessary as 035 = 35 and 0723 = 723.

Division by a Multiple of 10

Pupils are expected to divide by multiples of 10. The method is similar to that outlined in the previous page.

Calculate 1020 ÷ 60

60 = 6 x 10 ….. so divide by 6 and divide by 10 (in any order)

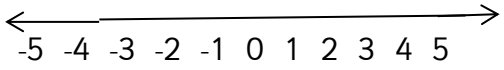
1020 ÷ 10 = 102 and $6\overline{)1\,0\,{}_{4}2}$ 1 7 therefore 1020 ÷ 60 = 17

3.9 Integers

The first number in our number system is not zero ☺!

The set of numbers known as integers comprises positive and negative whole numbers and the number zero. Negative numbers are below zero and are written with a negative sign, " – ".

Integers can be represented on a number line.



Integers are used in a number of real life situations including temperature, profit and loss, height below sea level and golf scores.

Adding and Subtracting Integers

Consider 2 + 3.

Using a number line this addition would be "start at 2 and move right 3 places". Whereas 2 – 3 would be "start at 2 and move left 3 places".

Picturing a number line may help pupils extend their addition and subtraction to integers.

Examples

1. -4 + 3 = -1 (start at -4 and move right 3 places)

2. -8 + 10 = 2 (start at -8 and move right 10 places)

3. -5 – 2 = -7 (start at -5 and move left 2 places)

4. -11 – 7 = -18 (start at -11 and move left 7 places)

Now consider 2 + (-3).

Here we read "start at 2 and prepare to move right **but** then change direction to move left 3 places because of the (-3). Therefore, 2 + (-3) = -1 and we could rewrite this calculation as:

2 + (-3) = 2-3 = -1

Similarly, 2 – (-3) can be read as "start at 2 and prepare to move left **but** instead change direction because of the (-3) and move right 3 places". So 2 – (-3) = 5 and we can write our calculation as:

2 – (-3) = 2+3 = 5

Therefore, for any positive number b:

a + (-b) = a – b and a – (-b) = a + b

Examples:

1. 4 + (-6)
   = 4 – 6
   = -2

2. -7 + (-8)
   = -7-8
   = -15

3. -11 + (-5)
   = -11 -5
   = -16

4. 6 – (-4)
   = 6 + 4
   = 10

5. -3 – (-5)
   = -3 + 5
   = 2

6. -8 – (-2)
   = -8 + 2
   = -6

7. What is the difference in temperature between -14C and -51C?

-14 – (-51)
= -14 + 51
= 37°C

3.10 Order Of Operations (BODMAS)

Calculations which involve more than one operation (addition, subtraction, multiplication or division) have to be completed in a specific order.

For example, what is the value of $3 + 5 \times 2$?

Two suggestions are: $8 \times 2 = 16$ and $3 + 10 = 13$

The correct answer is **13**.

The mnemonic BODMAS helps us to remember the correct order of calculations:

Brackets
Other
Division
Multiplication
Addition
Subtraction

Brackets means tidy up anything inside brackets whilst the "other" refers to fractions and percentages (see later).
Finally, the division and multiplication have equal priority as do the addition and subtraction.

From the example above, BODMAS tells us that we must do the multiplication 5 x 2 before adding the answer to the 3.

Scientific calculators are generally programmed to follow these rules, however basic calculators may not and therefore caution must be exercised when using them.

Examples:

1. $25 - 18 \div 3$ division first
   $= 25 - 6$ then subtraction
   $= 19$

2. $4 + (3 + 8) \times 2$ brackets first
   $= 4 + 11 \times 2$ then multiplication
   $= 4 + 22$ then addition
   $= 26$

3. $30 - (2x2+1) \times 3 + 4$ brackets first

$= 30 - 5 \times 3 + 4$ then multiplication

$= 30 - 15 + 4$ addition and subtraction have

$= 15 + 4$ priority so do either (starting with the 30) next

$= 19$ then the last one.

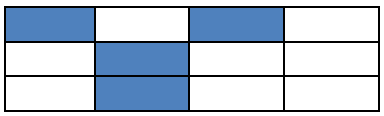
3.11 Fractions

A fraction tells us how much of a quantity we have. Every fraction has two parts, a numerator (top) and a denominator (bottom).

numerator → $\frac{2}{5}$ ← denominator

This is the fraction two fifths which represents two out of five.

Which fraction of the rectangle is shaded?



There are 4 parts shaded out of 12 so the fraction is $\frac{4}{12}$

Equivalent Fractions

Equivalent fractions represent the same amount. In the notes above we said that $\frac{4}{12}$ of the rectangle is shaded

but we could also have said that $\frac{1}{4}$ is shaded.

That is: $\frac{4}{12} = \frac{1}{4}$

To find equivalent fractions we divide both the numerator and the denominator of the fraction by the same number. (Ideally this is the highest common factor, i.e. the highest number which can divide each number with no remainder.) In the example above we divided by 4. We always aim to write fractions in the simplest possible form.

Examples

1. $\frac{6}{10} = \frac{3}{5}$ (The highest common factor of 6 an 10 is 2)

÷2 above 6, ÷2 below 10

2. $\frac{35}{63} = \frac{5}{9}$ (÷7 above and ÷7 below) (The highest common factor of 35 and 63 is 7)

3. Simplify $\frac{60}{72}$ $\frac{60}{72} = \frac{30}{36}$ (Here it is harder to spot the highest common factor of 60 and 72 which is 12 so we have had to repeat the process with lower common factors.)

$= \frac{15}{18}$

$= \frac{5}{6}$

3.12 Fraction Of A Quantity

Throughout fraction and percentages work the word "of" represents a multiplication. To find a fraction of a quantity you divide by the denominator and multiply by the numerator. If it is possible to simplify the fraction first by finding an equivalent fraction then this will make the calculation easier.

Examples

1, Find ½ of 30

½ of 30 = 30 ÷ 2
= 15

2. Find $\frac{1}{3}$ of 219

$\frac{1}{3}$ of 219 = 219 ÷ 3
= 73

If the numerator of the fraction is one then we can stop here as multiplying any term by one leaves it unchanged.

Calculate ¾ of 64

¼ of 64 = 64 ÷ 4
= 16

¾ of 64 = 3 x (¼ of 64)
= 3 x (16)
= 48

Find $\frac{8}{20}$ of 500

$\frac{8}{20} = \frac{2}{5}$ (we've simplified here)

So now find $\frac{2}{5}$ of 500

$\frac{1}{5}$ of 500 = 500 ÷ 5 = 100

So $\frac{\mathbf{2}}{5}$ of 500 = **2** x 100 = 200

3.13 Mixed Numbers and Improper Fractions

- If the numerator of a fraction is smaller than the denominator then the fraction is called a **proper fraction.**
- If the numerator is larger than the denominator then the fraction is an **improper fraction**.
- If a number comprises a whole number and a fraction then it is called a **mixed number**.

Examples:

¾ is a proper fraction $\frac{11}{2}$ is an improper fraction 2 ½ is a mixed number

Conversion Between Mixed Numbers and Improper Fractions

To write an improper fraction as a mixed number we calculate how many whole numbers there are (by considering multiples of the denominator) and then the remaining fraction part.

1. $\frac{11}{2} = \frac{10}{2} + \frac{1}{2}$

   $= 5\ ½$

   The highest multiple of 2 below 11 is 10 so the whole number must be $\frac{10}{2} = 5$ with $\frac{1}{2}$ left over.

2. $\frac{14}{3} = \frac{12}{3} + \frac{2}{3}$

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

   The highest multiple of 3 below 14 is 12 so the whole number must be $\frac{12}{3} = 4$ with $\frac{2}{3}$ left over.

3. $\frac{31}{4} = \frac{28}{4} + \frac{3}{4}$

   $= 7\ ¾$

   The highest multiple of 4 below 31 is 28 so the whole number must be $\frac{28}{4} = 7$ with $\frac{3}{4}$ left over.

Conversely, to write a mixed number as an improper fraction we convert the whole number to a fraction and then add the existing fraction on.

Examples:

$2\frac{1}{3} = \frac{2x3}{3} + \frac{1}{3}$ $\qquad$ $6\frac{3}{7} = \frac{6x7}{7} + \frac{3}{7}$

$= \frac{6}{3} + \frac{1}{3}$ $\qquad$ $= \frac{42}{7} + \frac{3}{7}$

$= \frac{7}{3}$ $\qquad$ $= \frac{45}{7}$

If we are given mixed numbers in a question with multiplication or division then we change the mixed number to an improper fraction before undertaking the calculation. We can also do this for addition or subtraction or treat the whole and fraction parts separately.

3.14 Adding and Subtracting Fractions

When adding and subtracting fractions, the denominators of the fractions must be the same. If the denominators are different then we find the lowest common multiple of the denominators (the lowest number in both times tables) and use equivalent fractions.
Examples:

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

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

$= \frac{3}{4}$

The lowest common multiple (LCM) of 2 and 4 is 4 so that is our new denominator for both fractions.

Remember: what you do to the denominator, you must do to the numerator.

Now add the numerators to find out how many quarters you have.

$\frac{3}{5} + \frac{1}{3}$

$= \frac{9}{15} + \frac{5}{15}$

$= \frac{14}{15}$

LCM of 5 and 3 is 15.

I multiplied denominator 5 by 3 to get 15, so I must do the same to the numerator 1.

I multiplied denominator 3 by 5 to get 15 so I must do the same to the numerator 1.

$\frac{4}{7} - \frac{2}{5}$

$= \frac{20}{35} - \frac{14}{35}$

$= \frac{6}{35}$

LCM of 7 and 5 is 35.

I multiplied denominator 7 by 5 to get 35 so I must do the same to the 4.

I multiplied denominator 5 by 7 to get 35 so I must to the same to the 2.

$2\frac{3}{4} + 3\frac{1}{5}$

$= \frac{11}{4} + \frac{16}{5}$

$= \frac{55}{20} + \frac{64}{20}$

$= \frac{119}{20}$

$= 5\frac{19}{20}$

$5\frac{4}{7} - 1\frac{1}{4}$

$= \frac{39}{7} - \frac{5}{4}$

$= \frac{156}{28} - \frac{35}{28}$

$= \frac{121}{28}$

$= 4\frac{9}{28}$

3.15 Multiplying Fractions

When multiplying a fraction by a whole number it can be useful to write the whole number as a fraction.

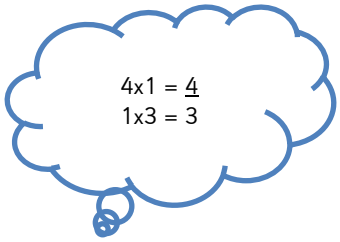
For example, $2 = \frac{2}{1}$ and $3 = \frac{3}{1}$

Look at the following:

Above, we have $\frac{1}{3}$ shaded in each rectangle, so, altogether we have 4 lots of $\frac{1}{3}$ shaded. That is, $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{4}{3}$

We could also write this calculation as

$$4 \times \frac{1}{3} = \frac{4}{1} \times \frac{1}{3} = \frac{4}{3}$$



We could also have looked at the unshaded area where $\frac{2}{3}$ of each shape is unshaded.

