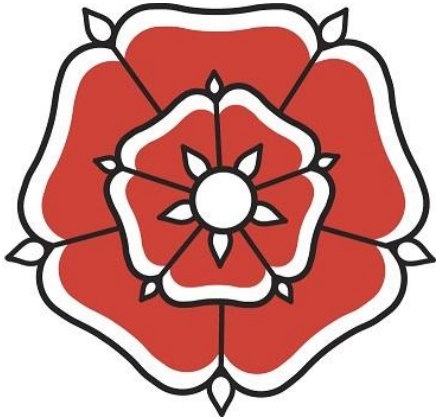
Maidenhill School Knowledge Organiser

Year 10 – Term 2



Be kind, Aspire, Persevere, Achieve

Name:	Tutor:

Planner



Week 1	Notes
Monday 2nd November	
Tuesday 3rd November	
Wednesday 4th November	
Thursday 5th November	
Friday 6th November	

Week 2	Notes
Monday 9th November	
Tuesday 10th November	
Wednesday 11th November	
Thursday 12th November	
Friday 13th November	

Week 1	Notes
Monday 16th November	
Tuesday 17th November	
Wednesday 18th November	
Thursday 19th November	
Friday 20th November	

Week 2	Notes
Monday 23rd November	
Tuesday 24th November	
Wednesday 25th November	
Thursday 26th November	
Friday 27th November	INSET

Planner

Planner

Week 1	Notes
Monday 30th November	
Tuesday 1st December	
Wednesday 2nd December	
Thursday 3rd December	
Friday 4th December	

Week 2	Notes
Monday 7th December	
Tuesday 8th December	
Wednesday 9th December	
Thursday 10th December	Y10 Parents Evening 4-6.30pm
Friday 11th December	

Week 1	Notes
Monday 14th December	
Tuesday 15th December	
Wednesday 16th December	
Thursday 17th December	
Friday 18th December	Christmas Jumper Day

Self-certification / Out of lessons

Self-certification

Every student is entitled to self-certify to go to the toilet on 2 occasions each term, when they do not have a medical exemption (this is issued by school only, in conjunction with parents). This will equate to 12 opportunities a year.

Sign below and show to your teacher. If you have a reason that requires this page to be refreshed before the end of term, please speak to your Head of Year.

Date	Time	Student signature

Insert medical exemption here (Head of Year)
Review/end date:

NSPCC CHILD PROTECTION HELPLINE 0808 800 5000

ChildLine 0800 1111

Student out of lesson record

Date and time	Reason	Staff signature

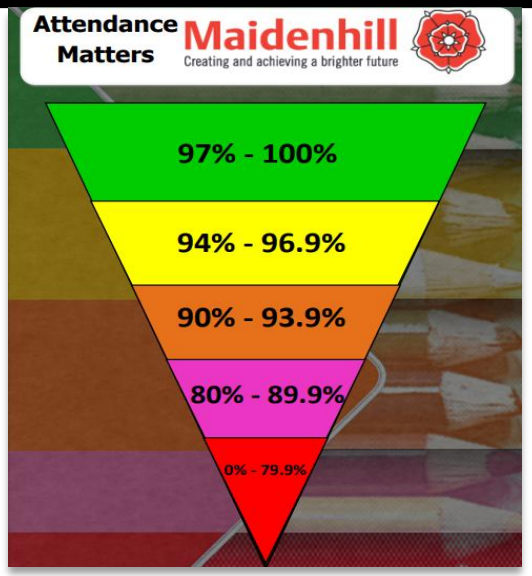
Have a problem? Worried about someone or something? Need someone to talk to? Scan the QR code and let us know.

Reporting your concerns

Self-certification / Out of lessons

Attendance Matters

Term 2 Reward Dates:
Friday 18th December– 'Festive Friday' – Reward for all students with 0 Negatives **AND** 94% (or above attendance)
Monday 14th to Thursday 17th December reward shop is open in the main hall





Personal Attendance Record

Week	Monday	Tuesday	Wednesday	Thursday	Friday	%	Which Colour?	↑ → ↓
1								
2								
3								
4								
5								
6								

Home School Agreement and uniform expectations

As a student of the school I will:

- Attend school every day and on time
- Represent the school in a positive way on my way to and from school
- Wear the correct school uniform smartly at all times
- Ensure I have downloaded the ClassCharts app and actively use the platform so that I am up to date with notifications regarding my behaviour, attendance, homework and detentions
- Follow the "Maidenhill Expectations" for all students regarding their Behaviour for Learning and uphold the school's expectations to 'Be kind, Aspire, Persevere and Achieve'
- Not use my mobile phone in school
- Go to reception if I need to contact home
- Be polite and considerate to all members of the school community
- Ensure that my behaviour has a positive impact on other students' learning and progress
- Refuse to take part in bullying or anti-social behaviour, including on social media
- Take responsibility for my own learning and actively participate in lessons
- Actively seek ways to improve my work and respond effectively to feedback
- Complete all my classwork and homework to the best of my ability and on time
- Respect the environment of the school and its neighbourhood, and help to keep it clean and tidy, free from litter and graffiti
- Represent the school in a positive way in the local community and when participating in school activities or visits, and on social media
- Talk with my parent(s)/carer(s) and school staff about any concerns in school
- Pass any written correspondence to my parents'/carers' on the day they are issued
- Interact positively with any school social media platforms.

