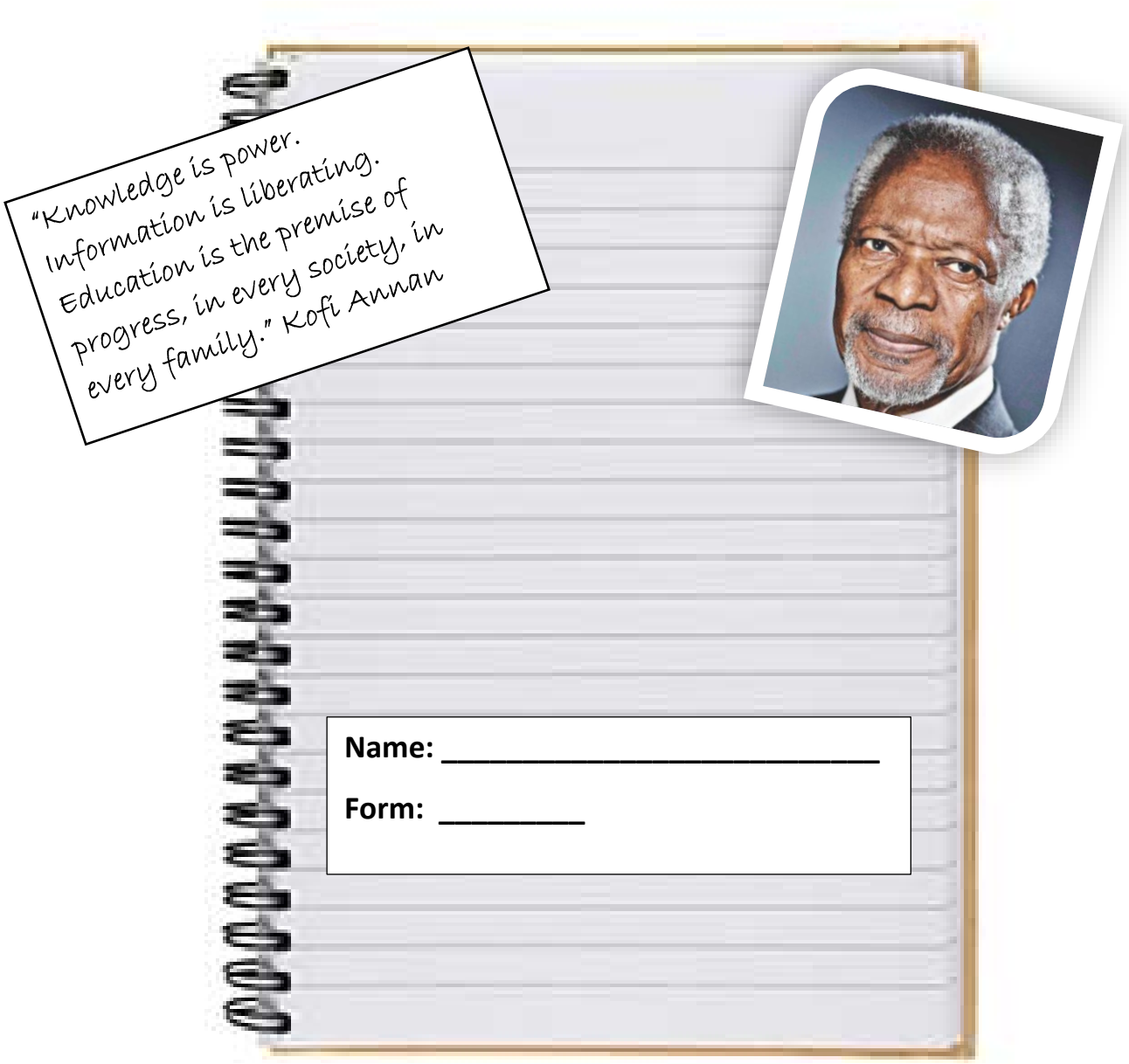
Knowledge Organisers

"I have come that they may have life and have it to the full"

John 10: 10

Year 7



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Knowledge Organisers at St John Fisher Catholic School

Why do we have Knowledge Organisers?

Knowledge Organisers show you everything that you need to know for that particular topic of study. It is the 'big picture' of what knowledge you will be taught by the end of the topic. It will give you an excellent understanding of the topic you are studying and to expect by the end.

How do I use it?

Your teachers will use your knowledge organisers with you, explained in the question below, but you can also use it to support your understanding of the topic and develop further knowledge. You will have a test at the end of each unit of study and an end of year exam which will cover all that you have learnt so it is important that this new knowledge is embedded for you to recall it later.

Use the Look, Say, Cover, Write, Check system to learn the information on your organisers. Complete any support/challenge tasks outlined. Research tells us that this method of practising is a good way to remember the knowledge. Over time, you will build up this knowledge and be able to recall it.

Use the Knowledge Organiser when completing class and homework especially with key vocabulary.

How will my teachers use it?

Your teachers may set homework to learn parts of the Knowledge Organiser or set tasks from what is on there. You will be expected to complete between 30 minutes – 45 minutes of homework for each subject according to the homework timetable.

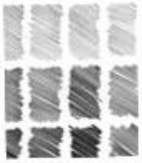
Your teachers may use the Knowledge Organiser in the lesson to support the new knowledge being taught so you must always keep this booklet with you.

You may be given low stake quizzes in your lessons which will test your recall of the current knowledge but also previous knowledge as the year progresses.

What do I do if I lose it?

All Knowledge Organisers are on the school website. However, you can purchase a copy at student services.

Knowledge Organiser. Year 7 Project 1: Formal Elements

LINE	TONE	PATTERN	TEXTURE	FORM	COLOUR
					

What will they learn? (overview of knowledge)

Students will learn about each formal element in Art – Line, Tone, Pattern, Texture, Form and Colour. Formal elements have two key uses – to help analyse art and to help create art. Students will learn how to apply this knowledge in their artwork and in their critical analysis.

What skills will they learn/develop?

- Drawing skills – shape, tone and detail
- Mixing and applying paint
- Mark-making skills
- Depicting Form using Tonal values
- Using media to create 3D forms
- Some basic critical analysis of art

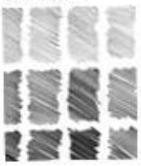
Support/Challenge:

https://hardleyart.wordpress.com/the-formal-elements-in-art/
http://www.artyfactory.com/art_appreciation/visual-elements/visual-elements.html

COLOUR	TONE	LINE	FORM
PATTERN	TEXTURE	MIX	LIGHT
HARMONIOUS	COMPLEMENTARY	PRIMARY	DARK
REPEAT	3-DIMENSIONAL	SECONDARY	PAINT
PENCIL	BLENDING	MARK-MAKING	ANALYSE

Assessment	
A03	Baseline test – teacher assessed. Students respond to feedback
A02	Media experiment – peer assessed
A01	Writing task
A03	Drawing activity – based on baseline feedback. Teacher assessed
A04	Final outcome – teacher assessed.

Knowledge Organiser. Year 7 Project 2: Fantastic Creatures

LINE	TONE	PATTERN	TEXTURE	FORM	COLOUR
					

What will they learn? (overview of knowledge)

Students will learn about how to critically analyse a contemporary artist who produces 3D sculptures. They will then experiment with paper construction, colour theory and design techniques. This project is designed to build upon their prior learning of the formal elements.

What skills will they learn/develop?