There are 4 lots of $\frac{2}{3}$ which is $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3}$

As a multiplication, this is $4 \times \frac{2}{3} = \frac{4}{1} \times \frac{2}{3} = \frac{8}{3}$

So, to multiply fractions, we simply multiply the numerators together and then multiply the denominators together.

Examples:

1. $\frac{2}{7} \times \frac{4}{9}$

$= \frac{2 \times 4}{7 \times 9}$

$= \frac{8}{63}$

2. $\frac{4}{7} \times \frac{3}{10} \times 5$

$= \frac{4}{7} \times \frac{3}{10} \times \frac{5}{1}$

$= \frac{60}{70}$

$= \frac{6}{7}$

3. $2\frac{2}{5} \times 4\frac{2}{3}$

$= \frac{12}{5} \times \frac{14}{3}$

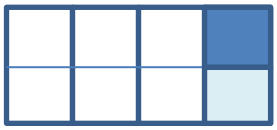
$= \frac{168}{15}$

$= \frac{56}{5}$ $= 11\frac{1}{5}$

3.16 Dividing Fractions

Look at the following diagrams:

Now, half the one quarter that is shaded



When we half $\frac{1}{4}$ we **divide** it by **2** to get the answer $\frac{1}{8}$.

Dividing by 2 is the **same** as **multiplying** by $\frac{1}{2}$ so we can write:

$$\frac{1}{4} \div 2 = \frac{1}{4} \div \frac{2}{1}$$

$$= \frac{1}{4} \times \frac{1}{2}$$

$$= \frac{1}{8}$$

This example demonstrates that to divide by a fraction we multiply by the reciprocal of the dividing fraction (what we get when we turn it upside down).

4/1is the recipricol of 1/4 and our calculation is now a multiplication

Examples

$$\frac{1}{2} \div \frac{1}{4} \quad = \frac{1}{2} \times \frac{4}{1} \quad = \frac{4}{2} \quad = 2$$

$$\frac{6}{7} \div \frac{3}{2} \quad = \frac{6}{7} \times \frac{2}{3} \quad = \frac{12}{21} \quad = \frac{4}{7}$$

3.17 Decimals

The value of a digit in a decimal, or decimal fraction, is determined by place value. This enables us to convert between decimals and fractions.

Examples

For the decimal **0.614**

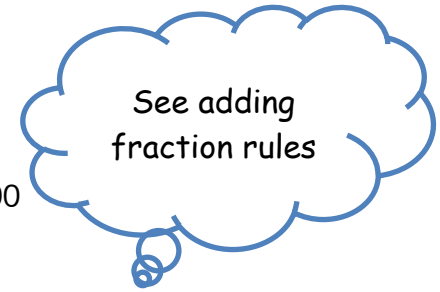
Units	.	Tenths	Hundredths	Thousandths
0	.	6	1	4

6 can be written as $\frac{6}{10}$, 1 as $\frac{1}{100}$ and 4 as $\frac{4}{1000}$

So, another way of writing 0.614 would be:

$\frac{6}{10} + \frac{1}{100} + \frac{4}{1000}$

$= \frac{600}{1000} + \frac{10}{1000} + \frac{4}{1000}$



$= \frac{614}{1000}$

$= \frac{307}{500}$

$0.8 = \frac{8}{10}$ $= \frac{4}{5}$

$0.92 = \frac{92}{100}$ $= \frac{23}{25}$

$0.428 = \frac{428}{1000}$ $= \frac{107}{250}$

To convert a decimal back into a fraction, just divide the numerator by the denominator. From the examples above:

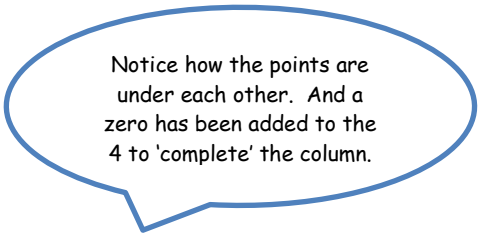
$4 \div 5 = 0.8$ $23 \div 25 = 0.92$ $107 \div 250 = 0.428$

Decimals and Calculations

Be careful with basic decimal calculation that you keep the decimal points in line.

Example

2.4 + 1.93



2.40
1.93
4.33

3.18 Percentages

Percent refers to 'out of 100'.

Example

As a fraction 48% = 48 out of 100

$$= \frac{48}{100}$$

$$= \frac{12}{25}$$

As a decimal 48% $= \frac{48}{100}$

$= 48 \div 100$

$= 0.48$

There are some commonly known and used percentages/fractions/decimals that pupils are taught and expected to remember.

Percentage	Fraction	Decimal
1%	$\frac{1}{100}$	0.01
10%	$\frac{1}{10}$	0.1
20%	$\frac{1}{5}$	0.2
25%	$\frac{1}{4}$	0.25
331/3%	$\frac{1}{3}$	0.33333.....0.3
50%	$\frac{1}{2}$	0.5
662/3%	$\frac{2}{3}$	0.666666....0.6
75%	$\frac{3}{4}$	0.75

To change a decimal to a percentage multiply the decimal by 100%.

Example

0.71 = 0.71 x 100% = 71%

If you have a fraction you can find it's associated decimal through dividing the numerator by the denominator and then multiplying by 100%.

Example

So, to find the percentage equivalent to $\frac{4}{5}$

$\frac{4}{5} = 4 \div 5 = 0.8$

$0.8 \times 100\% = 80\%$

3.19 Finding A Percentage

Given a scenario we can find the associated percentage by writing the information as a fraction and then using the conversions on the previous page.

Example

1. In a class of 30 pupils there are 12 girls. What percentage of the class are girls?

As a percentage: $\frac{12}{30} = 12 \div 30 = 0.4 = 40\%$

2. Alan practises scoring goals from the penalty spot in Football. From 80 attempts he is successful 49 times. What is Alan's success rate as a percentage?

Alan's success rate is $\frac{49}{80} = 49 \div 80 = 0.6125 = 61.25\% = 61\%$

(rounded to the nearest %)

Percentage Increase or Decrease

If we are told how much a quantity has increased or decreased by, and want to convert this to a percentage of the original value, we find out 1) how much the increase or decrease is and then 2) divide it by the original amount. This is also true of profit and loss.

Example

1. A plant grown in a classroom measured 52cm when it was planted. Six months later it measured 68cm. Calculate the percentage increase in the height of the plant based on its height when planted.

Increase in height is: $68 - 52 = 16$cm

$\frac{16}{68} = 0.31$ (to 2 decimal places) $= 31\%$

original height

2. A car bought four years ago for £9250 has just been sold for £1500. How much money has the owner lost over time as a percentage of its cost price?

Decrease in price is: 9250 – 1500 = £7750

$\frac{7750}{9250}$ = 0.84 (to 2 decimal places) = 84%

3.20 Percentages: Mental Strategies

These are a few of the strategies which might be used. More will be covered during Number Talks.

Method 1 – Using Equivalent Fractions

In a survey of 200 pupils, 75% had a games console. How many pupils is this?

75% = $\frac{75}{100} = \frac{3}{4}$ so now we want to find $\frac{3}{4}$ of 200.

$\frac{1}{4}$ of 200 = 200 ÷ 4 = 50

$\frac{3}{4}$ of 200 = 3 x 50 = 150

So, 150 pupils had a console.

Method 2 – Using 1%

Remember: 1% = $\frac{1}{100}$ so we DIVIDE by 100 to find 1%.

Jenny's annual salary is £28 000. If she gets a pay rise of 3% what is her new annual salary?

1% of £28000 = 28000 ÷ 100 = £280
3% = 280 x 3 = £840

£28000 + £840 = £28840
Jenny's new salary is £28840.

Method 3 – Using 10%

As 10% = $\frac{1}{10}$ to find 10% we divide by 10.

A jacket is marked as 40% off in a sale. If the jacket originally cost £220, what is its sale price?

10% of £220 = 220 ÷ 10 = £22
40% = 4 x £22 = £88

£220 - £88 = £132
The sale price of the jacket is £132.

We can combine two or more of the methods outlined above:

1. During a tennis training session, Andy hit 180 first serves. Of these 55% were good serves. How many good serves did Andy have?

50% = $\frac{1}{2}$ $\frac{1}{2}$ of 180 = 180 ÷ 2 = 90

10% of 180 = 180 ÷10 = 18
so 5% would be 18 ÷ 2 = 9 (as 5% is a half of 10%)

So 55% of 180 = 50% + 5%
= 90 + 9
= 99
Andy served 99 good first serves.

2. A bag of flour normally holds 1kg of flour. In a special offer, the bag has an additional 12.5% extra free. How much flour is there in this bag?

10% of 1kg = 10% of 1000g
= 1000 ÷ 10
= 100g

1% of 1000g = 1000 ÷ 100
= 10g

so

2% of 1 000g = 2 × 1%
= 2 ×10
= 20g

0.5% = ½ of 1%
= 10 ÷ 2
= 5g

Therefore: 12×5% = 10% + 2% + 0×5%
= 100 + 20 + 5
= 125g

In total there is 1 000g + 125g = 1125g
= 1.125 kg of flour in the bag.

Percentages On A Calculator

When calculating a percentage on a calculator we do not use the % button due to differences between models. Instead, we convert the percentage to a decimal by dividing it by 100.

Example

1. A train company decides to decrease its prices by 4.5%. How much would a journey which originally cost £16.35 now cost?

4.5% of £16.35 = 4.5 ÷100 × 16.35 = £0.74 (rounded to nearest penny)

The new price of the journey is £16.35 - £0.74 = £15.61

2. A bank offer a savings interest rate of 2.3% per annum (that means, each year). If £3000 is deposited in the savings account and no money is withdrawn, how much would be in the account after two years?

Year one: 2.3% of £3000 = 2.3 ÷ 100 x 3000 = £69
So, total after first year is £3000 + £69 = £3069

Year two: 2.3% of £3069 = 2.3 ÷100 x 3069 = £70.59
So, total after two years is £3069 + £70.59 = **£3139.59**

3.21 Rounding

Rounding a number allows us to approximate the size of the number.

When rounding, we consider the digit to the right of the place value we want to round.

If the digit to the right is:

- 0, 1, 2, 3, 4 or 5 then the digit we are rounding **stays the same**
- 6, 7, 8, 9 then the digit we are rounding **increases by one**

Example

Round 821 to the nearest 100.

Think of the place value: H t u
8 2 1

As the digit to the right of the hundreds (remember, we're rounding to the nearest hundred) is a **2**, the digit we are rounding (the **8**) stays the same.

So, 821 rounded to the nearest hundred is 800.

Similarly:

To the nearest thousand: 2**8**36 ⟶ 3000
To the nearest ten: 6**9** ⟶ 70

We can also round decimals to a specified number of decimal places (d.p.) using this rule:

Example

1. Gavin jumps 1.74m in the long jump. Round this jump to the 1 decimal place.

1.7**4** ⟶ 1.7m (1 decimal place means 1 digit after the decimal point)

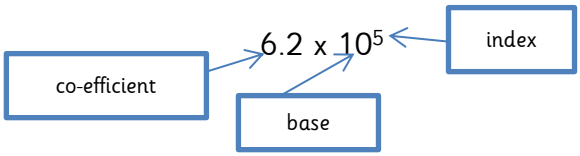
2. Round 2.6183 to (i) 2 decimal places (2 digits after the decimal point) and (iii) 3 decimal places (3 digits after the decimal point)

(i) 2.61**8**3 ⟶ 2.62
(iii) 2.618**3** ⟶ 2.618

3.23 Scientific Notation/Power Of 10

Scientific notation, sometimes also referred to as standard form, is a convenient way of writing very large and very small numbers.