Student Signature ……

Maidenhill Uniform

- Maidenhill school blazer needed at all times (terms 1-5)
- Maidenhill school tie
- Long or short sleeved plain white shirt, **tucked in when in the school building**
- Plain black, smart, tailored trousers
- Footwear should be a shoe and not a boot, and entirely black
- White, grey or black socks
- Black or nude tights. No patterns.
- Optional
  - Maidenhill skirt
  - Maidenhill shorts
  - Simple black belt
  - Maidenhill jumper



- Jewellery must be easily removed for practical lessons. Earrings must be studs and not dangle. Necklaces should be underneath the shirt
- Make-up should be discreet
- Long hair should be tied back for health and safety reasons in certain subjects







Maidenhill PE Uniform

- **NO JEWELLERY**
- Red Maidenhill PE polo shirt
- Red Maidenhill hooded jumper
- Optional Rugby shirt
- Options for the lower half:
  - Plain black shorts with less than 5cm logos
  - Black tracksuit bottoms with less than 5cm logos
  - Maidenhill leggings
  - Maidenhill skort
  - Plain black leggings with no logos



- Socks
  - White or black
  - Red needed for all fixtures
- Shoes
  - Suitable trainers
  - Optional studded boots for football/rugby



Home School Agreement and Uniform

Equipment and acceptable use of the school ICT facilities

Equipment

You should be fully equipped for every lesson. Make sure you have the correct books for each lesson. It is always a good idea to pack your school bag the night before. Remember to check your timetable first. Here is a useful checklist.

Essential requirements

- ❑ At least 2 black pens
- ❑ Green pen
- ❑ 2 pencils and 2 x 2b or 4b pencils for Art, Design and Nutrition
- ❑ Ruler
- ❑ Rubber
- ❑ Pencil sharpener
- ❑ Scientific calculator
- ❑ Whiteboard and whiteboard pen (provided)
- ❑ Headphones
- ❑ Reading book
- ❑ Plastic wallet and knowledge organiser (provided)

Student property

You are expected to have your clothing marked with your name and, wherever possible, all other items of property which you are expected to bring to school with you such as bags, pencil cases and PE kit named too.

Money, bus passes and other similar items of value should always be carried with you and never left in bags around the school at break and lunchtimes.

You have the opportunity, if you wish, to hand valuables to a teacher before PE and arrangements will be made for safe keeping. The changing rooms are not always locked during lessons. If you do not do this, the school cannot guarantee full security for your property.

Network rules

Never share your password with anyone – not even your best friend – if you suspect that someone knows it, change it or see an ICT technician as soon as possible
Never share your user area with anyone – email files to a friend or home as an attachment, or use Office 365 "One Drive"
Always log off before leaving a computer
Never tamper with ICT equipment, if your PC or laptop is damaged or not working properly, please inform a member of staff immediately. DO NOT disconnect, reconnect or move or swap any cables at any time
Never give a stranger any information about you or your home
Always communicate with strangers politely – ask a teacher to check before sending
Don't suffer bullying – report and give a printout of any email or other material that offends you to a teacher
Avoid the spreading of computer viruses – from the internet or home. Keep your home virus checking software up to date
Do not attempt to download or install software – use only the software provided
Always give credit for information obtained from the internet
Do not eat or drink close to electronic equipment or in any computer room
Use your printing credits with care – extra print credits in any one week can only be obtained through the permission of a teacher whose work you need to print
The use of the internet at school must be in support of learning. The use of all chat systems is strictly forbidden. Inappropriate use will result in access being withdrawn. A log of all internet access and activity is monitored throughout the day by the network staff so misuse of the system can be quickly identified and dealt with.

To access email from home, log on to rmunify.com. School emails should only be used to communicate with staff/students about school related matters. You can also speak with staff via the message function on ClassCharts.

Visit the website 'thinkyouknow' for essential and excellent advice on using the internet safely outside of school.



Behaviour for Learning

At Maidenhill School we believe that students have the right to learn, and teachers have the right to teach.

When you make good choices and follow the rules, you will be rewarded.

Rewards

You can collect positive reward points in lessons and for completing quality homework. Rewards can be spent in the reward shop at the end of each term on vouchers, chocolate, stationery and much more! We have end of term Friday rewards and end of year rewards in the form of our activities week, all to recognise the positivity and hard work you show each and every day.

If you make poor choices and do not follow the rules, then a clear set of consequences will follow.

Consequences

C2 – This is a verbal warning

C3 – Issued with a BFL detention of 40mins

C3r – This is when you are sent out of a lesson, and you must move to the referral room. You will be issued with a 55mins detention. Those students that are removed from lesson five times in a term, will then receive a 1-day internal isolation in the refocus room for every subsequent C3r. This will be reset at the start of the next term

C4 – Isolation in the refocus room

C4e – Educated off site at an alternative provision

C5 – Fixed term suspension

Be kind, Aspire, Persevere, Achieve

C5 Exclusions
If a student receives a C5 they will be excluded from school for a fixed period of time.

