

# **Maidenhill School Knowledge Organiser**

**Year 10 – Term 3**



**Be kind, Aspire, Persevere, Achieve**

Name:

Tutor: 10

# Planner



Week 2	Notes
Monday 5 <sup>th</sup> January	INSET DAY
Tuesday 6 <sup>th</sup> January	
Wednesday 7 <sup>th</sup> January	
Thursday 8 <sup>th</sup> January	
Friday 9 <sup>th</sup> January	
Week 1	Notes
Monday 12 <sup>th</sup> January	
Tuesday 13 <sup>th</sup> January	
Wednesday 14 <sup>th</sup> January	
Thursday 15 <sup>th</sup> January	
Friday 16 <sup>th</sup> January	

Week 2	Notes
Monday 19 <sup>th</sup> January	
Tuesday 20 <sup>th</sup> January	
Wednesday 21 <sup>st</sup> January	
Thursday 22 <sup>nd</sup> January	
Friday 23 <sup>rd</sup> January	
Week 1	Notes
Monday 26 <sup>th</sup> January	
Tuesday 27 <sup>th</sup> January	
Wednesday 28 <sup>th</sup> January	
Thursday 29 <sup>th</sup> January	
Friday 30 <sup>th</sup> January	



<b>Week 2</b>	<b>Notes</b>
Monday 2 <sup>nd</sup> February	
Tuesday 3 <sup>rd</sup> February	
Wednesday 4 <sup>th</sup> February	
Thursday 5 <sup>th</sup> February	
Friday 6 <sup>th</sup> February	
<b>Week 1</b>	<b>Notes</b>
Monday 9 <sup>th</sup> February	
Tuesday 10 <sup>th</sup> February	
Wednesday 11 <sup>th</sup> February	
Thursday 12 <sup>th</sup> February	RP2 Published
Friday 13 <sup>th</sup> February	

# 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:

## Student out of lesson record

Date and time	Reason	Staff signature

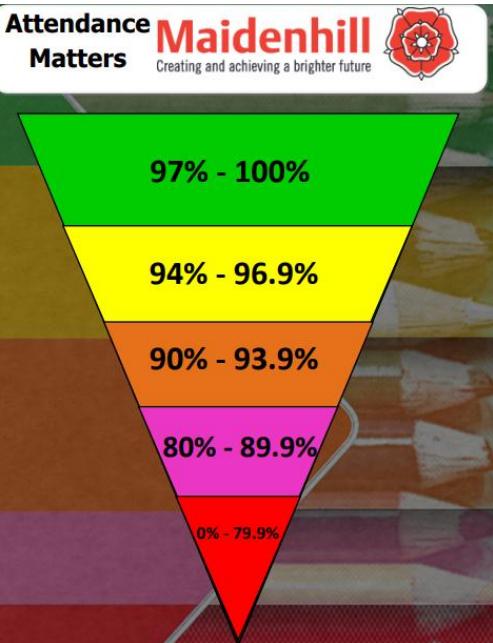


Have a problem?  
Worried about someone or something?  
Need someone to talk to? Scan the QR code and let us know.

Reporting your concerns



# Attendance Matters



100%	0 DAYS	0 DAYS MISSED
99%	1 DAY	1 DAY MISSED
98%	3 DAYS	3 DAYS MISSED
97%	1 WEEK	5 DAYS MISSED
96%	1.5 WEEKS	7.5 DAYS MISSED
94%	2 WEEKS	10 DAYS MISSED
93%	2.5 WEEKS	12.5 DAYS MISSED
92%	3 WEEKS	15 DAYS MISSED
90%	3.5 WEEKS	17.5 DAYS MISSED

MAXIMISE YOUR POTENTIAL.  
ATTEND SCHOOL EVERY DAY.