A number written using scientific notation looks like:



The first part of the number (the coefficient) must lie between 1 and 10. We then consider how many times we have to either multiply or divide the coefficient by 10
and this value becomes our index.
If the index is positive, you multiply by 10 that number of times
If the index is negative, you divide by 10 that number of times.

The base is always 10 as this is the multiple we are considering.

Example

1. At its closest, Venus is 38000000km from Earth. Write this distance using scientific notation.

38 000 000 = 3.8 x 10 000 000
= 3.8 x 10 x 10 x 10 x 10 x 10 x 10 x 10
= 3.8×10^7 km

2. The diameter of a red blood cell is 0.0065. What is this number in scientific notation?

0.0065 = 6.5 ÷ 1000
= 6.5 ÷ 10 ÷ 10 ÷ 10
= 6.5×10^{-3} cm

3.24 Ratio

Ratios are used to compare the amounts of different quantities. To separate quantities we use a colon **:**

The order that we write a ratio is important.

Example

1. There are 5 apples and 6 oranges in a bowl.

The ratio of apples to oranges is 5:6

The ratio of oranges to apples is 6:5

Sometimes it can be useful to use a table to ensure the ratio is in the correct order –

apples	:	oranges
5	:	6

oranges	:	apples
6	:	5

2. In an art tub, there are 8 red pencils, 3 blue pencils and 1 green pencil.

The ratio of red : blue : green is 8:3:1

Simplifying Ratios

1. Simplify 36:8

36:8 = 9:2

Highest Common Factor of 36 and 8 is 4, so divide both sides by it.

2. The colour turquoise is made by mixing 20 parts of blue paint with 10 parts of green paint. Write the ratio of blue to green paint in its simplest form.

Blue : Green
20 : 10
= 2 : 1

Highest Common Factor of 20 and 10 is 10, so divide both sides by it.

3. In a bag of coins coins, thirty six 50p coins and six £1 coins. Write the ratio of 20p coins to £1 coins to 50p coins in its simplest form.

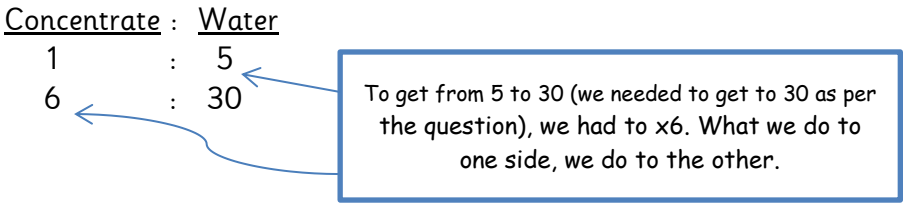
20p : 1p : 50p
12 : 6 : 36
= 2 : 1 : 6

Highest Common Factor of 12, 6 and 36 is 6, so divide all by it.

3.25 Applications of Ratios

Ratios can be used to calculate unknown quantities or to distribute an amount accordingly.

1. To make a diluting juice drink the manufacturers suggest the ratio of concentrate to water is 1 : 5. How much concentrate is required for 30 litres of water?

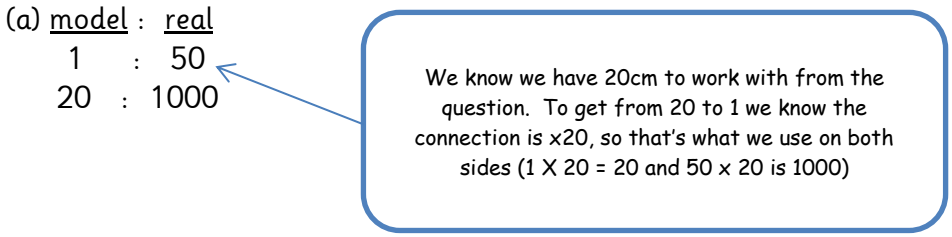


Therefore, 6 litres of concentrate is required.

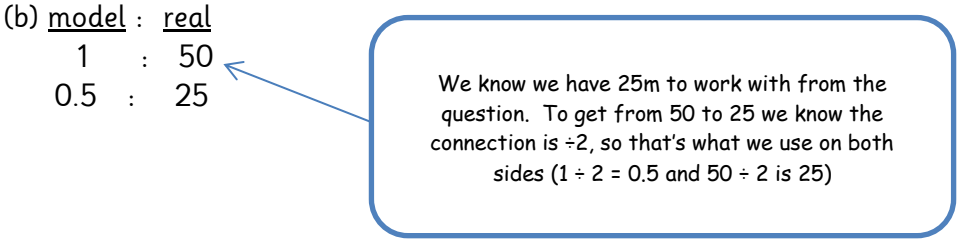
2. The ratio of a model plane to the actual plane is 1 : 50.

(a) If the model plane has a wing span of 20cm, what is the length of the wing span on the real plane?

(b) The real plane has length 25m. What length is the model plane?



So, the wingspan of the plane is 1000cm (= 10m).



The length of the model plane is 0.5m (=50cm)

3. A lottery win of £500 000 is shared amongst Janice, Marie and Sarah in the ratio 3 : 5 : 2. How much does each person receive?

The ratio has to be split into 10 parts altogether (3 + 5 + 2 = 10) so

1 part = 500,000 ÷10 = 50,000

Janice : Marie : Sarah
3 : 5 : 2
150,000 : 250, 000: 100,000

Janice received £150,000
Marie received £250,000
Sarah received £100,000

Proportion

If two quantities are directly proportional to each other then as the value of one increases so does the value of the other.

Example

1. One packet of crisps costs 48p. How much will 3 packets cost?

1 packet = 48p
3 packets = 48 x 3 = 144p = £1.44

As the number of packets increase the price also increases so the number of packets and the price are directly proportional to each other.

Sometimes it is necessary to work out the value of a single item before working out multiple items.

Example

A food label for Macaroni Cheese states that the energy released when 228g of food is burned is 250 kcal. How much energy is released when 17g of food is burned?

1. 228g = 250 kcal
   1g = 250 ÷ 228
   = 1.1 kcal

so, 17g = 17 x 1.1
= 18.7 kcal

If two quantities are inversely proportional to each other then as the value of one increases the value of the other decreases.

Examples

1. It takes 3 men one hour to build a wall. Working at the same speed, how long would it take 4 men to build the wall?

3 men = 60 minutes
1 man = 60 x 3 (it would take him 3 times as long on his own)
= 180 minutes
4 men = 180 ÷ 4
= 45 minutes

As the number of men decreases the length of time increases so the number of men and time taken are **inversely proportional** to each other.

2. Eight friends agree to pay £73.50 each to rent a chalet for a week's holiday. At the last minute, one friend drops out and the remaining seven has to share the bill. How much does each person have to pay?

8 people = £73.50 each
Total cost = 8 × 73.50
= £588
7 people = 588 ÷ 7
= £84 each

3.27 Time

Time Facts

Pupils have to recall basic time facts. For example -

1 year = 365 days (366 in a leap year)
= 52 weeks
= 12 months

The following rhyme may help to remember the number of days in each month:

"30 days has September, April, June and November
all the rest have 31
except February alone
which has 28 days clear and 29 in a leap year."

12 and 24 Hour Clock

Time is measured using either the 12 or 24 hour clock.

When using the 12 hour clock a.m. represents from midnight to noon and p.m. from noon to midnight.

Times written using the 24 hour clock require 4 digits ranging from 00:00 to23:59.

Midnight is expressed as 00:00; 12 noon is written as 12:00 and the hours thereafter are 13:00, 14:00, 15:00, etc until midnight.

Examples

12 hour	**24 hour**
6.03 a.m.	06:03
Noon	12:00
7.48 p.m.	19:48
Midnight	00:00

Time Intervals

Pupils are expected to count on to work out time intervals, rather than subtract.

Example

How long is it from 08:40 to 13:25?

08:40 ⟶ 09:00 ⟶ 13:00 ⟶ 13:25
20 mins + 4 hours + 25 mins

= 4 hours 45 minutes in total.

Converting Minutes to Hours

To convert from minutes to hours we write the minutes as a fraction of an hour.

Example

Write 48 minutes in hours.

$\frac{48}{60} = 48 \div 60 = 0.8$ hours

Stopwatch Times

In general, stopwatches read -

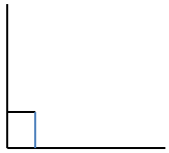
hours : minutes : seconds . hundredths of a second.

Example

02 : 34 : 53 . 91 This stopwatch reading represents a time of 2 hours 34 minutes 53 seconds and 91 hundredths of a second.

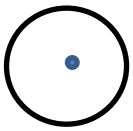
3.39 Angles

A **right angle** is 90°



A **straight angle** is 180°

A **complete turn** is 360°

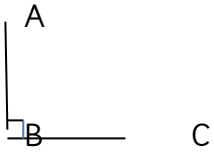


Acute angles are angles measuring between 0° and 90°.

Obtuse angles are angles measuring between 90° and 180°.

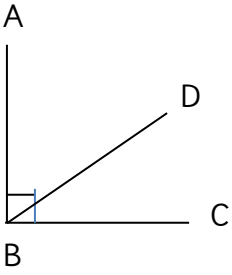
Reflex angles are angles measuring between 180° and 360°.

In general, 3 letters are employed to name an angle and the sign ∠ is used.

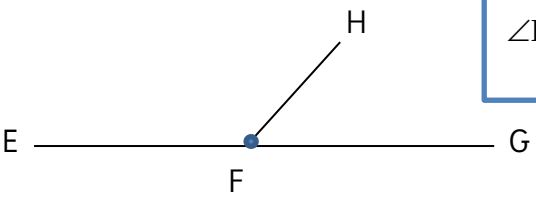


We would name this angle either ∠ABC or ∠CBA. The lines AB and BC are called the arms of the angle and B is the vertex. This means that B must be the middle of the three letters, however it doesn't matter whether A is first or C.

Complementary angles add up to 90° and supplementary angles add up to 180°.



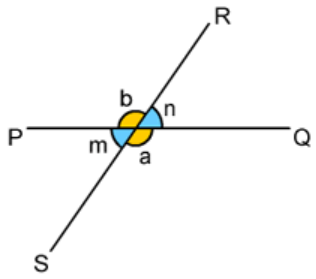
∠ABD and ∠CBD are complementary.



∠EFH and ∠GFH are supplementary.

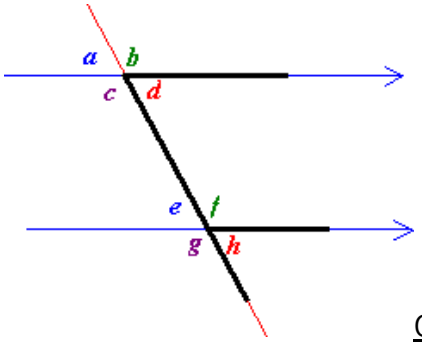
Angles which are vertically opposite each other are equal.