- Drawing skills – shape, tone and detail
- Depicting texture and form using drawing skills and paper
- Using media to create 3D forms
- Some basic critical analysis of art
- Constructing their own final piece using 3d techniques and knowledge of colour theory

Support/Challenge:

https://www.ajfosik.com
https://www.bbc.co.uk/bitesize/guides/z3bqycw/test

COLOUR	TONE	LINE	FORM
PATTERN	TEXTURE	SYMMETRY	LAYERS
HARMONIOUS	COMPLEMENTARY	PRIMARY	DARK
SCULPTURE	3-DIMENSIONAL	SECONDARY	PAINT
PENCIL	MASKS	ANIMALS	ANALYSE

Assessment	
A01	Analysis of Fosik using formal elements – teacher assessed
A02	Creating animal textures from paper. Self assessed
A03	Pencil drawings – homework and lessons. Peer assessed
A03	Gridding technique – drawing animals. Self assessed.
A04	Animal mask designed and built. Teacher assessed.

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Year 7 How Computers Work

What you are going to learn:

You are going to be learning about how computers are made up.

Length of Unit:

6 Weeks

The Lessons:

Week 1: E-Safety

Week 2: Input

Week 3: Output

Week 4: Storage

Week 5: Systems Architecture

Week 6: Networks

Key Words (can you find out what they mean?):

Input

Output

Storage

RAM

ROM

CPU

Support/Challenge for E-Safety

https://www.nspcc.org.uk

https://www.thinkuknow.co.uk/

https://www.ceop.police.uk/safety-centre/

https://www.childline.org.uk

Try to find out some of the other risks of using the Internet.

How should you stay safe on social media?

English: The Gothic

In this topic, you will delve into a dark and sinister world filled with doomed romance, ambition, fear, murder and despair.

You will read a selection of key Gothic texts by some of the best writers in British history as well as learning more about the author, the times in which they were writing and their intentions in creating the narratives that they did.

You will also have the chance to craft your own Gothic narrative using the motifs, characters, setting and types of horror that you have read about throughout the term.

'It will cost you sweat and tears…and maybe a little blood' Nosferatu

Your assessments:

How has Stoker created a gothic atmosphere in the extract from 'Dracula'?

Write a gothic short story with the title 'Abandoned'

You will be assessed this term on your spelling. Make sure that you know how to spell and use the following words:

Gothic	Petrified
Psychological	Myth
Motif	Isolated
Ambition	Protagonist
Pathetic fallacy	Antagonist
Vengeance	Innocence
Horror	Guilt
Spectre	Regret

Here are the texts and authors that we will be studying. We will be focussing on short stories and extracts of whole novels in class but reading the entire novel is a fantastic way to build up your vocabulary, imagination and knowledge of the gothic.

Dracula – Bram Stoker

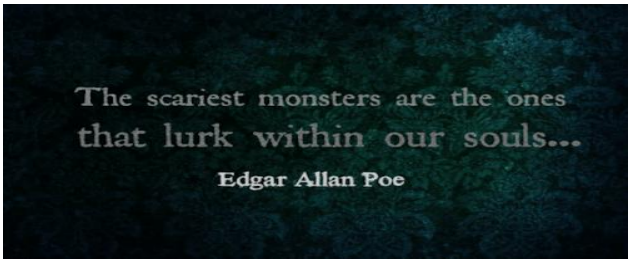
The Woman in Black – Susan Hill

Frankenstein – Mary Shelley

The Red Room – HG Wells

Jane Eyre – Charlotte Bronte

Wuthering Heights – Emily Bronte



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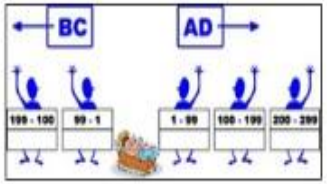
Year 7 history knowledge organiser term 1: introduction and skills

Keywords and definitions	
Anachronism	A mistake in placing something in time order
Anno Domini	Is Latin for 'in the year of the Lord' – it means the number of years since the birth of Jesus Christ
BC	Stands for 'Before Christ' – it means the number of years before the time of Jesus Christ
Century	A period of 100 years
Change and continuity	Progress is change for the better Continuity is when things stay the same Regress is change for the worse

Key Concepts
Chronology
Using evidence
Causation
Interpretations
Significance
Change and continuity

Keywords and definitions	
Chronology	The study of exactly when things happened
Interpretation	The meaning of a source/piece of work and why it is different to others
Pre-history	Refers to a time before writing existed
Sources	Primary source- a document or object that was created during the time period of study Secondary sources- an account or interpretation of events. It was not written during the time period



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Year 7 Product Design Knowledge Organiser

Intent/Aims of unit of study
Understand the key elements of safety, and use of hand-tools in making a clock and link to theories

Length of Unit:
12 Weeks

What will they learn? (Overview of knowledge)

They will learn all aspects of Health and safety in the workshop whilst using basic hand tools. They will use these in conjunction with a CAD program (2D Design) to create components for a working clock. They will learn aspects of basic technical drawing, including Isometric, one and two point perspective.

Will also learn about different types of woods and manufactured boards e.g.MDF

What skills will they learn/develop?

Identifying the user of a product
Naming all the hand tools used
Producing a final working product
Recognising and understanding properties of different woods
Recognise and use drawing equipment
Recognising the differences between different types of technical drawing

Fretsaw

Tenon Saw

Laser cutter

WAGOLL

Pillar Drill

Key vocabulary with definitions/examples

Coping Saw - For cutting curved lines in wood and plastic

Tenon Saw- For cutting straight lines in wood and plastic

Bench Hook- A flat surface for holding your work while you cut

Try Square- A device to help you accurately mark 90 degree angles on wood

Sandpaper- Special smoothing paper for wood and plastics- comes in different grades from fine to coarse

Assessments with dates

Week 1: in class annotating health and Safety rules

Homework 1 H&S in Workshop

Week 3: Homework 2 Coping & Tenon saws

Week 5: Homework 3 Softwoods

Week 7: Homework 4 Use of 2D Design (Deep marking)

Week 9: Homework 5 Isometric Drawing

Week 11: Homework 6 Planning a project

Support/Challenge
Theorists: Tess Perkins, Stuart Hall
Revise : https://www.bbc.co.uk/bitesize/clips/zfh8q6f
Can you explain why some hardwoods are very expensive, and give some examples?
How can we protect the rainforests from being cut down, and why is this an issue?

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Year 7 TEXTILES Knowledge Organiser

Intent/Aims of unit of study:

To understand pattern and African influences and apply Tie Dye, Batik, making a pom pom and machine sewing in the creation of a cushion.

Length of Unit:

12 Weeks

What will they learn? (overview of knowledge)

Being able to use equipment and materials within the textiles room safely is very important to enable students to get the most out of their lessons. The most important piece of equipment is the sewing machine, Batik pot and Djanting tool. Students will also learn about patterns and their influence: the African Ndebele artist Esther Mahlangu.

What skills will they learn/develop?

Textiles Language

Identification of parts of the sewing machine, batik and tie dye equipment

Discussion of how to create batik, tie dye, pom pom pieces

Planning designs incorporating pattern

Assessments with dates:

Week 1: Health and Safety **Week 2:** Ndebele art, Esther Mahlangu, HW

Week 3: Batik practice **Week 4:** Four initial batik designs (marked) HW

Week 5: Finish batik designs **Week 6:** Start final batik, HW

Week 7: Finish final batik. **Week 8:** Tie Dye, HW

Week 9: Make pom-poms **Week 10:** Sewing machine test HW

Week 11: Assemble cushion, HW **Week 12:** Finish assembling cushion, evaluation

Key vocabulary with definitions/examples

Tie Dye – produce patterns in a garment or piece of cloth by tying parts of it to shield it from the dye.

Batik – a method of producing coloured designs on textiles by first applying wax to the parts to be left undyed and then painting on dye.

Pattern – a repeated decorative design.

Block Repeat Pattern – a motif which has been repeated in a grid layout to create a pattern.

Mirror Repeat Pattern - a motif which uses lines of symmetry to create a pattern.

Sewing – The technique of using a needle and thread to either sew two pieces of fabric together or to add a decoration.