## Attendance Groups

Green	Expected Attendance
Yellow	Risk of Underachievement
Amber	Serious Risk of Underachievement
Pink	Severe Risk of Underachievement (PA)
Red	Extreme Risk (PA)

## Personal Attendance Record

Week	Monday	Tuesday	Wednesday	Thursday	Friday	%	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
- ❖ 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 with no logos
- ❖ 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
- ❖ Hair must not be of extreme style or colour. 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



# 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
- Headphones for music
- Reading book
- Plastic wallet and knowledge organiser

### 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](http://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](http://thinkyouknow.co.uk)’ 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 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

## C5 Exclusions

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

Incidents for which a student may be excluded include:

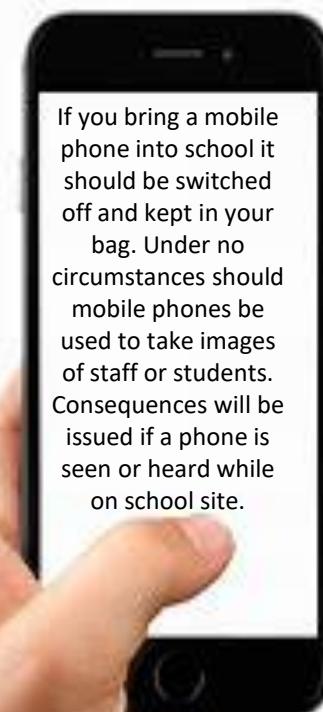
- In possession, under the influence of or dealing in illegal drugs. This also extends to alcohol and other toxic substances
- Serious physical or verbal aggression towards others
- Serious rudeness, defiance, threatening behaviour or inappropriate language towards a member of the school staff
- Anti-social 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).



If you bring a mobile phone into school it should be switched off and kept in your bag. Under no circumstances should mobile phones be used to take images of staff or students. Consequences will be issued if a phone is seen or heard while on school site.

## 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.*



## 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

# Review Point 2



# Review Point 2

	Attitude to Learning	Attitude to homework	Organisation	
<u>Outstanding because student...</u>	<p>...always engages with activities showing resilience when challenged</p> <p>...actively seeks ways to improve work and responds effectively to feedback</p> <p>...demonstrates consistently high levels of effort and focus</p>	Consistent Persevere, Aspire, Achieve	<p>...always demonstrates high levels of determination and motivation</p> <p>...works hard to proof read homework for spelling, punctuation and grammar (SPAG)</p> <p>...shows great pride in their presentation of homework</p>	Quality homework
<u>Good because student...</u>	<p>...engages with activities often showing resilience when challenged</p> <p>...improves their work by responding to feedback</p> <p>...demonstrates high levels of effort and focus</p>		<p>...often demonstrates determination and motivation</p> <p>...proof reads homework for spelling, punctuation and grammar (SPAG)</p> <p>...shows pride in their presentation of homework</p>	
<u>Not yet good because student...</u>	<p>...sometimes engages with learning activities but can be passive</p> <p>...responds to feedback but doesn't always work hard enough at this</p> <p>...sometimes demonstrates high levels of effort and but not consistently</p>		<p>...sometimes demonstrates determination but sometimes effort is below expectation</p> <p>...checks homework for spelling, punctuation and grammar (SPAG) but could put more effort into this</p> <p>...could take more pride in their presentation of homework</p>	
<u>Urgent improvement required because student...</u>	<p>...rarely engages with learning activities but not at the standard expected</p> <p>...rarely improves their work by responding to feedback and doesn't put enough effort into this</p> <p>...can make poor choices regarding behaviour and/or disrupts the learning of others</p>	C3 Behaviour / C3 Inadequate Learning Profile / C3r	<p>...rarely demonstrates determination and effort is often below expectation</p> <p>...makes insufficient effort to proof read for spelling, punctuation and grammar (SPAG)</p> <p>...rarely takes pride in their presentation of homework</p>	C3 Homework not completed
<b>X</b>	Teacher is unable to comment due to student absence.	Teacher is unable to comment due to student absence.	Teacher is unable to comment due to student absence.	10
				No equipment or late marks
				Equipment and late marks

# Review Point 2



Subject	Attitude to Learning	Attitude to Homework	Organisation	Y11 MEG	Progress
English language					
English literature					
Maths					

## Reflections

**What Went Well** – what have you made progress in?

1. ....

.....

.....

2. ....

.....

.....

3. ....

.....

.....

### Next steps:

My first key area for development is

.....

.....

I will do this by

.....

.....

.....

My second key area for development is

.....

.....

I will do this by

.....

.....

.....



# 100 Colorful Words to Use in Place of "Said"

<b>Rhyme</b> Rhyming words occur very often in poems, sometimes in patterns of a poem.	<b>Tone and Pace</b> Have a big impact on rhythm and expected by punctuation and shape of a poem.
<b>Onomatopoeia</b> When a word imitates the sound it makes (e.g. BANG, SPLASH)	<b>Repetition</b> When words and phrases are repeated multiple times.