Incidents for which a students may be excluded include:

- In possession, under the influence of or dealing in illegal drugs. This also extends to alcohol and other toxic substances
- Serious physical or verbal aggression towards others
- Serious rudeness, defiance, threatening behaviour or inappropriate language towards a member of the school staff
- Anti-social behaviour such as theft or damage to property
- A build-up of incidents which are unacceptable and contravene school standards
- Repeated disruption and defiance which has disturbed the learning of other students
- Persistent poor behaviour

If a student persistently behaves in an unacceptable manner, this could lead to a permanent exclusion.

In exceptional circumstances, it is appropriate for the Headteacher to permanently exclude a student for a first offence. These might include such things as:

- Serious actual or threatened violence against another individual
- Sexual abuse or assault
- Supplying an illegal drug
- Carrying an offensive weapon

The school can take no responsibility for valuable items brought into school by students (so students are advised not to bring in expensive items).



The following items are not allowed to be brought into school:

- Alcohol and drugs
- Knives and other weapons
- Fireworks
- Cigarettes/e-cigarettes, vapes, tobacco, matches and lighters
- Tippex or other correcting fluids
- Aerosols
- Illegal substances
- Energy/fizzy drinks

Smoking is not permitted in school or on the way to and from school. Students found to be smoking/vaping or in possession of smoking/vaping equipment will receive a significant sanction.

Behaviour for Learning

Bullying

What is bullying?

Bullying is when one person or a group of people deliberately hurt, threaten or frighten someone over a period of time. It can be physical; like punching or kicking, or emotional like teasing or calling names.



Bullying includes repeated:

- Hitting
- Insults
- Cruel nicknames
- Making threats
- Isolating someone
- Damaging, taking or hiding property
- Writing or telling lies about someone
- Sending cruel text messages, video messages or emails
- Spreading rumours
- Being unfriendly and turning others against someone
- Posting inappropriate comments on websites and social media

Types

- Physical
- Cyber
- Verbal
- Emotional
- Prejudice based

If you are being bullied, do not suffer in silence:

- Be firm – look the bully in the eye and tell them to stop
- Get away from the situation as quickly as possible
- Tell an adult, peer or friend what has happened, straight away
- If you are scared to tell someone, get a friend to go with you
- Keep on speaking up until someone listens
- Don't blame yourself for what has happened

When you are talking about bullying, be clear about:

- When it started
- What has happened to you
- How often it has happened
- Who was involved
- Who saw what was happening
- Where and when it happened
- What you have already done about it

If you are being bullied, you can expect that:

- You will be listened to and taken seriously
- Action will be taken to help stop the bullying
- You will be involved in the process of deciding what action to take to stop the bullying and any worries that you may have will be listened to and respected
- You will be given the opportunity to talk about the way that the bullying has made you feel and to find strategies to deal with these feelings and to understand and cope with bullying behaviour
- If you are ever in fear of your physical safety, staff will take immediate action to keep you safe

ALL REPORTED INCIDENTS WILL BE TAKEN SERIOUSLY, INVESTIGATED AND APPROPRIATE ACTION TAKEN

Remembrance Day – 11th November 2026

What is Remembrance Day?
Remembrance Day is an annual event, where we remember all the people who have lost their lives while serving in the armed forces. It's also called Armistice Day or Poppy Day.

In Britain, Remembrance Day has been a tradition since the end of the First World War. It's also celebrated in many countries across the globe. People from different backgrounds, cultures, and religions come together to honour Remembrance Day. We remember the bravery and courage of those who fought in the World Wars on Remembrance Day. But, we also commemorate all those who have served in the army since, and those who are serving in the army today.

When is Remembrance Day 2026?
Remembrance Day 2026 will take place on Wednesday 11th of November. Remembrance Day is celebrated every year on the 11th of November. This is because during WW1, the conflict ended "at the eleventh hour of the eleventh day of the eleventh month".

How is Remembrance Day commemorated in the UK?
From laying Remembrance Day poppy wreaths to watching parades, there are lots of ways that people in Britain commemorate Remembrance Day each year.

One important moment that happens every year on Remembrance Day is a two-minute silence. Held at 11:00 a.m. on the 11 November, the silence takes place across the country.

Colour in and reflect…

WE WILL REMEMBER THEM



Remembrance Day – 11th November 2026

REMEMBRANCE DAY WORD SEARCH

Army
Armistice
Silence
Heroes
Crosses
Soldiers
Pilots
Sailors
Memorial
Wreath
Poppies
World War
Remember
Sacrifice
Bravery

F R W A W C O W M R E E O S O C C O E R
O T R S B E R E B M E M E R S W R S I L
E D S M Y E O P S A C R I F I C E S C C
A E R M M S R A D N I R S E A I D M E S
H I R R W E O T O S T R M L T L W I L S
E A S S V O M C R O S S E S L A L W B S
R O C O A E R O S A I L O R S W V E R B
O I A A L S H L R A M I L S L E P E I R
E S E R W D A S D I R I R O S S I E E A
S P P O P P I E S W A S E F C I L R E V
E P I I R S A E C T A L R I E O O O M E
R S L E H E I I R C E R C C S C T S W R
E I E M T S I E E S L E L E W L S A S Y
I V A S A W R E T S S L Y E I S R R C R
R E S A E L T R B I A F L N R O A M L R
E M A I R I S S E C C R I R S R A R R S
E E S I W E L E T Y R S I A M E L Y M P
S R S E C N E L I S T A O O A L Y P S E
I I R R A C S Y S R C D R D S I I B S O
C S A M E E S E M F M P B A C S E E E S