Sewing machine – a machine with a mechanically driven needle for sewing or stitching cloth.

Pom pom - A decorative item made out of wool.

Support/Challenge

Revision:

https://www.bbc.com/bitesize/subjects/zvkw2hv

Inspiration:

https://www.vam.ac.uk/

https://www.ftmlondon.org/

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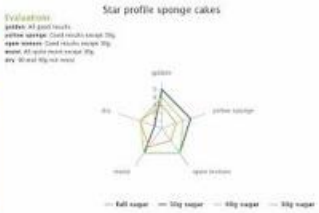
Year 7 FOOD PREPARATION AND NUTRITION Knowledge Organiser

Intent/Aims of unit if study :
To gain knowledge and understanding of basic skills in Food including food hygiene and safety, how to use a sharp knife correctly, and the Eatwell Plate and the elements of a healthy diet.

Length of unit :
12-13 weeks

What will they learn/develop ?
***Knife skills *Nutrition/Eatwell Guide *hygiene and safety *Sensory analysis**
***Equipment and uses**



Key vocabulary with definitions/examples :
Bacteria : micro-organisms
Cross-contamination : Transfer of a substance(eg bacteria) from one area/food to another.
High-risk foods : Food easily contaminated with food poisoning bacteria
Salmonella : Harmful bacteria often found in raw meat, particularly chicken.
Sensory analysis : A process to investigate how the food appeals to senses
Carbohydrate : Starchy energy foods e.g. potatoes, rice, pasta, bread
Protein : Nutrient important for growth and repair.
Vitamins : Nutrient needed in small amounts to keep our bodies healthy and regulated
Minerals : Needed in the diet in small amounts for various important functions in the body.
Fats : Energy rich food e.g. butter, vegetable oil. Also found in prepared foods e.g. crisps
Savoury : Opposite of sweet flavour/smell
Umami : A savoury taste (the fifth taste profile. (Sweet, salt, bitter and sour are the other four)
Hazards : Something that could be dangerous if left the way it is.
Danger zone : The range of temperature where bacteria grow rapidly
Eatwell Guide : Colour coded diagram to help select foods for a balanced, healthy diet.

Assessment with dates :

Week 1 : Introduction: hygiene and safety and equipment
Week 2 : Deli salad practical and sensory evaluation.

Week 3 : Eatwell Guide : Focus on nutrients. Intro to safe use of the hob/dem soup or ratatouille
Week 4 : Soup/Ratatouille practical

Week 5 : Protein foods/high risk foods and the 4 Cs Dem savoury nuggets/Veg burgers
Week 6 : savoury nuggets/Veg burgers practical

Week 7 : Eatwell Guide/Healthy diets
Scone based pizza dem

Week 8 : Scone based pizza practical

Week 9 : Modification of recipes – Rock bun dem

Week 10 : Rock buns/muffins.

Week 11 : Group/paired focused practical task and presentation.

Week 12 : Spices and herbs practical challenge

Week 13 : Evaluation of progress

Key Temperatures : Fill in and learn the key temperatures

Boiling point =
Minimum safe cooked temperature of food =
Hot holding =
Danger zone =
Fridge temperature =
Freezer temperature =

4Cs - Chill, clean, cook, cross-contamination

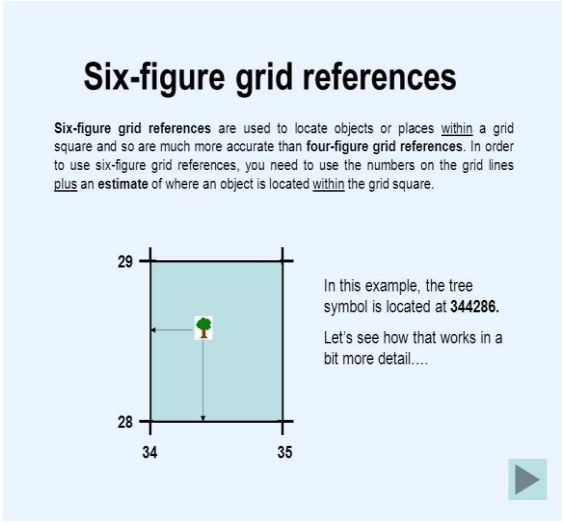
Kitchen Equipment :
Bowl, wooden spoon, colander, oven, palette knife, sieve, whisk, grater, peeler, tablespoon, teaspoon, dessertspoon, weighing scales, saucepan, frying pan, grill, baking tray, lemon squeezer, dishcloth, tea :towel.

Support /Challenge :
https://www.foodafactoflife.org.uk
https://www.bbc.com/bitesize/learn
Unifrog careers - Research catering, chef/cook, product development technologist

Geography: Basic Geography and Map Skills

Key Terms	
Human Geography	The study of how humans affect, or are affected by, the earth.
Physical Geography	The study of the natural features of the earth.
Ocean	A very large expanse of sea.
Continent	Any one of seven large land masses of the Earth.
Country	A nation with its own government, occupying a particular area.
Compass	An instrument showing the direction of north using a magnet.
Grid reference	A map reference indicating a location in terms of a series of vertical and horizontal grid lines identified by numbers or letters.
Contour lines	A series of lines on maps which connect areas of the same height.
Ordnance Survey (OS)	A national mapping agency in the United Kingdom which covers the island of Great Britain.
Plan	A detailed map of an area.
Scale	The link between a distance on a map and the distance on the ground.

7 continents map with 5 oceans



VOCABULAIRE ANNÉE 7 T1A: JE SUIS

Présentation	Introduction
Qui es-tu ?	Who are you?
Je suis…	I am…
Je ne suis pas…	I am not…
un garçon	a boy
une fille	a girl
D'où es-tu ?	Where are you from?
Je suis de (d') (+city/town or country)	I am from (+city/town or country)
Je ne suis pas de (d') (+city/town or country)	I am not from (+city/town or country)
l'Allemagne	Germany
l'Angleterre	England
l'Ecosse	Scotland
l'Irlande	Ireland
la France	France
le Pays de Galles	Wales
la Pologne	Poland
la Lituanie	Lithuania
l'Estonie	Estonia
la Lettonie	Latvia
la Russie	Russia
le Pakistan	Pakistan
l'Italie	Italy
le Portugal	Portugal
De quoi es-tu fan?	What are you a fan of?
Je suis fan de (d')…	I'm a fan of…
Je ne suis pas fan de (d')…	I'm not a fan of…
la danse	dancing
le foot	football
le tennis	tennis
le rugby	rugby
le chocolat	chocolate
le piano	piano
la musique	music
le brocoli	broccoli
le ciné	cinema
Internet	the Internet
les jeux vidéo	videogames
la télé	TV

Être	To be
Je suis	I am
Tu es	You are (referring to 1 person)
Il est	He is
Elle est	She is
Nous sommes	We are
Vous êtes	You are (referring to a group of people)
Ils sont	They (boys) are
Elles sont	They (girls) are

La personnalité	Characteristics
Comment es-tu ?	What are you like?
Je suis quelqu'un de (d')…	I am a(n) … person.
Je suis	I am
Je ne suis pas	I am not
un peu	a bit
assez	quite
très	very
actif	active
adorable	adorable / cute
amusant	funny
bavard	chatty / talkative
courageux	brave
créatif	creative
fidèle	faithful
généreux	generous
gentil	kind
heureux	happy
intelligent	intelligent / clever
méchant	horrible / nasty
sociable	sociable
sportif	sporty
timide	shy/timid
travailleur	hard-working

Mots-clés	Key words
à mon avis	in my opinion
je pense que	I think that
on dit que	People say that
et	and
mais	but
par contre	however