So in the diagram below, ∠SmP = ∠RnQ and ∠PbR = ∠QaS.

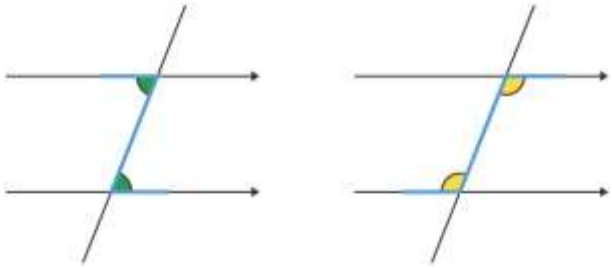


When there are parallel lines, _____
there may be _____
corresponding and/or **alternate angles.**

Corresponding angles are sometimes referred to as F angles.
Alternate angles are sometimes referred to as Z angles.



Corresponding angles - angles **a** and **e** are equal; angles **c** and **g** are equal; angles **b** and **f** are equal and angles **d** and **h** are equal.



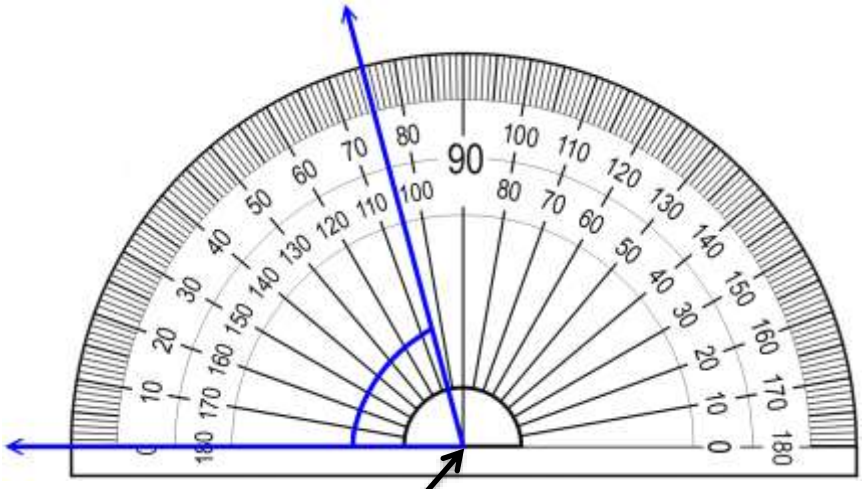
Alternate angles – the marked angles are equal on the Z shape.

Measuring Angles

To measure an angle we use a **protractor**; it is important that the centre of the protractor is placed at the **vertex** of the angle.

The **vertex** is where two lines meet to form the angle – the join.
We place the protractor so that one half of the bottom line is along an arm of the angle (whilst the centre remains at the vertex).

Counting from **zero** we work round the scale until the other arm is reached.



The measurement of this angle is 75°.

vertex

3.29 Coordinates

A coordinate point describes the location of a point with respect to an origin. A Cartesian plane consists of a horizontal axis (x-axis) and a vertical axis (y-axis).

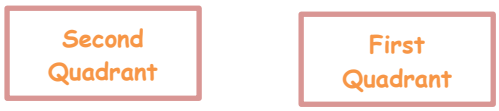
Where the two axes meet is the origin.

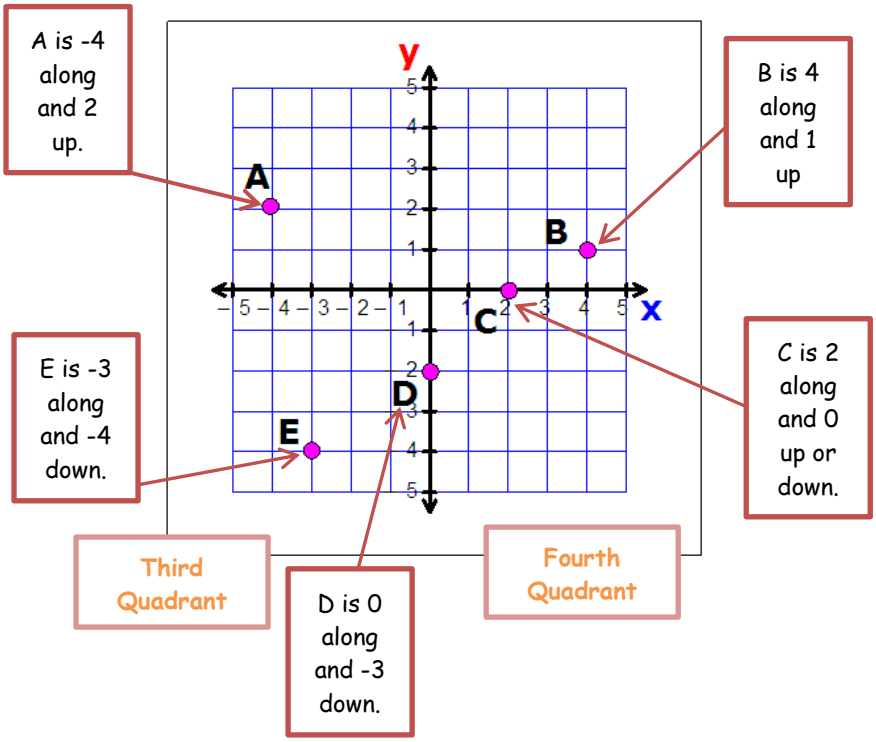
Points To Remember

• A ruler should be used to draw the axes – for accuracy - and they should be clearly labelled.
• For a two-dimensional coordinate point the **first** number describes **how far along** the x-axis the point is and the **second** refers to **how far it is up or down** the y-axis.
• Coordinate points are enclosed in round brackets and the two numbers are separated by a comma.
• If a letter appears before a coordinate point then we can label the point once it has been plotted.
• The origin corresponds to the point (0, 0).
• Positive numbers are to the right of the origin on the x-axis and above the origin on the y-axis.
• Numerical values should refer to a line – not a box.
• Each axis must have equal spacing from one number to the next.

Example

Plot the coordinate points B(4,1), C(2,0), A(-4,2), D(0,-2), E(-3,-4)





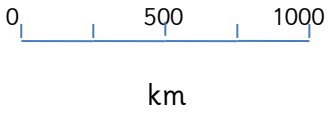
The axes split the coordinate plane in to 4 separate areas. These areas are known as quadrants. The **first quadrant** is the top right-hand section; the **second quadrant** is the top left-hand section; the **third quadrant** is the bottom left-hand section and finally the **fourth quadrant** is the bottom right-hand section.

3.30 Scale and Grid References

Pupils will be expected to read maps so it is important that they are familiar with scale and grid references.

Scale
A scale describes how an object has been produced on paper in comparison to the object in real life. There are four main ways of expressing a scale: a line scale; as a representative fraction; as a statement or as a visual comparison.

Examples

1. A Line Scale: 

Measuring this line with a ruler we see that 1cm on the ruler would represent 250km in real life.

2. A Representative Fraction: 1 : 50 000
This reads that every 1cm on the map is 50 000cm in real life.

3. A statement: "4cm on the map represents 1km on the ground".

4. A visual comparison is similar to the line scale, except a ruler would also be provided to illustrate the 1cm.

Grid References

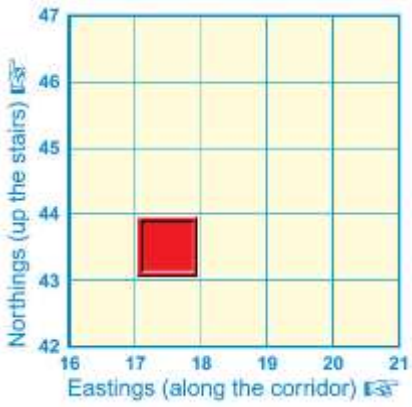
Grid references are similar to coordinates in that they describe the position of an object.

A map will be divided into separate sections by a grid and to write the grid reference find the vertical grid line (Easting) followed by the horizontal grid line (Northing).

Combining these two values in that order yields the grid reference.

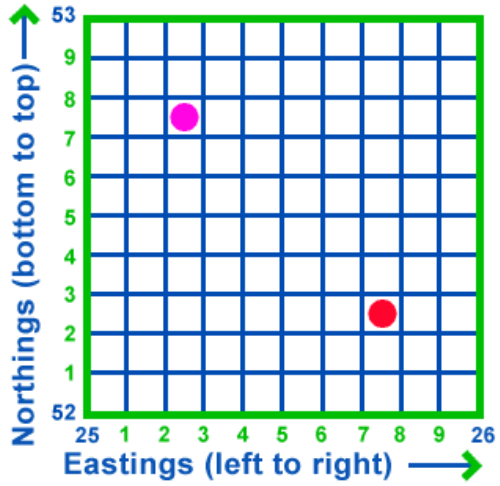
The four-figure grid reference represents the bottom left-hand corner of the square being referenced.

Example – Four Figure Grid Reference



The Red Square is 1743

Example – Six Figure Grid Reference



Read the grid reference as before except now each box is split into tenths (sometimes without the numbers on the axis); measure the tenths and add it on to both Eastings and Northings.

The Red Circle is 25**7**52**2.**

The Purple Circle is 25**2**52**7**.

3.31 Information Handling – Averages

In statistics we are often given various pieces of information, known as a data set, and asked to describe what the information is showing us.

One way of doing this is by calculating the averages of the data set via **the mean**, **the median** and **the mode**. Note that, depending on the data, it is not always possible to calculate all three.

Mean
To calculate the mean we add all the data together and then divide by how many pieces of data there are.

Median
The median is the middle number of a data set once the data is written in order. *If there is an even number of data then the median is the mean of the two middle values.*

Mode
The mode is the piece of data which occurs the most often.
It can also be advantageous to calculate the range (largest value subtract smallest value) for a data set.

Example

An author's book was examined for sentence length. From the nine sentences picked at random they were found to have the following number of words in them:

12 14 9 21 16 12 8 13 12.

Calculate the mean, median, mode and range of the sentence lengths.

$$\textbf{Mean} = \frac{12 + 14 + 9 + 21 + 16 + 12 + 8 + 13 + 12}{9}$$

$$= \frac{117}{9} = 13$$

Writing the data in order we have:

8 9 12 12 12 13 14 16 21

So the **median** value is **12** (the fifth value along).

The most frequent length is 12, occurring three times, so the **mode** is also **12**.

The range of lengths is 21 – 8 = 13.

3.32 Types Of Graphs

There are consider various types of graphs that a pupil may see. All graphs should be drawn using a ruler, have a title and two axes. The axes should be clearly labelled and have equal spacing along them.

It is often difficult to decide which type of graph to use for a set of data and different subjects prefer different graphs for their own reasons.

In Mathematics, the graph used depends on the type of data given; discrete data or continuous data.

Discrete Data

A discrete data set contains values which are based on a distinct number. Examples of discrete data include number of goals scored or number of pupils in a class – you cannot have half a goal or half a pupil.

Bar graphs are the most common way of illustrating discrete data.