Remembrance Day – 11th November 2025

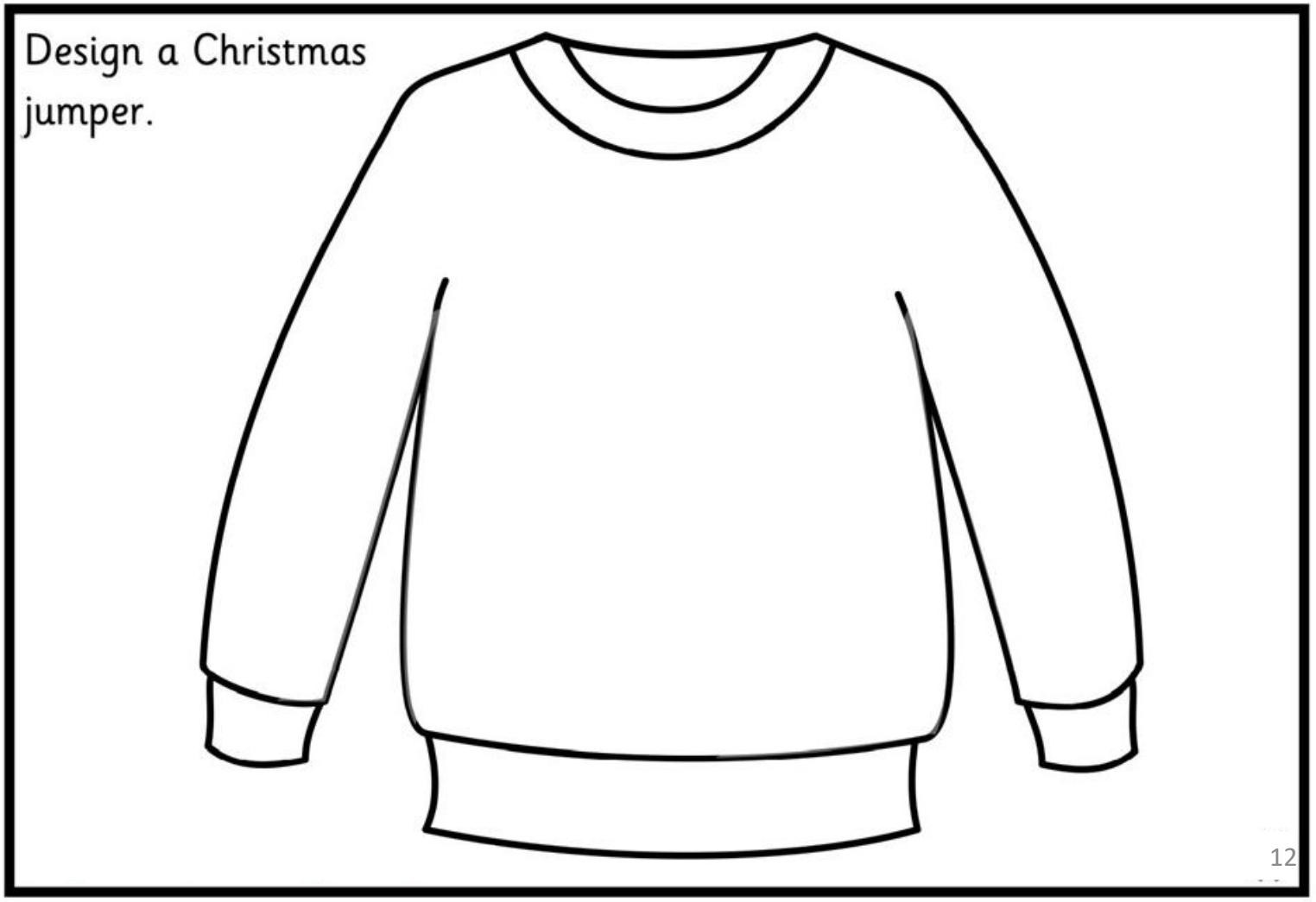
Save the Children

WHAT IS CHRISTMAS JUMPER DAY?

Christmas Jumper Day is one of Save the Children's biggest annual fundraising events. It's been going since 2012!

Every December they ask schools, workplaces, and community and friend groups to put on a Christmas jumper and donate whatever they can afford. And every year, millions of people join in making the world better in a sweater.

They'll use the money raised on Christmas Jumper Day to help children in the UK and all around the world stay safe, healthy and learning - and change their future for good.



Christmas Jumper Day – 18th December

POETIC TECHNIQUES

Rhyme
Rhyming words occur very often in poems, sometimes in patterns.

Rhythm
The flow of a poem, often effected by the punctuation and shape of a poem.

Tone and Pace
Have a big impact on rhythm and effected by punctuation.

Onomatopoeia
When a word imitates the sound it makes (e.g. BANG, SPLASH)

Repetition
When words and phrases are repeated multiple times.