VOCABULAIRE ANNÉE 7 T1B: J'ai un animal

Les animaux domestiques	Pets
un animal	an animal
un chat	a cat
un cheval	a horse
un chien	a dog
un cochon d'Inde	a guinea pig
un lapin	a rabbit
un lézard	a lizard
un oiseau	a bird
un phasme	a stick insect
un hamster	a hamster
un serpent	a snake
un poisson	a fish
un rat	a rat
un perroquet	a parrot
une araignée	a spider
une tortue	a tortoise
une souris	a mouse

Les couleurs	Colours
noir	black
blanc	white
marron	brown
jaune	yellow
orange	orange
gris	grey
bleu	blue
vert	green
rouge	red
rose	pink
violet	purple

Avoir	To have
j'ai	I have
tu as	You (1 pers) have
il a	He has
elle a	She has
nous avons	We have
vous avez	You (group) have
ils ont	They (boys) have
elles ont	They (girls) have

Avoir	To have
je n'ai pas	I don't have
tu n'as pas	You (1 pers) don't have
il n'a pas	He doesn't have
elle n'a pas	She doesn't have
nous n'avons pas	We don't have
vous n'avez pas	You (group) don't have
ils n'ont pas	They (boys) don't have
elles n'ont pas	They (girls) don't have

Des adjectifs	Adjectives
petit	small
grand	big
mignon	cute
moche	ugly
jeune	young
vieux	old
câlin	cuddly
doux	soft
sage	wise
féroce	fierce
fort	strong
effrayant	scary
grincheux	grumpy

Conjonctions	Connectives
et	and
aussi	also
donc	therefore
mais	but
par contre	on the other hand
tout d'abord	first of all
puis	then
ensuite	next
après ça	after that

Décrire une photo	Describing a picture
Qu'est-ce qu'il y a sur la photo ?	What is there on the photo?
Sur la photo, il y a…	On the photo there is/are
trois chiens noirs.	three black dogs
Sur la photo, je peux voir…	On the photo I can see
deux poissons rouges et jaunes.	two red and yellow fish.

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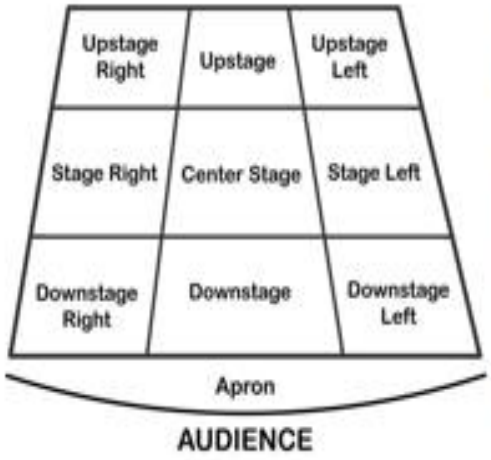
Drama Term 1

Key Words	
Projection	make your voice louder and more clear.
Eye Contact	A meeting of the eyes between two people.
Posture	Your stance, the way of standing .
Gestures	movement of the hands, face, or other parts of the body.

STAGE DIRECTIONS



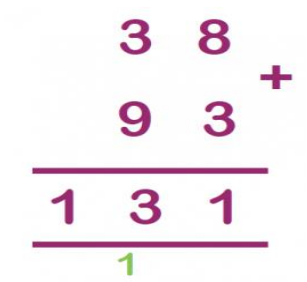
Key Words	
Blocking	The stage directions given to an actor.
Masking	When an actor cannot be seen properly on stage by the audience.
Staging	How you stage a play. The position an actor takes on stage.

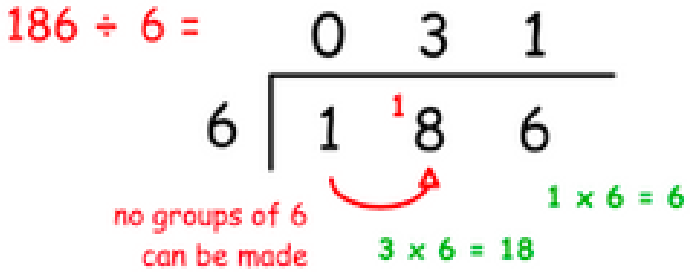
Maths 1.1 – Chapter One: Calculations 1

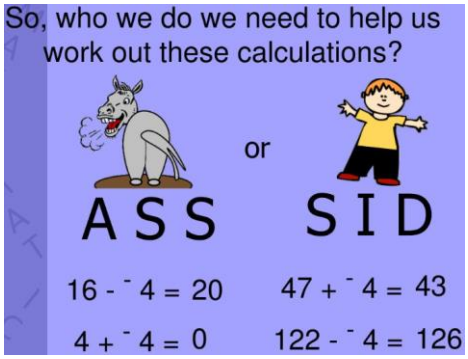
Aim of study:
To understand the basic foundations of number calculations; rounding, multiplication, division etc…

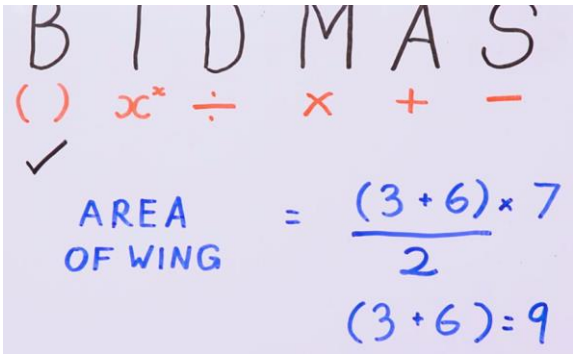
What will students learn:
- Formal written methods of multiplication, division, addition and subtraction.
- Rounding numbers to decimals and significant figures.
- The order of operations (BIDMAS) in multi-stage calculations.

What skills will be developed:









Key words:
Digit – 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9
Rounding – making a number less accurate but easier to use.
Significant figures – round to 1, 2 or 3 digits
Operation – Add, Subtract, Multiply, Divide

Support/Challenge:
Textbook - pages 22-23 for revision materials.
Doddle – Search the **key words.**
Numeracy ninjas – Free online resource.
Mathsgenie.com – Free videos to help revise.

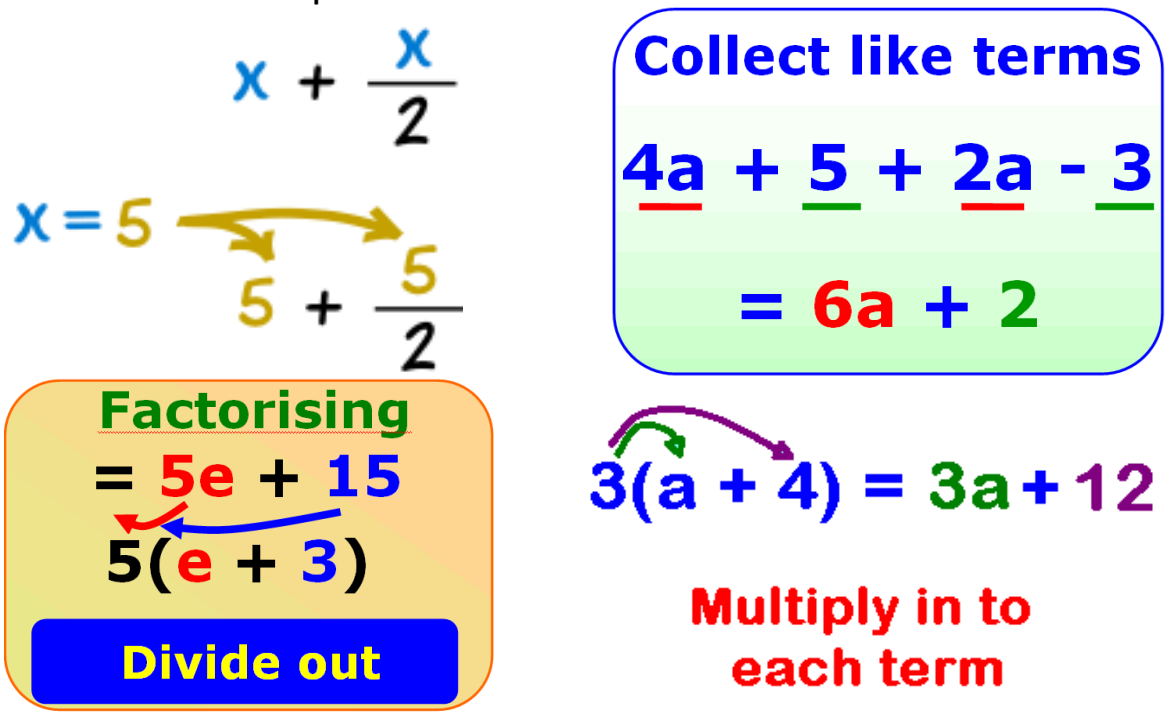
Maths 1.2 – Chapter Two: Expressions

Aim of study:
To understand the basic foundations of simplifying algebra and its related calculations; Expanding, Factorising and Collecting like terms.