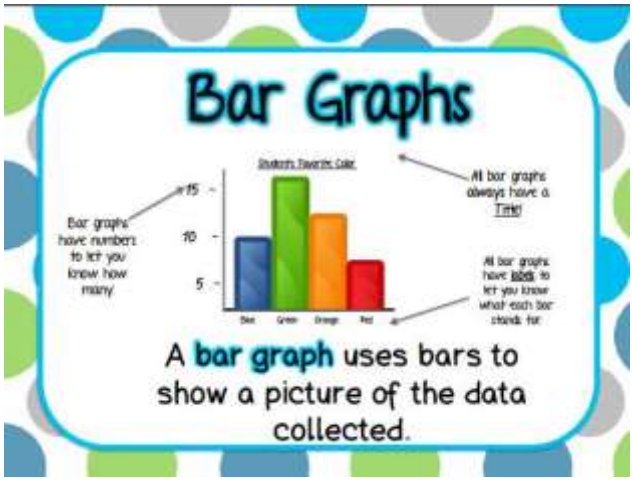
Continuous Data

A continuous data set comprises values which are measured and can be illustrated on a continuous scale.

Examples of continuous data include temperature, speed and distance.
Histograms and line graphs are the most common ways of illustrating continuous data.

Bar Graphs

A bar graph is a good way of demonstrating the frequency (or amount) of different categories within a set of data.

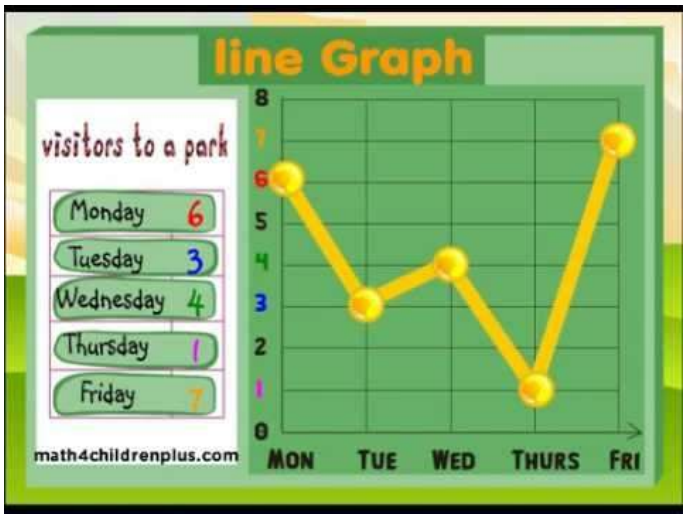


The bar graph above shows students favourite colours.

Sometimes, Bar Graphs may be called Histograms. Technically, Bar Graphs have a space at the start, and spaces between the bars.

3.33 Line Graphs

Line graphs comprise a series of points which can then be joined by a line.

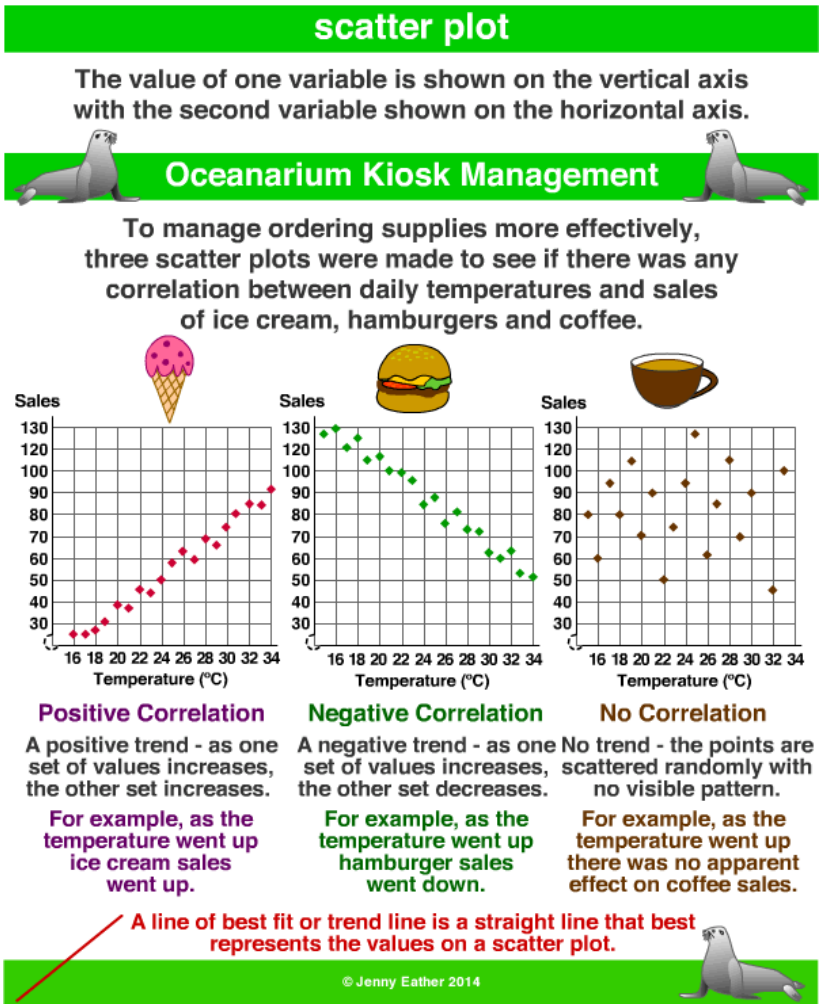


Trend

Line graphs are particularly useful when describing the trend of a set of data. From the example above we may say
"The park is busier on a Friday, perhaps due to it being the weekend. The quieter days are Tuesday to Thursday"

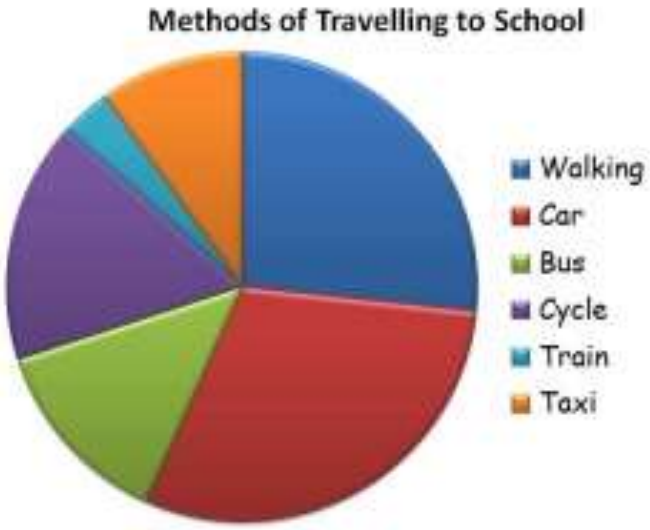
3.34 Scatter Graphs/Diagrams

Scatter graphs can be used to display the relationship between two variables.



3.35 Reading Pie Charts

A pie chart comprises a circle divided into separate sectors. Each sector represents a different category from the data set.



There are several ways of reading/interpreting/using the data in a pie chart

One complete revolution, or the angle round the centre of the circle, measures 360°.

We can calculate the size of each sector by measuring its angle with a protractor and finding the associated fraction.

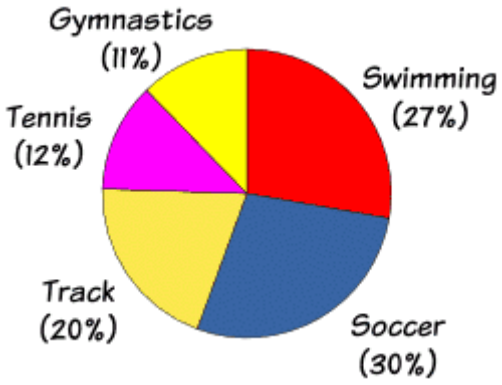
Using the pie chart above, and imagining it was based on the information collected from a class of 24 pupils, the red section is pupils who travel by car. A protractor shows that angle measures 108°. Using this information we can find out how many pupils travel by car –

$\frac{108}{360} \times 24 = 7.2$ pupils

So, 7 pupils travel by car (rounding down).

Pie Charts may also show percentages or numbers –

Pupils' Favourite Sports



3.36 Equations

An equation is a mathematical statement linking two things which are equal.

When dealing with an equation it is important that it remains equal (or **balanced**) at all times, i.e. if you change one side then you must do the same to the other side so that both sides remain the same.

There should only be one equals sign on every line of an equation and they should be aligned one above the other.

It is a good idea to check an equation by substituting the final answer back in to the original problem.

Examples

Solve for x (this means you want to find out what x is).

1. $2x + 3 = 21$
   $2x = 18$ (balanced by taking 3 away from both sides)
   $x = 9$ (balanced by dividing both sides by 2)

Check it: $2 \times 9 + 3 = 21$ ✓

2. $4x - 7 = 37$
   $4x = 44$ (balanced by adding 7 to both sides)
   $x = 11$ (balanced by dividing both sides by 4)

Check it: $4 \times 11 - 7 = 37$ ✓

3. $3x - 5 = x + 15$
   $2x - 5 = 15$ (balanced by subtracting x from both sides)
   $2x = 20$ (balanced by adding 5 to each side)
   $x = 10$ (balanced by dividing both sides by 2)

Check: $3 \times 10 - 5 = 25$ ✓ $10 + 15 = 25$ ✓

3.37 Formulae

Evaluating Formulae

To evaluate a formula we substitute numbers in for letters.

Pupils will learn some simple formulae. For example, relating to speed, distance and time.

1. A car travels at 70mph for ½ an hour. How far does it go?

D = S x T
D = 70 x 0.5
= 35 miles

Note that we are working in **miles** and **hours** so all values show this. If the question was in minutes, we would change it to hours etc. The formula to

2. The formula to convert temperature from degrees Celsius, C, to Fahrenheit, F, is $F = 1.8C + 32$. What temperature is 20oC in Fahrenheit?

In this example, C=20 so F = 1.8C + 32
= 1.8 x 20 + 32
= 68°F

Rearranging Formulae

To change the subject of a formula is to rearrange it to have a different letter on its own on one side of the equation. To rearrange a formula we "work backwards", ensuring that the formula remains balanced at all times.

Examples

1. For F = 1.8C + 32, make C the subject of the formula.

$F = 1.8C + 32$ (subtract 32 from both sides)
$F - 32 = 1.8C$ (divide both sides by 1.8)
$(F - 32) \div 1.8 = C$

So, $C = (F - 32) \div 1.8$

[When you are making something the subject of a formula, it should be on the left hand side]

3.38 Measurement

It is important that pupils are familiar with different units relating to measure whether it be lengths, weights or volumes. At Early level, we start with measuring in everyday objects such as cubes, pencils, fingers, hands, paperclips or anything else the pupils might choose.

In Food Technology and STEM etc, pupils are expected to measure materials for practical work. A high level of detail and accuracy are expected as skills in this area progress.

Length

Length measurements include millimetres (mm), centimetres (cm), metres (m), kilometres (km).

The prefixes: milli-, centi-, and kilo- refer to one thousandth, one hundredth and one thousand respectively and can be applied to many situations related to life and Numeracy.