Similes
Compares two different things, using the words "like" or "as".

Metaphors
Identifies something as being the same as something else.

Alliterations
More than one word beginning with the same letter (close together in text).

100 Colorful Words to Use in Place of "Said"

admitted
advised
agreed
assured
avowed



began
bragged
chatted
cheered
commented
convinced
crowed
exclaimed
gushed
instructed

bawled
complained
confessed
cried
croaked
denied
fretted
gasped
groaned
gurgled
moaned
mumbled
objected
pleaded
protested
sniffled
sobbed
squeaked
stammered



argued
barked
bellowed
boasted
boomed
coughed
demanded
griped
growled
hissed
insisted
interrupted
jeered
ranted
raved

added
asked
babbled
bargained
blurted
chortled
clucked
explained
grumbled
gulped
grunted
lied
murmured
mused
muttered



Common Techniques

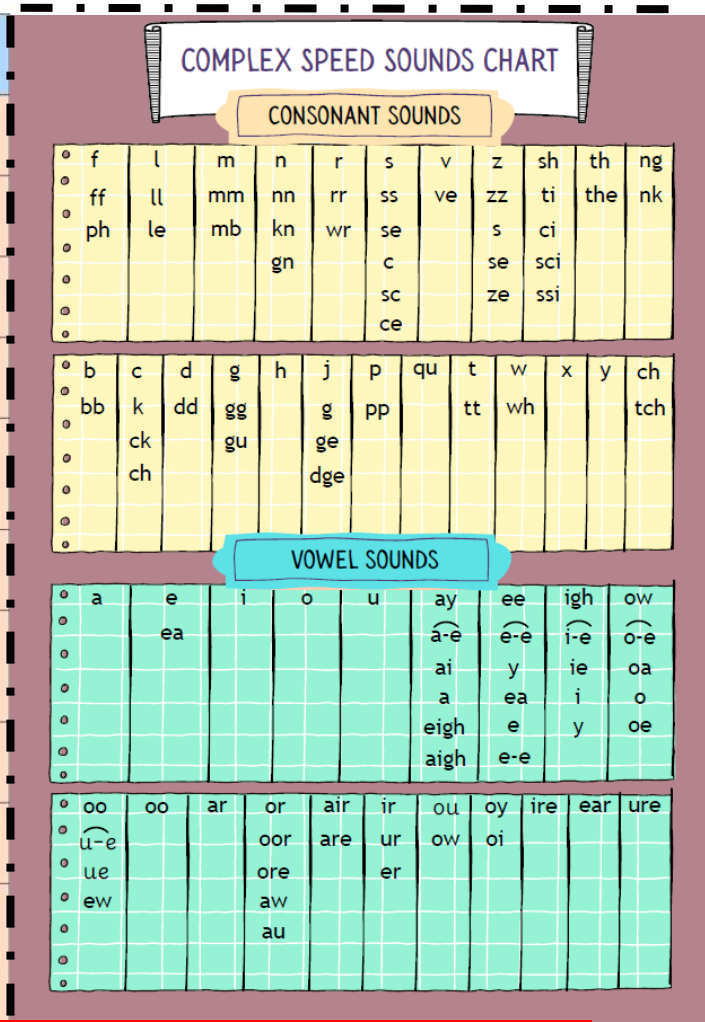
D	DIRECT ADDRESS
A	ALLLITERATION
F	FACT
O	OPINION
R	RHETORIAL QUESTION
R	REPETITION
E	EMOTIVE LANGUAGE
S	STATISTICS
T	THREE (LIST OF)
I	IMPERATIVE

Transactional Writing

- Letters
- Reviews
- Reports
- Articles

LITERARY DEVICE	DEFINITION	EXAMPLE
Simile	A comparison using "like" or "as"	Her eyes were like shining stars
Metaphor	A comparison without using "like" or "as"	Life is a journey
Personification	Giving human qualities to non-human things	The wind whispered through the trees
Hyperbole	An exaggeration for emphasis	I've told you a million times
Alliteration	Repetition of the same sound at the beginning of words	Peter Piper picked a peck of pickled peppers
Onomatopoeia	Words that sound like what they mean	Buzz, hiss, sizzle
Irony	A contrast between what is expected and what actually happens	A fire station burning down
Foreshadowing	Hinting at what will happen later in the story	The ominous music in a horror movie
Symbolism	Using objects or actions to represent ideas or qualities	A dove as a symbol of peace
Imagery	Descriptive language that creates a picture in the reader's mind	The sun set over the ocean, painting the sky with shades of orange and pink

www.loveenglish.org



English Support – Language

Conjunctions

Addition	Summary	Place
Further	In short	There
Also	In other word	Here
Too	Anyway	In the back
Besides	In brief	Adjacent to
Finally	It seems	Next to
Last	Clearly	Nearby
Additionally	In sum	Beyond
In addition	After all	Opposite to
Then	In general	At that point

Example	Comparison	Time
Such as	Equally	Meanwhile
For one thing	A smilar ...	Finally
For instance	Likewise	At last
For example	Similarly	Presently
That is	Comparable	Currently
Specifically	As with	In the past
Illustrated by	Another ... like	In the meantime
In particular	In the same way	Eventually
		Immediately