What will students learn:

- How to substitute numbers and letters.
- Collect like terms.
- Factorise simple equations.
- Expand single sets of brackets.

What skills will be developed:



Key words:
Equation – a maths sentence with an answer.
Substitute – swap a letter for a number.
Simplify – Make it smaller or easier.
Factorise – Take something out.

Support/Challenge:
Textbook - pages 42-43 for revision materials.
Doddle – Search the **key words.**
Numeracy ninjas – Free online resource.
Mathsgenie.com – Free videos to help revise.

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Music Term 1 – Baseline Assessment and Key Skills

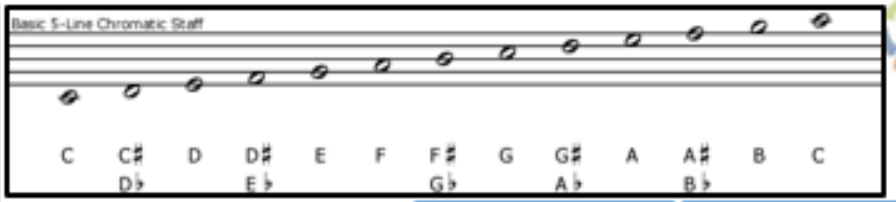
Keywords:

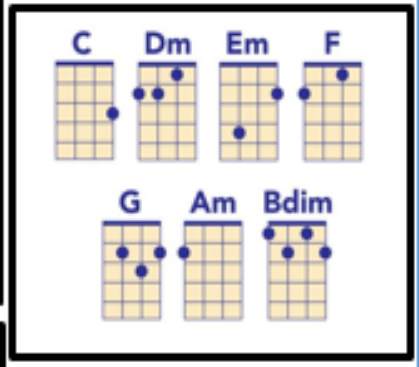
Chord
Piano
Guitar
Ensemble
Rhythm
Beat
Tempo
Melody
Tune
Ukulele
Notes
Sharp
Flat
Dynamics

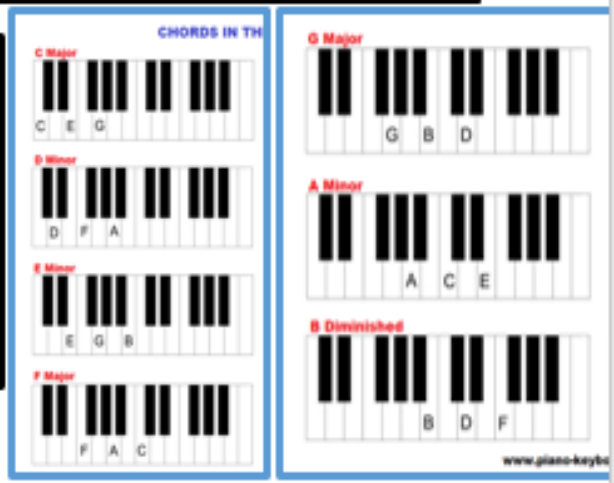
Musical Symbols/Pictures:

Name	Symbol	Rest
Semibreve		
Minim		
Crotchet		
Quaver		
Semiquaver		

Flat Sharp

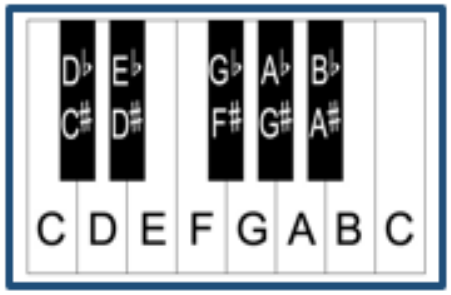






Music Resources you can use at home:

Soundtrap
Soundation
Musictheory.net
Kahoot Quizzes
Quizlet Quizzes
Practice using YouTube



Want to learn an instrument? We do instrumental lessons and clubs at SJF! Ask Mrs Harmson for more information

By the end of this unit, you will have **self and teacher assessed your skills in music in performing, listening and composing.** This will be done using different instruments, styles and learning styles to give you a chance to show off your skills. You will also learn about the extra curricular activities we offer in music and how to get involved in these to develop skills further.

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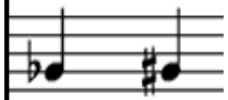
Year 7 Music Term 2 – Elements of Music

Keywords:

Dynamics
Tempo
Articulation
Staccato
Legato
Structure
Rhythm
Melody
Accompaniment
Harmony
Ensemble
Timing
Texture

Musical Symbols/Pictures:

Name	Symbol	Rest	
Semibreve			4
Minim			2
Crotchet			1
Quaver			½
Semiquaver			¼



Flat Sharp

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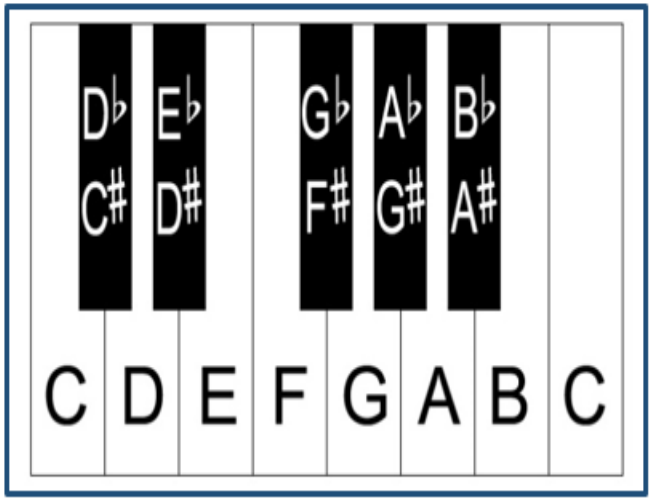
Practice using YouTube

When you listen to a song or hear music on the radio, try to describe it using the elements of music we learn!



Want to learn an instrument? We do instrumental lessons and clubs at SJF! Ask Mrs Harmson for more information

Don't forget about our choir, band and ukulele clubs on at lunchtimes!

By the end of this unit, you will have learnt about the different elements of music and be able to play and sing examples of all of the keywords we have learnt.