1cm = 10mm 1m = 100cm 1km = 1000m
1000mm = 100000cm
= 1000000mm

Pupils should be able to identify sensible units to use to measure and describe everyday objects e.g.

Length of pencil	millimetres
Width of desk	centimetres
Playground	metres
Livingston to Edinburgh	kilometres

Weight and Volume

In Food Technology, practical work is undertaken using various weight and volume measures.

Examples include using scales, spoon sizes and jugs to measure in grams (g), millilitres (ml) and litres (l). It is convenient to know the following conversions.

1 ml = 1 cm^3 1000 g = 1 kg
1000 ml = 1 L 1000 kg = 1 tonne

3.39 Mathematical Literacy (Glossary of Terms)

Word(s)	Symbol abbreviation (if any)	Meaning
Acute Angle		An angle between 0° and 90°.
Add/Addition	+	To combine two or more numbers to get one.
Ante meridiem	a.m.	Any time in the morning (between Midnight and Noon).
Approximate		A result that is nearly but not exact.
Average		A number which represents a set of data.
Axes		The lines that make a graph's framework.
Calculate		To work out an answer (not necessarily with a calculator!).
Carrying		Taking a digit to the next column when the number in one column is greater than 9.
Common Denominator		A number that all the denominators for two or more fractions divide into exactly.
Coordinates		A set of numbers that illustrate a point on a graph.
Continuous Data		Data consisting of measurements.
Correlation		A connection between two things.
Data		A collection of facts, numbers, measurements or symbols.
Decimal Point	.	A point that separates a whole number from a part of a number.
Deduct	-	Another word for subtract.
Degree	o	A unit for measuring angles.
Denominator		The number written below the line in a fraction, illustrating how many parts are in one whole.
Difference	-	Another word for subtract.
Digit		Numerals 0 to 9 are called digits.
Discrete Data		A set of data which is based on counting whole objects.

Divisible		A number is divisible by another number if, after dividing, there is no remainder.
Divide	÷	Split a quantity into smaller, equal groups.
Divisor		The number which to divide by.
Equal	=	Identical in amount, or quantity.
Equation		A statement that links two equal quantities.
Equivalent Fractions		Fractions which have the same value.
Estimate		A rough or approximate calculation.
Evaluate		Find the value of.
Factor		A whole number that can be divided exactly into a given number.
Finite		Anything that can be counted or has boundaries.
Formula		An equation that uses symbols to represent a statement.
Fraction		A part of a whole quantity or number.
Frequency		The number of times something happens.
Improper Fraction		A fraction where the numerator is bigger that the denominator.
Integers		Positive or negative whole numbers including zero.
Least		The smallest thing or amount in a group.
Length		How long an object is from end to end.
Lowest Common Denominator (LCD)		The lowest number that can be divided exactly by the denominators of two or more fractions.
Lowest Common Multiple (LCM)		The lowest number that can be divided exactly by two or more numbers.
Maximum		The largest value.
Mean		The average of a set of scores.

Median		The middle number when a data set is arranged in order of size.
Minimum		The smallest value.
Minus	-	Another word for subtract.
Mixed Number		A whole number and a fraction.
Mode		The data which appears the most often in a data set.
Most		The greatest amount.
Multiple		A number that can be divided exactly by a given number.
Multiply	×	To combine an amount a given number of times.
Negative Numbers		A number less than zero.
Numerator		The top number of a fraction.
Numeral		A symbol used to represent a number.
Obtuse Angle		An angle bigger than 90o but less than 180o.
Operations	+ - × ÷	The four arithmetic operations are addition, subtraction, multiplication and division.
Percent	%	A number out of 100.
Place Value		The position of a digit within a number.
Plus	+	Another word for add.
Post Meridiem	p.m.	Any time in the afternoon or evening (between Noon and Midnight).
Product		The answer to a multiplication.
Proper Fraction		A fraction where the numerator is less than the denominator.
Protractor		An instrument used to measure and draw angles.
Quadrants		The spaces between the *x*-axis and *y*-axis on a Cartesian coordinate plane.
Quotient		The answer to a division.
Range		The difference between the

		largest and smallest number in a set.
Ratio	:	A way of comparing two quantities.
Reflex Angle		An angle greater than 180°.
Remainder		The amount left over when a number does not divide exactly into another number.
Revolution		One complete turn.
Right Angle		An angle measuring exactly 90°.
Rounding		Writing a number as an approximation.
Scale		Equally spaced markings on a measuring device.
Scientific Notation		A quick and easy was of writing large or very small numbers using powers of 10.
Significant Figure		A digit in a number that is considered important when rounding.
Simplify		To write in the simplest, shortest form.
Solution		The answer to a problem or question.
Solve		Find the answer.
Straight Angle		An angle of exactly 180°.
Substitution		Replacing a letter with a number.
Subtract	-	Take one quantity away from another to find what is left.
Sum		The answer to an addition problem.
Times		Another word for multiplied by.
Total		Another word for sum.
Vertex		A point where two lines meet to form an angle.

Section Four
How We Teach Literacy in HSA

Introduction

We have developed our own Literacy Strategy to create a cohesive programme of teaching from Early Years through to Primary 7 which focuses on teaching the skills required to meet the challenges of Literacy in today's world.
The main areas of Literacy as defined by a Curriculum for Excellence are Reading, Writing and Talking and Listening, taught across Early, First and Second Levels. These can be further broken down to include Handwriting and Grammar.

4.1 Phonics
4.2 Spelling
4.3 Reading
4.4 Grammar
4.5 Writing
4.6 Handwriting
4.7 Talking and Listening

What Else Can Be done To Improve Literacy?
Read! Read with your child(ren) for 20 minutes per day. This will complement the work we do in school. Read anything at all that interests you – sport, books, leaflets, comics, magazines – anything! Talk and Listen – again, about anything. Use the questions in the T&L section to create discussion and to share ideas, again, about anything: watch a film or TV...then talk about it! Discuss your day, ask about theirs....include thoughts and feelings. It's good for Health and Wellbeing too.

4.1 Phonics

There is a progressive pathway of phonics taught from P1 to P3 which covers each sound required to decode words and assist fluency when reading. Sounds are taught in such a way to allow for small and three letter words to be built as soon as sounds are taught. Sounds are introduced at a rate of 2 per week, though this is flexible depending on progress.

Learning Sounds

In Primary One the sounds taught are as follows:

Week	**Sound**
1	a t
2	s i
3	p n
4	consolidation
5	r m
6	d e
7	c k ck
8	consolidation
9	g l
10	f o
11	b u
12	consolidation
13	h w
14	j v
15	consolidation
16	y z
17	q(u) x
18	consolidation
19	consolidation/assessment
20	h w
21	th (revise p, n, r, m)
22	consolidation
23	ch (revise d, e, c, k)
24	ng (revise g, l, f, o)
25	consolidation
26	wh (revise b, u, h, w, j)
27	ph (revise v, y, z, qu, x)
28	consolidation/assessment
29	ee
30	oo
31	ck
32	consolidation/assessment
33	consolidation
34	consolidation/assessment
35	ai
36	oy
37	oa

38	consolidation
39	consolidation/assessment
40	consolidation/assessment

There are consolidation weeks build in throughout the programme for extra practice.

- Sounds are usually introduced via a story, song or other visual.
- Pupils are encouraged to repeat the sound and work with partners to find it in a variety of activities (around the classroom walls, in stories, in sand/water).
- Writing/making the sound in a variety of ways is encouraged: writing it in flour/lentils/shaving foam/sand/glitter/on smartboard/ipads with fingers and with paint/crayons/pencils/pens on paper

In Primary Two, sounds taught are as follows:

Week	Phoneme
1	sh, ch, th, ng
2	wh, ph, ee, oo
3	ck, ai, oy, oa, qu
4	consolidation
5	ay
6	ea (leaf)
7	ow (snow)
8	consolidation
9	ue
10	aw
11	oi
12	consolidation
13	au
14	ew
15	consolidation
16	ow (owl)
17	ou
18	consolidation
19	consolidation/assessment
20	igh
21	y
22	consolidation
23	i-e
24	o-e
25	consolidation
26	a-e
27	u-e
28	consolidation
29	e-e
30	ss
31	ll

32	consolidation
33	consolidation
34	consolidation/assessment
35	ff
36	kn
37	mb
38	consolidation
39	consolidation/assessment
40	consolidation/assessment

There are consolidation weeks build in throughout the programme for extra practice.

- Sounds are usually introduced via a story or other visual.
- Pupils are encouraged to repeat the sound and work with partners to find it in a variety of activities (around the classroom walls, in stories, in reading books).
- Writing/making the sound as it appears in words is encouraged and working with these words to build vocabulary is encouraged.
- Spelling dictations are used at the end of the week to assess learning of the week's sounds.

In Primary Three, sounds taught are as follows:

Week	Phoneme
1	ue, aw, oi
2	au, ew, ow
3	ou, igh, y
4	i-e, o-e, e-e
5	a-e, u-e, ea
6	consolidation
7	tch
8	wr
9	ea (bread)
10	wa
11	th (then)
12	consolidation
13	ie (tried)
14	ve (have)
15	g (gentle)
16	consolidation
17	ch (chorus)
18	se (cheese)
19	c (city)
20	consolidation/assessment
21	ea (break)

22	ou (would)
23	ey (money)
24	consolidation
25	ie (field)
26	oe (toe)
27	ough (thought)
28	consolidation/assessment
29	y (gym)
30	u (push)
31	gn (sign)
32	consolidation
33	t (future)
34	dge
35	o (some)
36	consolidation
37	ch (chef)
38	ti (station)
39	consolidation
40	consolidation/assessment

In Primaries Four and Five, sounds are grouped together, consolidated and built upon in more complex words. Each block lasts for 1 momth. Weeks 1 and 2 focus on the sound groups below; weeks 3 and 4 focuses on spelling strategies.

Block	Sound	Group
1	ae	a-e ay ai ey ea
2	ee	ee ea e ie e-e
3	ie	igh i-e ie y
4	oe	o-e oa ow oe
5	oo	oo u-e ew ue u
6	f	f ff ph
7	ow	ou ow
8	oy	oy oi
9	k	c k ck ch
10	j	j g dge
11	sh	sh ti ch
12	ch	ch tch t
13	s	s ss c se ce
14	au	a o au aw
15	silent letters & singular/plural	

4.2 Spelling

Spelling is taught through the use of Spelling strategies.

In Primaries 1-3, the main spelling strategy is using phonics.

Alongside this, Common Words are taught as follows.