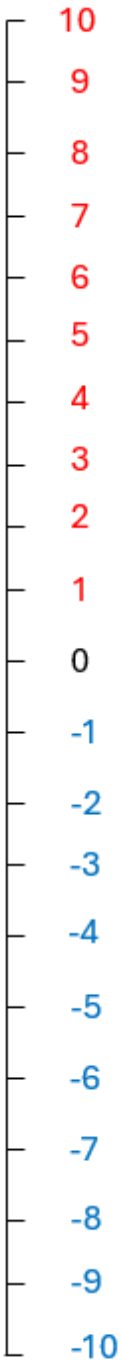
PUNCTUATION





Verbs to sharpen your analysis

THIS SHOWS	THIS SUGGESTS	THIS HIGHLIGHTS	THIS INTERESTS
Demonstrates	Implies	Emphasises	Fascinates
Reveals	Infers	Stresses	Amuses
Exposes	Hints at	Reinforces	Satisfies
Discloses	Signifies	Spotlights	Terrifies
Uncovers	Connotes	Underlines	Enthrals
Encapsulates	Denotes	Accentuates	Enthuses
Proves	Insinuates	Underscores	Stimulates
Validates	Intimates	Foreshadows	Galvanises
Exhibits	Advocates	Exaggerates	Animates
Establishes	Poses	Reiterates	Rouses
Denotes	Conjures	Magnifies	Stirs
Displays	Symbolises	Zeroes in on	Placates
Flaunts	Points towards	Promotes	Provokes
Showcases	Indicates	Publicises	Deceives
Presents	Alludes to	Pinpoints	Astonishes



Multiplication Table Grid 1-12

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

Mathematics Higher Unit 8 – Transformations and constructions

What do I need to be able to do?

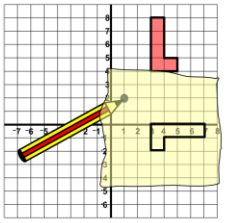
By the end of this unit you should be able to:

- Reflect, translate and enlarge polygons, including negative enlargements.
- Understand and represent bearings
- Construct triangles and bisectors using a ruler and compass

Keywords

Enlarge: to make a shape bigger (or smaller) by a given multiplier (scale factor)
Scale Factor: the multiplier of enlargement
Centre of enlargement: the point the shape is enlarged from
Line of symmetry: A line of symmetry is a line that divides a shape or object into two identical halves that are mirror images of each other.
Reflect: mapping of one object from one position to another of equal distance from a given line.
Bearing: the angle in degrees measured clockwise from North.

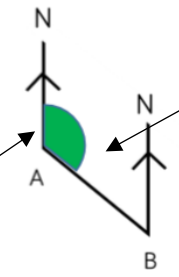
Rotations U696



Rotate the shape clockwise 90^0 about the point (1,2)

Understand and represent bearings U107

- A bearing is always measured from **NORTH**
- It is always given as three figures



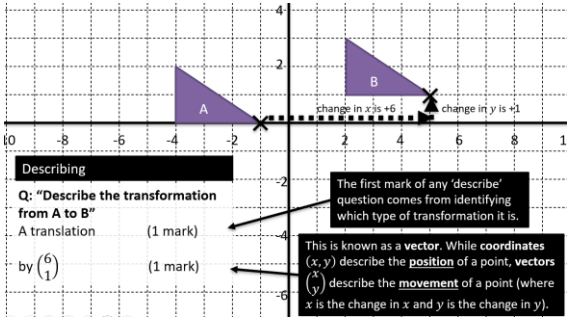
The bearing of B from A is calculated by measuring the highlighted angle

The angle indicated starts from the North line at A and joins the path connecting A to B.

This angle shows the bearing of **B from** A

The sentence… "Bearing of ____ from _____" is really important in identifying the bearing being represented.

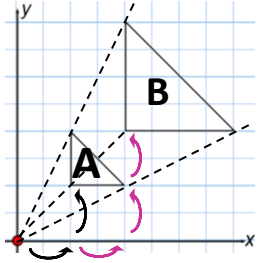
Translations U196



Positive scale factors U519

Enlargement from a point

Enlarge shape **A** by SF 2 from (0,0)



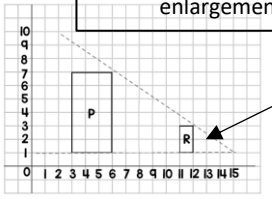
The shape is enlarged by 2

The distance from the point enlarges by 2

Fractional scale factors U134

Fractions less than 1 make a shape SMALLER

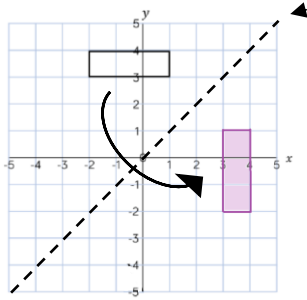
R is an enlargement of P by a scale factor $\frac{1}{3}$ from centre of enlargement (15,1)



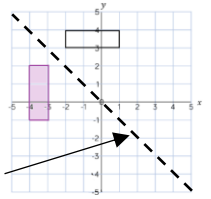
SF: $\frac{1}{3}$ - R is three times smaller than P

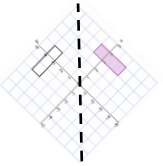
Reflections U799

This is the line **y = x** (every y coordinate is the same as the x coordinate along this line)



This is the line **y = - x** The x and y coordinate have the same value but opposite sign





If you turn your image, it becomes a vertical/ horizontal reflection (also good to check your answer this way)

Mathematics Higher Transformations and constructions – Unit 8

Unit 9 Higher – Equations and Inequalities

What do I need to be able to do?