## POETIC TECHNIQUES

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).

<b>Rhyme</b> Rhyming words occur very often in poems, sometimes in patterns of a poem.	<b>Tone and Pace</b> Have a big impact on rhythm and expected by punctuation and shape of a poem.
<b>Onomatopoeia</b> When a word imitates the sound it makes (e.g. BANG, SPLASH)	<b>Repetition</b> When words and phrases are repeated multiple times.
<b>Similes</b> Compares two different things, using the words "like" or "as".	<b>Alliterations</b> More than one word beginning with the same letter (close together in text).
<b>Metaphors</b> Identifies something as being the same as something else.	<b>Alliterations</b> More than one word beginning with the same letter (close together in text).
<b>Personification</b> Giving human qualities to non-human things	<b>Personification</b> Giving human qualities to non-human things
<b>Hyperbole</b> An exaggeration for emphasis	<b>Hyperbole</b> An exaggeration for emphasis
<b>Alliteration</b> Repetition of the same sound at the beginning of words	<b>Alliteration</b> Repetition of the same sound at the beginning of words
<b>Onomatopoeia</b> Words that sound like what they mean	<b>Onomatopoeia</b> Words that sound like what they mean
<b>Irony</b> A contrast between what is expected and what actually happens	<b>Irony</b> A contrast between what is expected and what actually happens
<b>Foreshadowing</b> Hinting at what will happen later in the story	<b>Foreshadowing</b> Hinting at what will happen later in the story
<b>Symbolism</b> Using objects or actions to represent ideas or qualities	<b>Symbolism</b> Using objects or actions to represent ideas or qualities
<b>Imagery</b> Descriptive language that creates a picture in the reader's mind	<b>Imagery</b> Descriptive language that creates a picture in the reader's mind

<b>Rhyme</b> Rhyming words occur very often in poems, sometimes in patterns of a poem.	<b>Tone and Pace</b> Have a big impact on rhythm and expected by punctuation and shape of a poem.
<b>Onomatopoeia</b> When a word imitates the sound it makes (e.g. BANG, SPLASH)	<b>Repetition</b> When words and phrases are repeated multiple times.
<b>Similes</b> Compares two different things, using the words "like" or "as".	<b>Alliterations</b> More than one word beginning with the same letter (close together in text).
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<b>Imagery</b> Descriptive language that creates a picture in the reader's mind	<b>Imagery</b> Descriptive language that creates a picture in the reader's mind

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

## Common Techniques

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

## Transactional Writing

- Letters
- Reviews
- Reports
- Articles

# Conjunctions

## PUNCTUATION

QUESTION MARK	!	PERIOD	●	COLON	●
EXCLAMATION MARK	!	Use at the end of a sentence to express a strong feeling.	Use at the end of a sentence.	Use to introduce a list or a definition.	●
APOSTROPHE	'	Use in contractions and to show when something belongs to someone.	Use to make one word.	Use to connect nouns and verbs into a single sentence.	●
PARENTHESIS	( )	Use to add extra information to a sentence without taking away from the idea.	Use to join separate words to make one word.	Use to connect nouns and verbs into a single sentence.	●
COMMA	,	Use to separate parts in a sentence or in a list.	Use around words that are spoken.	Use to show that someone is thinking.	●
QUOTATIONS	“ ”	Use to separate parts in a sentence or in a list.	Use around words that are spoken.	Use to show that someone is thinking.	●
ELLIPSIS	● ● ●	Use to show that someone is thinking.	Use to show that someone is thinking.	Use to show that someone is thinking.	●

# Conjunctions

## PUNCTUATION

Place	There Here In the back Adjacent to Next to Nearby Beyond Opposite to At that point
Time	Meanwhile Finally At last Presently Currently In the past In the meantime Eventually Immediately

Summary	In short In other word Anyway In brief It seems Clearly In sum After all In general
Comparison	Equally A similar ... Likewise Similarly Comparable As with Another ... like In the same way

Addition	Further Also Too Besides Finally Last Additionally In addition Then
Example	Such as For one thing For instance For example That is Specifically Illustrated by In particular



# THEY ARE

(A contraction for "they are")  
They're going to the movies.