Primary One:

Week	Words
1	a at the
2	I is it
3	an in and
4	consolidation
5	am me my
6	did as he
7	can we into
8	consolidation
9	go got get
10	if for on
11	be but you
12	consolidation
13	was went his
14	have just to
15	consolidation
16	your by only
17	are dad not
18	consolidation
19	consolidation/assessment
20	was went his
21	this that than
22	with us so
23	much of our
24	consolidation
25	old do going
26	out now new
27	one first little
28	consolidation
29	had see has
30	play no look
31	make like made
32	consolidation/assessment
33	consolidation

34	consolidation/assessment
35	said big could
36	our down off
37	him all came
38	here her before
39	consolidation
40	consolidation/assessment

Primary 2

Week	Words
1	have you only by
2	are come of new
3	said could her before
4	consolidation
5	day away always today
6	each ask year eat
7	yellow grow again food
8	consolidation
9	blue best number other
10	very took fast there
11	their some them last
12	consolidation
13	because week keep when
14	what many soon book
15	consolidation
16	how where now too
17	round found wish men
18	consolidation
19	consolidation/assessment
20	who after hand right
21	fly bring Mr two
22	consolidation
23	five time life line
24	home more school Mrs
25	consolidation
26	take give cold don't
27	every find want girl
28	consolidation
29	father head mother jump
30	four miss never these
31	well will fell call
32	consolidation
33	consolidation

34	consolidation/assessment
35	three room long tree
36	under thing were know
37	green people which another
38	consolidation
39	consolidation/assessment
40	consolidation/assessment

Primary 3

Week	Words
1	which what bring long
2	three again these people
3	too school some never
4	know yellow father mother
5	each year away always
6	consolidation
7	another watch time windy
8	gave family how might
9	learn children because earth
10	second fifteen five fourteen
11	spring sunny those home
12	consolidation
13	tell large spell still saw
14	own small something live give
15	about around house hour side
16	consolidation
17	any body carry along story
18	back bird add between world
19	city icy face place more
20	consolidation/assessment
21	white why also turn great
22	should would open song hard
23	read call even fly close
24	consolidation
25	begin follow often letter woman
26	write answer began heat page
27	walk water picture once until
28	consolidation/assessment
29	through sing morning colour kind
30	put different light sentence stop
31	list most must high late
32	consolidation

33	Monday Tuesday Wednesday Thursday Friday
34	does changes show think same
35	month together work Sunday Saturday
36	consolidation
37	try real eye low animal such
38	talk air lift land need move
39	consolidation
40	consolidation/assessment

Common (sometimes referred to as red or tricky words) are taught weekly, in tandem with phonics, with activities similar to those for phonics and practised via reading books which are specifically chosen to support the learning and teaching of these words.

Primary Four and Primary Five

In Primaries Four and Five, a variety of more complex words are taught through the medium of Spelling Strategies. These words may be linked to current Interdisciplinary Learning Topics and/or other areas of the curriculum. Strategies are taught to encourage pupils to think critically about spelling, rather than copying or memorising, thus embedding the ability to apply the skill to other words.

Spelling Strategies

1. *Knowledge and use of phonics* – using Elkonin Boxes and the Diacritical Spelling Code (see below)

2. *Syllabification*—breaking words into syllables. Each syllable will contain a vowel.

3. *Words within words*—e.g. country: count try

4. *Compound words*—e.g. breakfast: break fast •

5. *Using analogy*—if you know some words you can spell others e.g. knowing how to spell light means you can spell bright, sight, fright etc.

6. *Mnemonic*—children use or create their own memory aid. eg. because - 'big elephants can always understand small elephants'

7. *Spelling Rules* (if appropriate) – eg. 'i' before 'e' except after 'c'

Examples Of Spelling Words Taught

Primary Six and Seven

In P6 and 7, the focus is on spelling rules:

1. 'q' is always followed by 'u'. Together they make the sound 'kw' (queen)

2. Soft 'c' – coming before 'e' (face), 'i' (cider) 'y' fancy

3. Soft 'g' – coming before 'e' (judge), 'i' (ginger), 'y' (gypsy)

4. Letters 'i' and 'y' followed by a consonant, usually make the 'i' sound as in 'big' and 'gym'

5. Silent 'e' makes the vowel say its name, rather than its sound e.g. bake, scene, time, code, tune. A silent 'e' is used to stop words ending in a ''u' or a 'v' e.g. true, blue, give, love

6. One syllable words e.g. hop, need the final consonant to be doubled before adding endings which start with a vowel
e.g hop + p + ing = hopping
hop + p + ed = hopped
Other examples: shop, drop, bob, skip, trip, get, tan

7. Words ending in a silent final 'e' e.g. give, take, make, dance, drop the final 'e' when adding an ending beginning with a vowel. NB: when the final 'e' is dropped there is no need to double the consonant e.g. hope – hoping, take – taking, give – giving

8. The sound 'sh': in many words this 'sh' sound is represented by 'ti' e.g. station, nation, information, education. However, where a new word is formed from a root word, the ending is linked to its root word. In the following words, the 'sh' sound is represented by 'ci': music – musician, space – spacious, finance – financial

9. Double letters – l, f, s: these are often doubledfollowing a single vowel at the end of a one syllable word e.g. will, full, pull, off, miss

10. Prefixes (additions to the beginning of a word): e.g. all – when used as a prefix, has only one 'l' e.g. almost, always, already

11. Suffixes (additions to the end of a word): e.g. till, full – when used as a suffix, have a single 'l' e.g. beautiful, wonderful, helpful

12. 'dge' is used only after the single short vowel e.g badge, edge, fudge. (Long vowels use 'ge e.g. cage)

13. ‘ck’ is used only after a short vowel e.g. back, neck, sick, rock, tuck.

14. ‘ed’ at the end of a word has 3 different sounds namely d – t – ed
- ‘d’ – if the word ends in a vocal, ‘voiced’ consonant sound the ending ‘ed’ sounds ‘d’ as in ‘lived’
- ‘t’ – if the base word ends in an aspirate ‘unvoiced’ consonant sound, the ending ‘ed’ sounds ‘t’ as in jumped (pronounced jumpt)
- ‘ed’ if the base word ends with the sound ’d’ or ‘t’ adding ‘ed’ makes another syllable e.g. sided, parted

15. Nouns ending in a single ‘f’ change the ‘f’ to a ‘v’ adding ‘es’ to form the plural e.g. leaf – leaves; wolf – wolves. Exceptions: dwarfs, roofs, chiefs.

16. If a word ends in a consonant plus ‘y’, change the ‘y’ to ‘i’ before adding any ending. Except: ‘ing’
- party – parties
- heavy – heaviness
- marry – married
- funny – funnily
- carry – carriage
- pretty – prettier

Exceptions: cry – crying and hurry – hurrying

17. ‘All’ and ‘well’ followed by another syllable only have one ‘l’ e.g. also, already, although, welcome, welfare.

18. ‘full’ and ‘till’ joined to another root syllable, drop one ‘l’ e.g. useful, cheerful, until

19. No English word ends in v except spiv or abreviations. Use ‘ve’ instead.

20. No English words end in ‘j’. Use ‘ge’ or ‘dge’ instead.

21. No English words end in ‘i’. Use ‘y’ instead. ‘Exceptions’ are macaroni, spaghetti, vermicelli (these are Italian words!) and taxi (which is short for taxicab).

22. ‘ous’ at the end of a word means ‘full of’ e.g. famous - full of fame; glorious – full of glory; gracious, ridiculous, furious, dangerous etc

23. ‘al’ at the end of words

Additional Information For Phonics and Spelling

Elkonin Boxes

Elkonin Boxes are used to support spelling and phonics across Early, First and Second Levels, starting with the simplest of words and working up to more complex ones.

*Note that it is a **sound** per box, not a letter per box.*

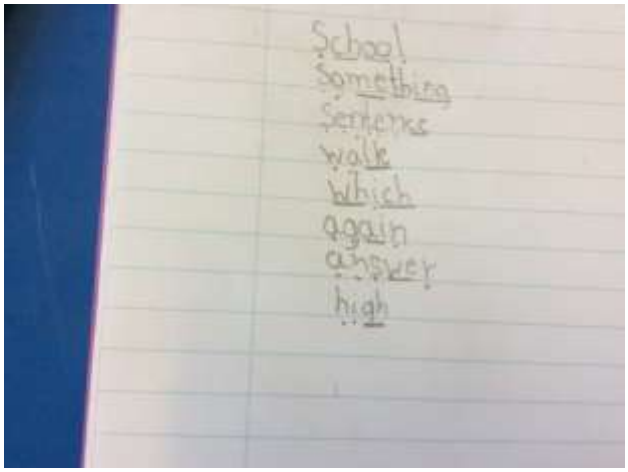
H	ow	d	e	n

t	ea	ch	e	r

L	i	v	i	ng	s	t	o	n

Diacritical Marking

Diacritical marking is used to support spelling across First and Second Levels. It uses a dots and dashes to encourage critical thinking about the formation of words.
A dot is used to identify a letter and a dash is used to note a phoneme. In the case of a split digraph, an arc is used.



4.3 Reading

The skills for Reading are taught across Early, First and Second Levels.

In conjunction with phonics and spelling, Word Attack Strategies are taught as pupils increasingly come across unfamiliar words in texts.

Reading Skills are progressive and roughly follow the following format:

Nursery
Primary 1
Primary 2 and 3
Primary 4 and 5
Primary 6 and 7

The Reading Strategies

Prior Knowledge

Metalinguistics

Visualisation

Inference

Main Idea

Summarisation

Each strategy is investigated time and again in different contexts throughout the course of a year, across a variety of texts including fiction, non-fiction, poetry and film.

4.4 Grammar

Grammar is taught in conjunction with Reading and Writing and alongside Spelling and Phonics, progressively from P1 to P7.

Stage	Taught Grammar
Primary 1	• Separation of words with spaces. • Introduction to capital letters and full stops. • Capital letters for names and places and for the personal pronoun I. • Joining words and joining clauses using 'and'. • How words can combine to make sentences. • Sequencing sentences to form short narratives.
Primary 2	• Introduction to question marks and exclamation marks to demarcate sentences. • Regular plural noun suffixes –s or –es [for example, dog, dogs; wish, wishes], including the effects of these suffixes on the meaning of the noun. • Suffixes that can be added to verbs where no change is needed in the spelling of root words (e.g. helping, helped, helper). • How the prefix un– changes the meaning of verbs and adjectives [negation, for example, unkind, or undoing: untie the boat].
Primary 3	• Formation of nouns using suffixes such as –ness, –er and by compounding [for example, whiteboard, superman]. • Formation of adjectives using suffixes such as –ful, –less. • Use of the suffixes –er, –est in adjectives and the use of –ly in Standard English to turn adjectives into adverbs. • Subordination (using when, if, that, because) and co-ordination (using or, and, but). • Expanded noun phrases for description and specification [for example, the blue butterfly, plain flour, the man on the moon]. • How the grammatical patterns in a sentence indicate its function as a statement, question, exclamation or command. • Correct choice and consistent use of present tense and past tense throughout writing. • Use of the progressive form of verbs in the present and past tense to mark actions in progress [for example, she is drumming, he was shouting]. • Use of capital letters, full stops, question marks and exclamation marks to demarcate sentences. • Commas to separate items in a list.