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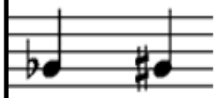
Year 7 Music Term 3 – Ukulele Skills

Keywords:

Chord
Ukulele
Guitar
Ensemble
Rhythm
Beat
Tempo
Melody
Tune
Major
Minor
Electric
Acoustic
Notation

Musical Symbols/Pictures:

Name	Symbol	Rest	
Semibreve			4
Minim			2
Crotchet			1
Quaver			½
Semiquaver			¼



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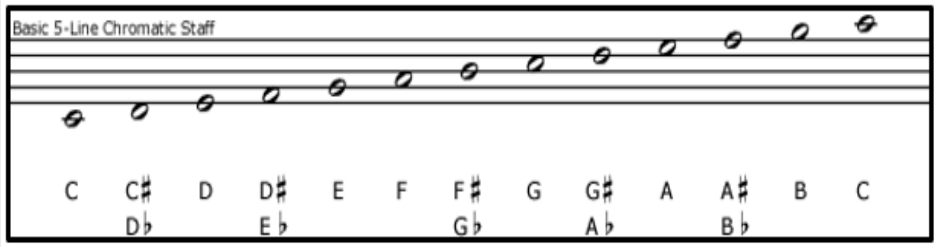
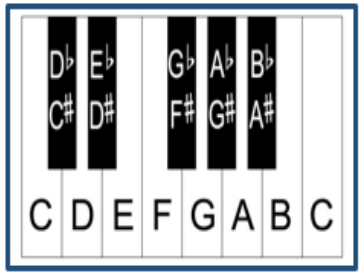
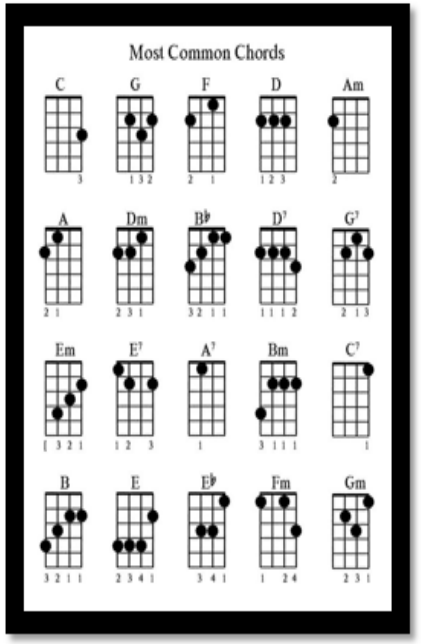


Want to learn an instrument? We do instrumental lessons and clubs at SJF! Ask Mrs Harmson for more information





By the end of this unit, you will have learnt how to play chords and melodies on the ukulele, using one, two, three and four finger chords and becoming quicker at playing songs over time. You will learn to play songs from a variety of genres.

PSHE- Knowledge organiser- Y7

Skills: To demonstrate understanding

To analyse sources of information and draw conclusions

To contribute views

To explain

To describe

To work in small groups

Themes	Topics	Key learning points
Living in the wider world	Identity and diversity	• Identity: the qualities, beliefs, personality, looks and/or expressions that make a person or group. • Diversity: Differences in the above. • Britain has always been a diverse nation. • Diversity has many benefits and need to be celebrated. • Stereotype: a widely held but fixed and oversimplified image or idea of a particular type of person or thing.
	Community	• community: a group of people living in the same place or having a particular characteristic in common. • citizen: a legally recognized subject or national of a state or commonwealth, either native or naturalized. • rights: a moral or legal entitlement to have or do something. • responsibilities: something you are required to do as an upstanding member of a community. • bullying: the use of force, coercion, or threat, to abuse, aggressively dominate or intimidate.
	CEIAG	• CEIAG: Careers Education, Information, Advice and Guidance • career: an occupation undertaken for a significant period of a person's life and with opportunities for progress. • Job sector: a part of the economy that includes certain kinds of jobs. • Skills: the ability to do something well. • Transferable skills: skills you can take along with you from job to job. • competencies: the ability to do something successfully or efficiently. • CV: a brief account of a person's education, qualifications, and previous occupations, typically sent with a job application.

Health and well being	The body	• health: a state of complete physical, mental and social well being and not merely the absence of disease or infirmity. • healthy diet: having balanced meals that have the correct nutritional content for our bodies needs. • obesity: weighing at least 30 percent more than your ideal weight • anorexia: an obsessive desire to be thin. • At least one hour of physical activity a day means working out a bit of a sweat and getting slightly out of breath for at least 1 hour. • Drug: a medicine or other substance which has a physiological effect when ingested or otherwise introduced into the body. • Drugs are classified into groups: groups A, B, C, legal. • Even legal drugs are dangerous. • Dealing and/ or possessing drugs from groups A,B,C is a criminal offence and therefore punishable by law.
Relationships	Healthy relations	• value: a belief that has a special meaning to a person. • Values originate from a variety of sources and subject to constant change. • In every relation, you have rights and the responsibility to ensure that the rights of others are upheld. • Relationship: the way in which two or more people or groups regard and behave towards each other. • Our needs change therefore will the relation. • Assertive behaviour/ communication: a way of expressing your point of view in a way that is clear and direct without being aggressive or passive. • Assertiveness is the most proactive type of behaviour and achieves the most positive outcome. • Emotion: a strong feeling deriving from one's circumstances, mood, or relationships with others. • Negative emotions need to be dealt in a positive way through good communication skills. • Puberty: the period during which adolescents reach sexual maturity and become capable of reproduction. • Everyone is unique! • It is important to be aware of how physical and emotional change affect you, and find a positive way to manage these feelings.

Remember!

- We will be open and honest, but not discuss directly our own and others personal/ private life.
- Your teacher will not repeat what is said in the room except if she/he is concerned we are at risk.
- It is ok to disagree but we will not judge.
- Taking part is important but we have the right to pass.
- We will not make assumptions and we will listen to others' point of view.
- We know that there are no stupid questions but we will use appropriate language.
- If we need further help or advice, you know you can talk to your teachers, form tutor and SSOs.

Year 7 Football

Aims

In this unit pupils focus on how to use basic principles of attack and defence to plan strategy and tactics for football. They work on improving the quality of their skills using various techniques.
In all games activities, pupils think about how to use skills, strategies and tactics to outwit the opposition.

Key Rules

Scoring System Handball
Offside Foul
Foul Throw
Students should be able to referee small sided games and apply the rules appropriately. Students should also be able to follow the key rules when playing the game.

Key Skills

Passing- accuracy of passing
Possession- keeping the ball
Dribbling- focus on control
Shooting- focus on accuracy
Defending- block tackle
Evaluate- basic strengths and weaknesses
Applying key skills in a game situation.

Key Words:
Passing, Possession, Shooting, Accuracy, Power, Teamwork, Tactics, Defending, Attacking, Tackling, Heading,

Key Tactics

Use a variety of tactics in small sided and full sided games.
To understand how to create and use space in conditioned and competitive games.

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Year 7 Rugby

Aims

In this unit pupils focus on how to use basic principles of attack and defence to plan strategy and tactics for rugby. Pupils will work on improving the quality of their skills with the intention of outwitting opponents. In all games activities, pupils think about how to use skills, strategies and tactics to outwit the opposition.

Key Rules

Forward Pass, Knock On, Offside, High Tackle/Dangerous Tackle

Students should be able to referee small sided games and apply the rules appropriately. Students should also be able to follow the key rules when playing the game.

Key Skills

Ball familiarisation
Handling skills – to catch and receive the ball.
Passing- accuracy of passing using correct technique
Tackling – to tackle in practice and conditioned games.
Rucking- To ruck to maintain possession.
Evaluate- basic strengths and weaknesses
Applying key skills in a game situation.

Key Words:

Passing, Possession, Tackling, Accuracy, Power, Teamwork, Rucking, Offside, Technique

Key Tactics

Use a variety of tactics in small sided and full sided games.
To understand how to create and use space in conditioned and competitive games.
To apply correct lines of attack and defence.

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Year 7 Basketball

Aims

In this unit pupils focus on how to use basic principles of attack and defence to plan strategy and tactics for basketball. They work on improving the quality of their skills using various techniques. In all games activities, pupils think about how to use skills, strategies and tactics to outwit the opposition.

Key Rules

Double Dribble, Travelling and No Contact.