# THERE

(Refers to a place)  
He went in the door over there.

# 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	Connote	Underlines	Enthrals
Encapsulates	Denote	Accentuates	Enthusiases
Proves	Insinuate	Underscores	Stimulates
Validates	Intimate	Foresadows	Galvanises
Exhibits	Advocate	Exaggerates	Animates
Establishes	Poses	Reiterates	Rouses
Denotes	Conjure	Magnifies	Stirs
Displays	Symbolise	Zeroes in on	Placates
Flaunts	Point towards	Promotes	Provokes
Showcases	Indicates	Publicises	Deceives
Presents	Allude 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



## Unit 10 – Transformations (Foundation)

### What do I need to be able to do?

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

Describe and carry out:

- Translations
- Rotations
- Reflections
- Enlargements
- Combinations of the above

### Keywords:

**Translation:** A slide that moves every point of a shape the same distance in the same direction.

**Rotation:** A turn of a shape around a fixed point (the centre of rotation) by a certain angle in a clockwise or anti-clockwise direction.

**Reflection:** A flip of a shape across a line (the line of reflection), creating a mirror image.

**Enlargement:** A change in the size of a shape by a scale factor, which can make it larger or smaller while keeping the shape similar.

**Object:** The starting shape

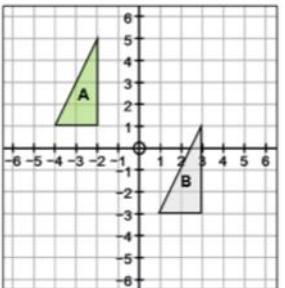
**Image:** The resulting shape, after you have completed the transformation

### Translations (U196)

#### Describing Translations

State...

1. Movement left or right
2. Movement up or down
- Or write the column vector



- Translation of 5 to the right and 4 down

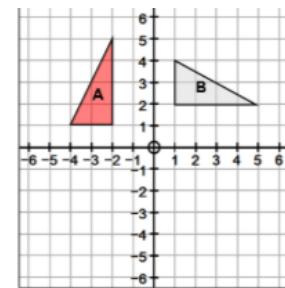
$$\begin{pmatrix} 5 \\ -4 \end{pmatrix}$$

### Rotations (U696)

#### Describing Rotations

State...

1. The centre of rotation
2. The angle of rotation
3. The direction of rotation



- Centre of rotation is (0,0)
- Angle of rotation is 90°

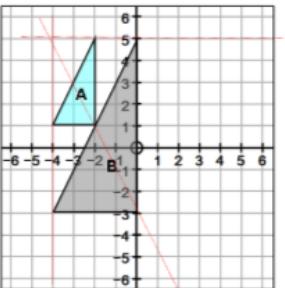
- Direction of rotation is clockwise

### Enlargements (U519)

#### Describing Enlargements

State...

1. Centre of enlargement
2. Scale Factor



- The centre of enlargement is (-4, 5)
- The scale factor is 2

The **scale factor** tells us how many times larger the lengths in the new shape (image) are than in the original shape (object).

If the scale factor is **positive** the shape will get **larger**.

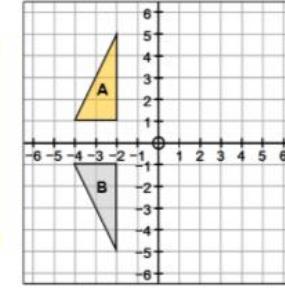
If the scale factor is **negative** the shape will get **smaller**.

### Reflections (U799)

#### Describing Reflections

State...

1. The line of symmetry



- The line of symmetry is the X axis

### Combining Transformations (U766)

We can be asked to perform multiple operations on the same shape. Ensure you do them in the order they are given and clearly label your final shape.

### Enrichment





## Unit 11 – Ratio and proportion (Foundation)

### What do I need to be able to do?

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

- Write and simplify a ratio
- Divide a quantity into a given ratio
- Write ratios in form  $n:1$  and  $1:n$
- Compare ratios and fractions
- Recognise and use direct proportion
- Solve problems using ratio and scale factors

### Keywords

**Ratio:** a statement of how two numbers compare

**Equivalent:** of equal value

**Proportion:** a statement that links two ratios

**Integer:** whole number, can be positive, negative or zero.

**Fraction:** represents how many parts of a whole.

**Denominator:** the number below the line on a fraction. The number represents the total number of parts.

**Numerator:** the number above the line on a fraction. The top number. Represents how many parts are taken

**Origin:**  $(0,0)$  on a graph. The point the two axes cross

### Compare with ratio U687

"For every dog there are 2 cats"



Dogs: Cats  
**1:2**

Units have to be of the same value to compare ratios

The ratio has to be written in the same order as the information is given.  
e.g. 2:1 would represent 2 dogs for every 1 cat.