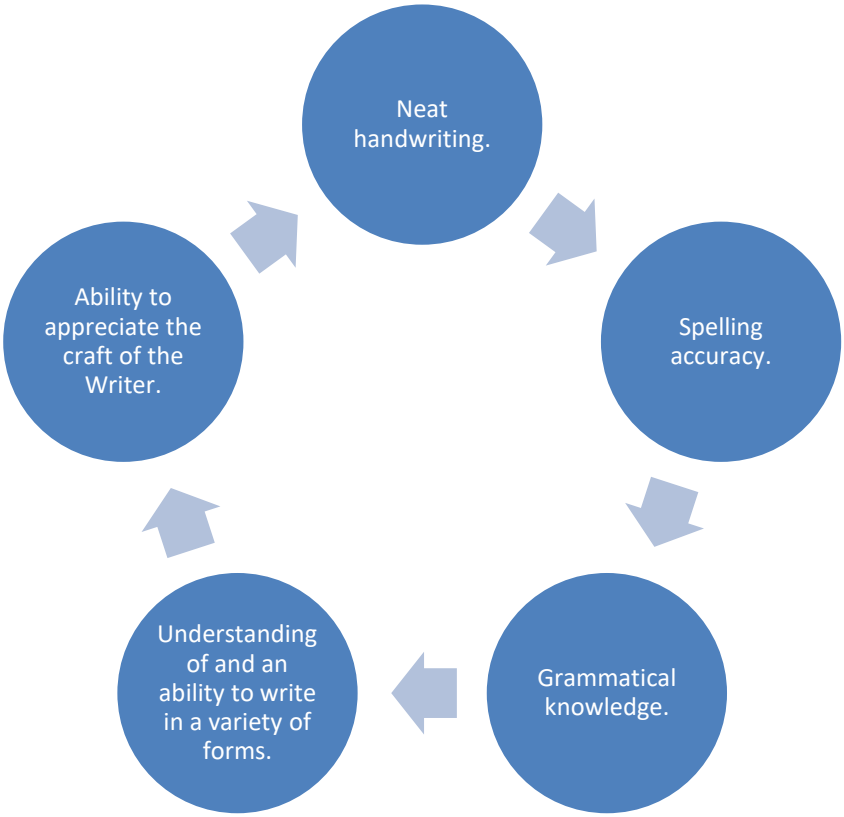
	• Apostrophes to mark where letters are missing in spelling and to mark singular possession in nouns [for example, the girl's name].
Primary 4	• Formation of nouns using a range of prefixes [for example super–, anti–, auto–]. • Use of the forms a or an according to whether the next word begins with a consonant or a vowel [for example, a rock, an open box]. • Word families based on common words, showing how words are related in form and meaning [for example, solve, solution, solver, dissolve, insoluble]. • Expressing time, place and cause using conjunctions [for example, when, before, after, while, so, because], adverbs [for example, then, next, soon, therefore], or prepositions [for example, before, after, during, in, because of] • Introduction to paragraphs as a way to group related material. • Headings and sub-headings to aid presentation. • Use of the present perfect form of verbs instead of the simple past [for example, He has gone out to play contrasted with He went out to play]. • Introduction to inverted commas to punctuate direct speech.
Primary 5	• The grammatical difference between plural and possessive –s • Standard English forms for verb inflections instead of local spoken forms [for example, we were instead of we was, or I did instead of I done]. • Noun phrases expanded by the addition of modifying adjectives, nouns and preposition phrases (e.g. the teacher expanded to: the strict maths teacher with curly hair). • Fronted adverbials [for example, Later that day, I heard the bad news.] • Use of paragraphs to organise ideas around a theme. • Appropriate choice of pronoun or noun within and across sentences to aid cohesion and avoid repetition. • Use of inverted commas and other punctuation to indicate direct speech [for example, a comma after the reporting clause; end punctuation within inverted commas: The conductor shouted, "Sit down!"] • Apostrophes to mark plural possession [for example, the girl's name, the girls' names] • Use of commas after fronted adverbials
Primary 6	• Converting nouns or adjectives into verbs using suffixes [for example, – ate; –ise; –ify]. • Verb prefixes [for example, dis–, de–, mis–, over– and re–]. • Relative clauses beginning with who, which, where, when, whose, that, or an omitted relative pronoun.

	• Indicating degrees of possibility using adverbs [for example, perhaps, surely] or modal verbs [for example, might, should, will, must]. • Devices to build cohesion within a paragraph [for example, then, after that, this, firstly]. • Linking ideas across paragraphs using adverbials of time [for example, later], place [for example, nearby] and number [for example, secondly] or tense choices [for example, he had seen her before]. • Brackets, dashes or commas to indicate parenthesis. • Use of commas to clarify meaning or avoid ambiguity.
Primary 7	• The difference between vocabulary typical of informal speech and vocabulary appropriate for formal speech and writing [for example, find out – discover; ask for – request; go in – enter]. • How words are related by meaning as synonyms and antonyms [for example, big, large, little]. • Use of the passive to affect the presentation of information in a sentence [for example, I broke the window in the greenhouse versus The window in the greenhouse was broken (by me)]. • The difference between structures typical of informal speech and structures appropriate for formal speech and writing [for example, the use of question tags: He's your friend, isn't he?, or the use of subjunctive forms such as If I were or Were they to come in some very formal writing and speech]. • Linking ideas across paragraphs using a wider range of cohesive devices: repetition of a word or phrase, grammatical connections [for example, the use of adverbials such as on the other hand, in contrast, or as a consequence], and ellipsis. • Layout devices [for example, headings, sub-headings, columns, bullets, or tables, to structure text]. • Use of the semi-colon, colon and dash to mark the boundary between independent clauses [for example, It's raining; I'm fed up]. • Use of the colon to introduce a list and use of semi-colons within lists. • Punctuation of bullet points to list information. • How hyphens can be used to avoid ambiguity [for example, man eating shark versus man-eating shark, or recover versus re-cover].

4.5 Writing

Writing is taught both across Learning and as a discrete subject within Literacy. It is a strong tool which allows children to help clarify their thinking and understanding.

Writing demands the use of many complex skills, namely:



We aid children's skills as writers by ensuring they experience a rich and varied diet of books, texts, stories and contexts for writing.

The teaching of writing covers 3 main aspects: Daily Writing, Taught Writing and Writing Across the Curriculum.

Daily Writing

Daily writing at First Level might include:

Character studies and summaries, linked to reading books/class novel
Summaries of chapters/characters, main events, endings, twists, conflicts
Letters; news reports
What happened next
Finding, organising, selecting and presenting information
Personal research

Biography/autobiography
Non-rhyming poems

Writing Across the Curriculum

Writing Across the Curriculum at First Level might include:

Religious Education and Health & Wellbeing
Social Subjects (Topic, IDL)
Research/reference
Technology and Science

Taught Writing

There are 4 stages to Taught Writing:

Genres

Instructions/Procedures: how to do something (e.g. how to make a Chocolate Cake or how to build an electric car).
Stories/Narrative (Real or Imaginative): creative pieces, written for entertainment, including personal writing e.g. My Pet Dinosaur, All About My Family.
Explanation: How or why things work or happen.
Information/Report: Describing what things are like e.g. World War I, Queen Victoria.

Persuasion: Convincing others of a particular viewpoint e.g. School Uniform Should Be Worn, People Should Pay Extra For Plastic
Recount: Retelling of events in time order e.g. How The Titanic Sank, How The Dinosaurs Lived

Genres Covered by Level

Early Level	
First Level	○ Instructional/Procedural ○ Narrative ○ Explanations ○ Information Reports ○ Persuasion ○ Recounts
Second Level	

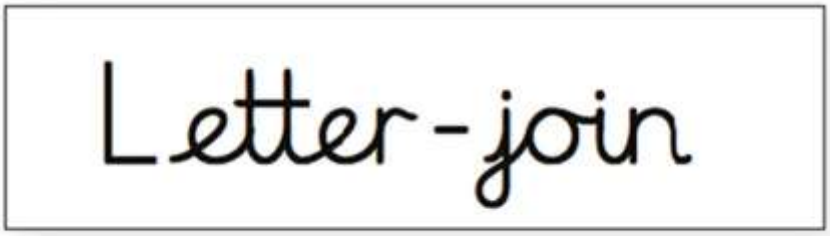
4.6 Handwriting

Handwriting is taught in the course of the Literacy week and applied daily throughout the curriculum. Cursive is the taught style from P1, with every lower case letter beginning 'on the line'.

Taught handwriting usually corresponds to the sounds/phonics and/or words being taught that week in Literacy.

Example

From P3 onwards, letters are joined –



4.7 Talking and Listening

Why we Talk and Listen:

- ✓ Language, and especially spoken language, builds connections in the brain; especially during the early years.
- ✓ Spoken language is humankind's main means of communication.
- ✓ Talking and listening builds relationships, confidence, a sense of self
- ✓ Language and the development of thought are inseparable – 'how do I know what I think until I hear what I say?
- ✓ Democracies need citizens who can argue, reason, question
- ✓ Research shows that high quality talking and listening increases pupils' attention and motivation – they like learning better when they are able to talk about their learning.

To encourage effective and progressive learning in Talking and Listening, questioning is used to promote critical thinking and discussion, across all areas of the curriculum.

Examples

Financial Advice and Support

Organisation	Support Offered	Contact Details
Credit Union	A not for profit organisation offering affordable financial services in the form of savings accounts, low cost loans to its members.	Tel: 01506 436666 Email: info@westlothiancreditunion.co.uk Website: www.westlothiancreditunion.co.uk
Food Bank Livingston	Provide help in easy reach of everyone.	Tel: 01501 229307 Mob: 07866155110 Email: info@westlothian.foodbank.org.uk Website: https://westlothian.foodbank.org.uk/
The Advice Shop	Free, impartial and confidential service to help the people of West Lothian with a focus of alleviating poverty.	Tel: 01506 283000 Email: advice.shop@westlothian.gcsx.gov.uk Website: www.westlothian.gov.uk/adviceshop

Support for your Child

Signpost	Support for families of young people with disabilities or additional needs in West Lothian	Tel: 01506 431123 Email: enquires@signpost-online.co.uk Website: http://signpostonline.co.uk/Supporting
Sleep Scotland	Supporting families of children with sleep problems and additional support needs.	Tel: 0131 6511392 Website: www.sleepscotland.org
Barnardos	Parental support services to help ensure that every	Tel: 0131 4467000 Website: www.barnardos.org.uk

	child has the best start in life.	

Support for Yourself

AA	If need help with a drinking problem.	Tel: 0800 9177650 Email: help@aamail.org Website: www.alcoholics-anonymous.org.uk
Al- Anon	If you are worried about someone's drinking.	Tel: 020 74030888 Website: www.al-anon.org.uk
Breathing Space	Sometimes our thoughts and feelings overwhelm us to the point where it becomes difficult to cope with everyday life. Breathing Space offers hope when none exists, direction for those who do not know where to seek help.	Tel: 0800 838587 (free phone) Website: www.breathingspace.scot/how-we-can-help/what-we-do/
Craigshill Good Neighbour Network	Practical help, Social Opportunities and Volunteering Opportunities	Tel: 01506 442093 Website: www.facebook.com/craigshillgoodneighbournetwork/
West Lothian Women's Aid	Provide information and support over the phone or in person. They can provide temporary housing and when the time comes resettlement support.	Tel: 01506 413721 Email: info@wlwa.org.uk Website: www.wlwa.org.uk
Samaritans	A safe place to talk any time you like, in your own way- about whatever's getting to you.	Tel: 0131 2219999 116123 (Free Number) Email: jo@samaritans.org

		Website: www.samaritans.org/branches/samaritans-edinburgh-and-lothians