Students should be able to referee small sided games and apply the rules appropriately. Students should also be able to follow the key rules when playing the game.

Key Skills

Ball familiarisation
Passing- 3 types
Possession – Keep ball
Set Shot
Lay Ups – Practice and Game
Dribbling- Beat a Defender
Evaluate basic strengths and weaknesses
Apply key skills in a game situation

Key Words:

Passing, Possession, Shooting, Dribbling, Control, Accuracy, BEEF, Lay Ups, Double Dribble, Travelling, Tactics

Key Tactics

Use a variety of tactics in small sided and full sided games.

To understand how to create and use space in conditioned and competitive games.

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Year 7 Trampolining

Aims

In this unit pupils will focus on the basic safety issues around the trampoline. Pupils will accurately replicate skills and movements individually and in combination focusing on the correct techniques. Pupils will show creativity, control, fluency and aesthetics in developed sequences.

Key Rules

Stay on the Cross
No jewellery, footwear.
One trampolinist at a time.
Spotters.
Arms Up,
Legs Straight,
Toes Pointed.
Clear Start and Finish.

Key Skills

Balance on the trampoline.
Body Tension
Aesthetics -pointed toes, straight legs, arms etc.
Basic Shapes, Seated Landings, Front Landings, Rotation.
Evaluate basic strengths and weaknesses
Apply key skills in a mini routine.

Key Words:

Balance, Body Tension, Aesthetics, Fluency, Tuck, Pike, Straddle, Seat Landings, Front Landings, Travel, Routine, Performance, Evaluation, Feedback.

Key Tactics

Show fluency in routines, routines should have good flow.

Routines should demonstrate good aesthetics of performance, body tension and creativity.

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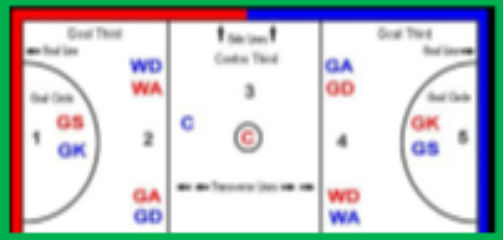
Year 7 Netball

Aims

In this unit pupils focus on how to use basic principles of attack and defence to plan strategies and tactics for netball. Pupils will work on improving the quality of their skills with the intention of outwitting opponents. In all games activities, pupils think about how to use skills, strategies and tactics to outwit the opposition.

Key Rules

Positional Play
Areas on the Court
Footwork



Key Skills

Passing – Different types of passing
Shooting
Running Step
Handling Skills
Turn in Air- catch one/two handed.
Attack and Defensive play
Positional plays on the court
Set Play to outwit opponents.

Key Words:
Passing, Footwork, Running Step, Pivot, Movement, Rotation, Possession, Accuracy, Teamwork, Positional, Shooting, Evaluation.

Key Tactics

Use a variety of tactics in small sided and full sided games.
To understand how to create and use space in conditioned and competitive games.

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Aims

Pupils will gain an understanding of warm ups, cool downs and health importance through physical tasks. Experience different methods of training and fitness testing. Understand changes in Heart Rate and health implications of being unfit. Be able to name the basic fitness components and muscle groups.

Year 7 Fitness

Key Components

Key Skills

Methods of Training – Circuit, Continuous, Weight, Interval.
Muscle Groups
Fitness Components
Heart Rate – Short Term and potential long term effects.
Fitness Tests – Bleep Test, Cooper Run, Ilinois.

Key Words:

Fitness, Methods of Training, Heart Rate, Quadriceps, Hamstrings, Biceps, Triceps, Abdominals. Strength, Power, Cardiovascular


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RE: Foundations of the Catholic Church

1. **Key words**

Monotheism: Christians in ONE God who is able to do anything. They would describe God as Trinity(God the Father, God the Son, God the Holy Spirit)
OMNIPOTENT: This means that God is seen as **ALL-POWERFUL**
OMNISCIENT: This means that God is all knowing **OMNIBENEVOLENT:** This means that God is all-Loving **IMMANENT:** This means that God is active in the world- in the form of Jesus
TRANSCEDENT This means that God is separate from time and space
INCARNATION This means "in flesh" – God coming to earth in the form of Jesus
The Creed: Statement of Christian beliefs.
Magisterium: The Pope and Bishops who are guided by the Holy Spirit. Their main role is guide the church and interpret the Bible and the teachings of the church.

6. Religious leaders-Priest, bishop, Pope and Jesus: The role that Jesus plays in Catholic Christianity. Why the pope and Bishops are important in the Catholic Church. How do they continue the work that Jesus started? What is magisterium?

7. BIBLE-Bible skills (how to use the Bible, Looking for Bible references-use of Gideon bible). The Bible is the Word of God. It is the Holy Book for Christians. The contents of the Bible are often referred to as Scripture-which means sacred writings. The Word Bible comes from Greek word for book. The Bible has OT and NT. The Gospel refers to the four books in the Bible that were written by people who were witnesses to some of the things that Jesus did.

8. Prayer: Catholics believe that prayer is an attempt to communicate with God usually through words. They also believe that God answers our prayers although some may question how prayers are answered where there is evidence of the presence of evil in the world such as earthquakes, Tsunami and terminal illnesses. There are different types of prayers.

Area 3: Jesus

10. **The Paschal Mystery**-Catholics understand the paschal mystery as the passion, death, resurrection and ascension of Jesus Christ. Paschal mystery is the culmination of God's love to humanity when Jesus dies to save people from sins. Catholics believe humans cannot save themselves from sin, but can choose to accept salvation. The Eucharist is the most important expression of the paschal mystery in the church today.

2. Christian nature of God: God's power is shown in creation story and the story of the 10 plagues. These accounts show that God is omnipotent.
Omnibenevolent: Christians believe that God is all-loving. "But you God are a compassionate and gracious God, slow to anger, abounding in love and faithfulness" Psalm 3:16. Catholics also believe that God sent his son Jesus on earth so that people could have eternal life. This is called incarnation.
Trinity: The belief that God is three in One. Catholics believe in the oneness of God. The Father is the creator. The son (Jesus) is the saviour. The Holy Spirit shows the presence of God in the World. Catholics believe that the Holy Spirit guides them to live their lives and offer comfort; courage; inspiration and guidance.

3.The Catholic church: church as a place of worship and membership in the Catholic Church.
4.The Local church: Local church and diocese (make a parish newsletter)
5.Belonging to a community-e.g. our school and community and the local parish
The Creed: Statement of Christian beliefs. Nicene creed-putting Faith into action.
Area 2: The Sacraments
9.Sacraments (9 lessons) are outward sign of invisible grace. Catholics believe that there are seven sacraments and are grouped into three groups (Initiation, Vocation and Healing). Baptism, Eucharist, Confirmation, Marriage, Holy Orders, Anointing the sick and confessions. Each sacrament will be studied separately during the term.

Area 4: Festivals (4-6 lessons)
11. LENT, EASTER, ADVENT AND CHRISTMAS.
Easter is the most important Christian festival. It remembers the death and resurrection of Jesus. These events are seen as proof that Jesus was the son of God and that by believing in him, Christians will have eternal life in heaven.

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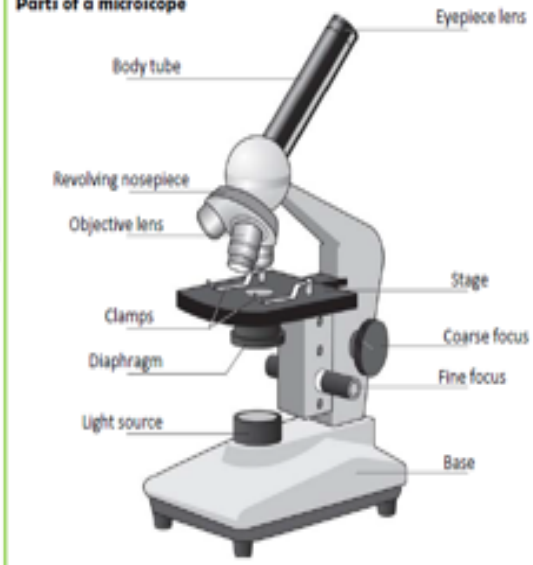
Knowledge organiser: (1) Cells and Organisation

Intent: Use a microscope to produce an image of a cell in focus.