- Completing the square
- Solving quadratic equations using factorising
- Solve an equation in the form ax+ by = c where x or y are given
- Solve simultaneous equations by elimination where coefficients of either x or y are the same
- Solve simultaneous equations by elimination where coefficients of either x or y are a multiple of the other
- Solve simultaneous equations by elimination where both equations need to be multiplied
- Set up two equations from context and solve
- Plot and quadratic and linear equation and find the points of intersection
- Solve simultaneous equations where one is quadratic by substitution where both in the form y=

Keywords

Solution - value of an unknown that satisfies an equation or inequality
Factorise - express an algebraic expression as a product of its factors using brackets; the reverse process of expanding brackets
Roots - value(s) of x where the quadratic equals 0
Coefficient - number in front of a variable indicating the multiple of the variable
Exact form - solution represented as an expression rather than a decimal approximation
Variable - symbol, usually a letter, that can represent any value in mathematical expressions,
Quadratic - equation or expression involving the second (and no higher) power of a variable or unknown, typically in the form $ax^2 + bx + c$

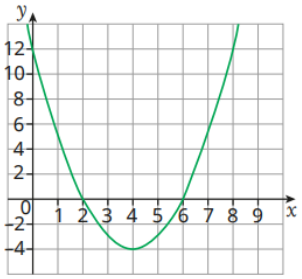
Solve by factorising (U228 and U960)

Solve $x^2 - 8x + 12 = 0$

$(x - 2)(x - 6) = 0$

$x - 2 = 0$ or $x - 6 = 0$

$x = 2$ $\quad$ $x = 6$



Solve by completing the square (U589)

$x^2 - 8x + 9 = 0$
$(x - 4)^2 - 16 + 9 = 0$
$(x - 4)^2 - 7 = 0$
$(x - 4)^2 = 7$
$x - 4 = \pm\sqrt{7}$
$x = 4 \pm \sqrt{7}$
$x = 4 + \sqrt{7}$ or $x = 4 - \sqrt{7}$

1. Make the equation equal to 0
2. Complete the square
3. Solve the perfect square

Solve using the quadratic formula (U665)

1. Compare with $ax^2 + bx + c$. Write the values of a, b, and c.
2. Substitute a, b and c into the quadratic formula
3. + gives one solution and – gives the other

$3x^2 - 5x + 1 = 0$
$a = 3$ $\quad$ $b = -5$ $\quad$ $c = 1$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \times 3 \times 1}}{2 \times 3}$$

$$x = \frac{5 \pm \sqrt{25 - 12}}{2 \times 3}$$

$$x = \frac{5 \pm \sqrt{13}}{6} \quad \text{or} \quad x = \frac{5 + \sqrt{13}}{6} \text{ or } x = \frac{5 - \sqrt{13}}{6}$$

Simultaneous Equations (U760)

1. Write the equations one above the other and number them
2. 2. (Multiply each term in the equation so the coefficients are the same)
3. If the signs are the same subtract, if not, add
4. Solve
5. Find the unknown variable by substituting the known variable into one of the equations

$2x + 5y = 24$
$4x + 3y = 20$
x2
LCM of 2 and 4 is 4
$4x + 10y = 48$ (1)
$4x + 3y = 20$ (2)

$7y = 28$
$\div 7 \quad \div 7$
$y = 4$
$4x + 3(4) = 20$
$4x + 12 = 20$
$-12 \quad -12$
$4x = 8$
$\div 4 \quad \div 4$
$x = 2$

Enrichment Opportunities

Mathematics Higher – Equations and Inequalities Unit 9

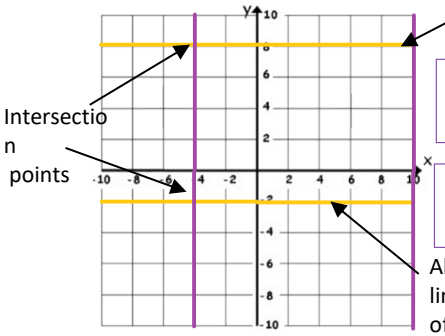
What do I need to be able to do?