### Ratio in 1:n and n:1

Show the ratio 4:20 in the ratio of 1:n

The question states that this part has to be 1 unit. Therefore Divide by 4

$$\begin{matrix} 4 : 20 \\ \curvearrowleft \quad \curvearrowright \\ 1 : 5 \end{matrix}$$

This is asking you to cancel down until the part indicated represents 1.

This side has to be divided by 4 too – to keep in proportion

### Ratio and scale

A picture of a car is drawn with a scale of 1:30



The car image is 10cm  
 $\times 10$   
Image : Real life  
1cm : 30cm  
10cm : 300cm

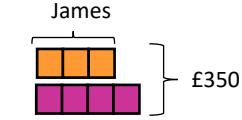
### Sharing a whole into a given ratio U557

James and Lucy share £350 in the ratio 3:4.  
Work out how much each person earns

Model the Question

James:  
Lucy

**3 : 4**



$$\begin{matrix} \text{£350} \\ \div 7 = \text{£50} \\ \square = \text{one part} \\ = \text{£50} \end{matrix}$$

Find the value of one part

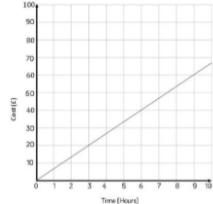
Whole: £350  
7 parts to share between  
(3 James, 4 Lucy)

Put back into the question

$$\begin{matrix} \text{James: Lucy} \\ \times 50 \quad \quad \times 50 \\ \text{3 : 4} \\ \text{£150:£200} \end{matrix}$$

### Direct Proportion and Graphs

**U238**



A graph which shows a direct proportion will...

- Form a straight line
- Pass through  $(0,0)$

### Best buys U721



4 pens costs £2.60



10 pens costs £6.00

You could work out how much 40 pens are and then compare

Compare the solution in the context of the question

The best value has the lowest cost "per pen"

The best value means £1 buys you more pens

"1 pen costs..."  
"1-pen buys..."  
 $\text{£} \quad 4 \div 2.60 = \underline{1.54}$  pens

$\text{£} \quad 10 \div 6 = \underline{1.67}$  pens

### Enrichment Opportunities





## Unit 9 – Equations and Inequalities (Higher)

### 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 a 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  $ax^2 + bx + c$

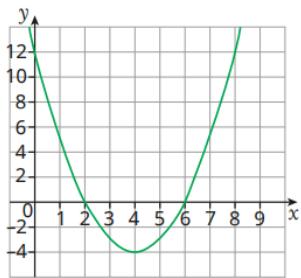
### Solve by factorising (U228 and U960)

$$\text{Solve } x^2 - 8x + 12 = 0$$

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

$$x - 2 = 0 \quad \text{or} \quad x - 6 = 0$$

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



### Solve by completing the square (U589)

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

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

### Simultaneous Equations (U760)

1. Write the equations one above the other and number them
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

$$\begin{aligned} 2x + 5y &= 24 \\ 4x + 3y &= 20 \\ &\text{LCM of 2 and 4 is 4} \\ 4x + 10y &= 48 \quad (1) \\ 4x + 3y &= 20 \quad (2) \end{aligned}$$

$$7y = 28$$

$$\div 7 \quad \div 7$$

$$y = 4$$

$$4x + 3(4) = 20$$

$$4x + 12 = 20$$

$$\cancel{-12} \quad \cancel{-12}$$

$$4x = 8$$

$$\div 4 \quad \div 4$$

$$x = 2$$

### 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

$$\begin{aligned} 3x^2 - 5x + 1 &= 0 \\ a &= 3 \quad b = -5 \quad c = 1 \\ x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ x &= \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \times 3 \times 1}}{2 \times 3} \\ x &= \frac{5 \pm \sqrt{25 - 12}}{2 \times 3} \\ x &= \frac{5 \pm \sqrt{13}}{6} \quad x = \frac{5 + \sqrt{13}}{6} \text{ or } x = \frac{5 - \sqrt{13}}{6} \end{aligned}$$

### Enrichment Opportunities





# Unit 10 Probability (Higher)

## What do I need to be able to do?

- Solve problems using two-way tables and sample space diagrams
- Estimate the expected results for experimental probabilities.
- Draw and use tree diagrams to solve probability problems.
- Use set notation.
- Use Venn diagrams to solve conditional probability problems.