- Plot and recognise coordinates in 4 quadrants
- Find the mid-point of a line segment
- Recognise and plot lines parallel to the axes
- Plot graphs in the form y= …. using a table of values
- Find the gradient of a line segment (understanding that parallel lines have the same gradient)
- Understand what m and c represent in the equation y=mx+c
- Find the equation of linear (straight line) graphs
- Interpret distance time graphs
- Draw distance time graphs

Keywords

Mid-point –the point exactly in the middle of the line segment
Gradient- the steepness of the line
Positive gradient- a line that slopes up from left to right
Negative gradient – a line that slopes down from left to right
Y-intercept- the point at which the line crosses the y-axis
Parallel lines- lines that always the same distance apart (never meet)
Linear graph- a straight line graph

Lines parallel to the axes



All the points on this line have a x coordinate of 10

'a' can be ANY positive or negative value including 0

Lines parallel to the **y axis** take the form **x = a** and are **vertical**

Lines parallel to the **x axis** take the form **y = a** and are **horizontal**

All the points on this line have a y coordinate of -2

e.g. (3, -2) (7, -2) (-2, -2) all lay on this line because the y coordinate is -2

y = mx + c

The **coefficient** of x (the number in front of x) tells us the gradient of the line

$y = mx + c$

y and x are **coordinates**.

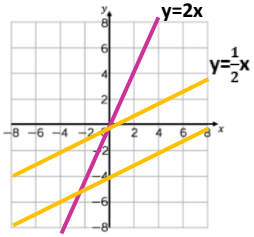
The value of **c** is the point at which the line crosses the y-axis. **Y intercept**

The equation of a line can be rearranged:. E.g:
y = c + mx
c = y – mx
Identify which coefficient you are identifying or comparing.

Compare Gradients

$y = mx + c$

The **coefficient** of x (the number in front of x) tells us the gradient of the line



The **greater** the gradient – the **steeper** the line

Parallel lines have the **same** gradient

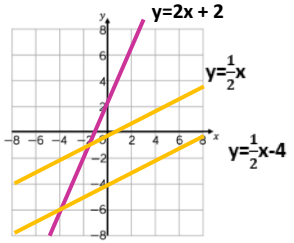
Positive gradients

Negative gradients

Compare Intercepts

$y = mx + c$

The value of **c** is the point at which the line crosses the y-axis. **Y intercept**



The coordinate of a y intercept will always be (0,**c**)

Lines with the **same** y-intercept cross the y axis at the point

Mathematics Foundation- Graphs Unit 9

Plotting a graph from table of values

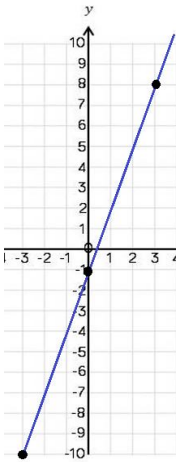
- $y = 3x - 1$

x	−3	0	3
y			

3 x the *x* coordinate then – 1

This represents a coordinate pair (-3, -10)

Draw a table to display this information

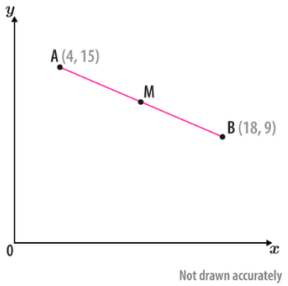


You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Midpoint of a line U933



Calculate the midpoint from coordinates.
A (4, 15) B(18, 9)
Work out x coordinate mid-point

$$\frac{4+18}{2} = 11$$

Work out y coordinate midpoint

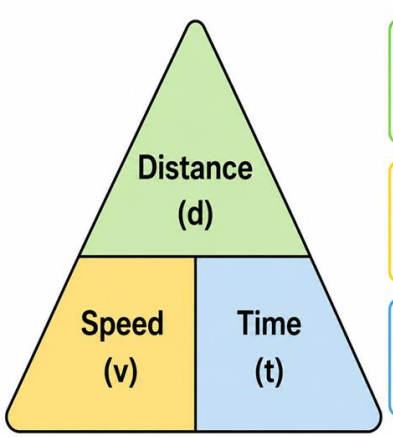
$$\frac{15+9}{2} = 12$$

Midpoint (11, 12) of line segment

Gradient of a line

Gradient = $\frac{Change\ in\ y}{Change\ in\ x}$

Gradient means the degree of steepness of a graph at any point.



$$\text{Speed (v)} = \frac{\text{Distance (d)}}{\text{Time (t)}}$$

$$\text{Distance (d)} = \text{Speed (v)} \times \text{Time (t)}$$

$$\text{Time (t)} = \frac{\text{Distance (d)}}{\text{Speed (v)}}$$

Minutes into hours

30 minutes = 0.5 hours
15 minutes = 0.25 hours
45 minutes = 0.75 hours

Date	KO*	WB*	TT*
2/11			
3/11			
4/11			
5/11			
6/11			
9/11			
10/11			
11/11			
12/11			
13/11			
16/11			
17/11			
18/11			
19/11			
20/11			
23/11			
24/11			
25/11			
26/11			
27/11	IN	S	ET

Date	KO*	WB*	TT*
30/11			
1/12			
2/12			
3/12			
4/12			
7/12			
8/12			
9/12			
10/12			
11/12			
14/12			
15/12			
16/12			
17/12			
18/12			

*Knowledge Organiser * Whiteboard * Timetable

RUBBER

PENCIL

WHITEBOARD PEN

GREEN PEN

BLACK PEN

You should also have:

- Pencil case
- Reading book
- Calculator
- Headphones
- Plastic wallet
- Protractor
- Sharpener
- Compass
- (no scissors)

You should also have when needed:

- Ingredients - PE kit - Completed homework

RULER

You can borrow core items without penalty between 8.30-8.45am before passing your Head of Year