## Experimental data U580

Theoretical probability

What we expect to happen

Experimental probability

What actually happens when we try it out

The probability becomes more accurate with more trials.

Theoretical probability is proportional

The more trials that are completed the closer experimental probability and theoretical probability become

## Sample space

The possible outcomes from rolling a dice

U104

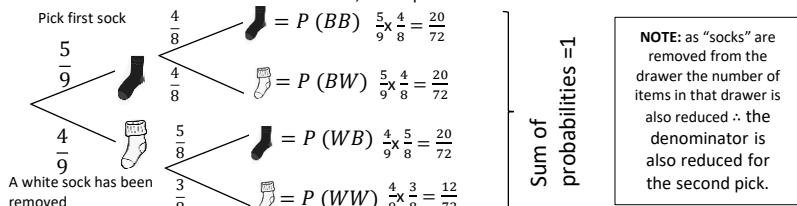
		1	2	3	4	5	6
The possible outcomes from tossing a coin	H	1,H	2,H	3,H	4,H	5,H	6,H
	T	1,T	2,T	3,T	4,T	5,T	6,T

$$P(\text{Even number and tails}) = \frac{3}{12}$$

## Dependent events

The outcome of the first event has an impact on the second event

A sock drawer has 5 black and 4 white socks. Jamie picks 2 socks from the drawer.



## Keywords

Event: one or more outcomes from an experiment

Outcome: the result of an experiment.

Intersection: elements (parts) that are common to both sets

Union: the combination of elements in two sets.

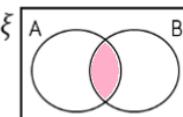
Expected Value: the value/ outcome that a prediction would suggest you will get

Universal Set: the set that has all the elements

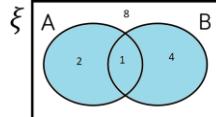
Systematic: ordering values or outcomes with a strategy and sequence

Product: the answer when two or more values are multiplied together.

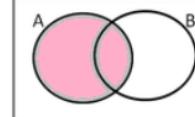
## Venn Diagrams U296



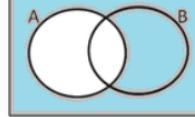
in set A AND set B  
 $P(A \cap B)$



in set A OR set B  
 $P(A \cup B)$



in set A  
 $P(A)$



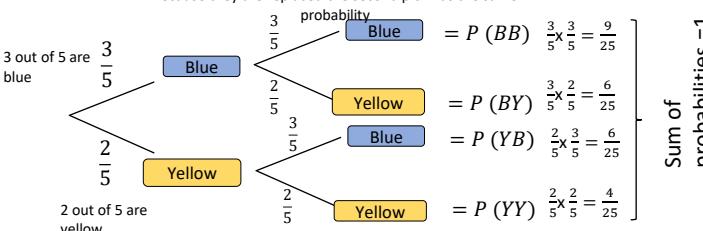
NOT in set A  
 $P(A')$

## Independent events U699

The outcome of two events happening. The outcome of the first event has no bearing on the outcome of the other

Isobel has a bag with 3 blue counters and 2 yellow. She picks a counter and replaces it before the second pick.

Because they are replaced the second pick has the same



## Enrichment Opportunities

Nrich Maths. Puzzles to complete focusing on probability





Date	KO*	WB*	Case*	Date	KO*	WB*	Case*
5/1			INSET	26/1			
6/1				27/1			
7/1				28/1			
8/1				29/1			
9/1				30/1			
12/1				2/2			
13/1				3/2			
14/1				4/2			
15/1				5/2			
16/1				6/2			
19/1				9/2			
20/1				10/2			
21/1				11/2			
22/1				12/2			
23/1				13/2			

**RUBBER**

**PENCIL**

**WHITEBOARD PEN**

**GREEN PEN**

**BLACK PEN**

You should also have:

- Reading book
- Calculator
- Headphones
- 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**