Parts of a microscope



Part of microscope	Function
Stage	Area where specimen is placed
Clamps	Hold the specimen still whilst it is being viewed
Light source	Illuminates the specimen
Objective lens	Magnifies the image of the specimen
Eyepiece lens	Magnifies the image of the specimen
Course/fine focus	Used to focus the specimen so it can be seen clearly
Revolving nosepiece	Holds 2 or more objective lenses

Where to find extra support/information:
https://www.bbc.com/bitesize/articles/zbm48mn
Doddle-
https://www.doddlelearn.co.uk/app/login

Magnification

We can use the following equation to calculate the magnification of an object viewed through a microscope:

$$magnification = \frac{image\ size}{actual\ size}$$

Using a microscope

To view an object down the microscope we can use the following steps:

1. Plug in the microscope and turn on the power
2. Rotate the objectives and select the lowest power (shortest) one
3. Place the specimen to be viewed on the stage and clamp in place
4. Adjust the course focus until the specimen comes into view
5. Adjust the fine focus until the specimen becomes clear
6. To view the specimen in more detail repeat the process using a higher power objective

Preparing a microscope slide

To prepare a slide to view onion cells we can use the following steps:

1. cut open an onion
2. use forceps to peel a thin layer from the inside
3. spread out the layer on a microscope slide
4. add a drop of iodine solution to the layer
5. carefully place a cover slip over the layer

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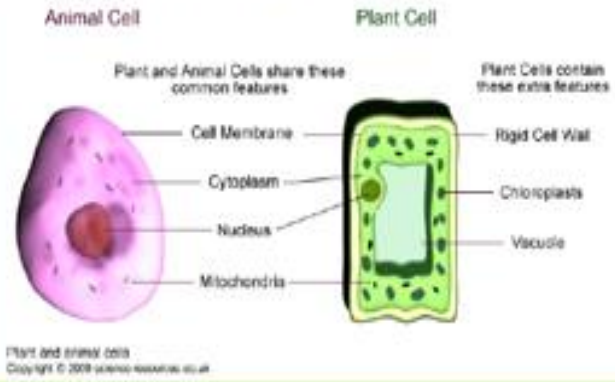
Knowledge organiser: (2) Cells and Organisation

Intent: Label plant and animal cells; state the function of the organelles; and compare plant and animal cells.

Cells

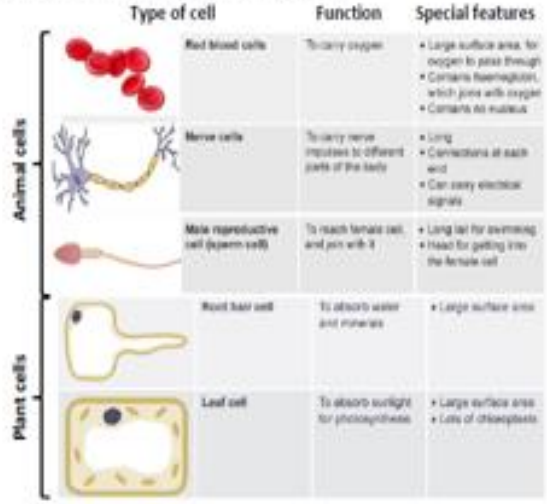
Cells are the building blocks of all living organisms



Organelle	Definition
Cell wall	Made of cellulose, which supports the cell
Cell membrane	Controls movement of substances into and out of the cell
Cytoplasm	Jelly-like substance, where chemical reactions happen
Nucleus	Contains genetic information and controls what happens inside the cell
Vacuole	Contains a liquid called cell sap, which keeps the cell firm
Mitochondria	Where most respiration reactions happen
Chloroplast	Where photosynthesis happens

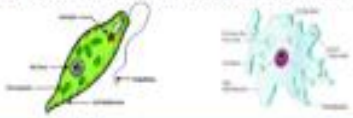
Specialised cells

Specialised cells are found in multicellular organisms. Each specialised cell has a particular function within the organism.



Unicellular Organisms

Some organisms are only made of a single cell, these are called unicellular organisms. All the processes needed for the organism to survive happen in that one, single cell. There are no tissues, organs or organ systems. Unicellular organisms often have structural adaptations to help them survive.



Where to find extra support/information:
https://www.bbc.com/bitesize/articles/zmrtng8
Doddle- https://www.doddlelearn.co.uk/app/login

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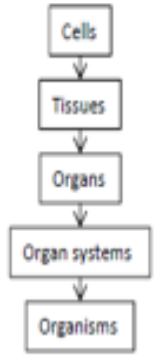
Knowledge organiser: (3) Cells and Organisation

Intent: Describe the relationship between cells, tissues and organs; and describe the function of the main organ systems

The make up of an organism

Organisms are constructed according to the following hierarchy:



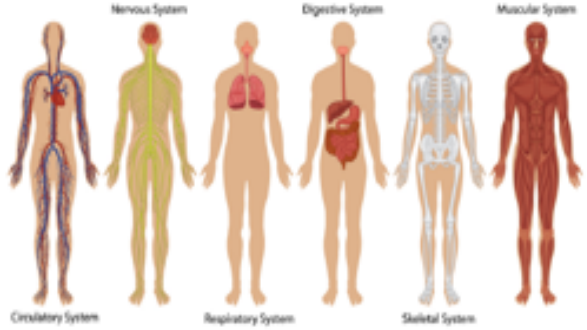
Cell	Nerve cell, muscle cell, root hair cell	Smallest functional structure of a living thing
Tissue	Muscle, epithelial (cover bodily surfaces), glandular (produces hormones and enzymes)	A group of cells with a similar structure and function
Organ	Intestine, heart, flower, leaf, brain	Made up of a group of tissues working together to perform a particular job
Organ system	Respiratory, digestive, reproductive	Made up of a group of organs working together to do a particular job
Organism	Human, oak tree, lion, shark	An individual living thing

Where to find extra support/information:

https://www.bbc.com/bitesize/clips/zx8fgk7
https://www.bbc.com/bitesize/articles/znqbcj6
Doddle- https://www.doddlelearn.co.uk/app/login

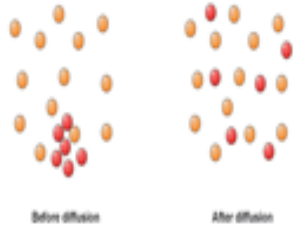
Organ systems

The following organ systems are found in humans. They each carry out a particular function.



Circulatory system	Heart and blood vessels	Transports substances around the body
Nervous system	Brain, spinal column, nerves	Transmits nerve impulses around the body
Respiratory system	Lungs, trachea, nose, mouth	Provides oxygen needed for respiration
Digestive system	Oesophagus, stomach, intestines, liver	Extracts nutrients from food
Skeletal system	Bones	Holds the human body up
Muscular system	Muscle	Responsible for movement of the human body

Define the term 'diffusion'.
The movement of particles from a high concentration to a low concentration.



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Knowledge organiser: (1)Nutrition and digestion.

Intent: Describe and explain the components that make up a balanced diet, describing the consequences of an imbalanced diet.

Deficiency diseases

When the body does not have enough of a certain nutrient deficiency diseases can develop.

Deficiency diseases are most common in more deprived areas of the world such as Africa and in people who have difficultly maintaining a healthy diet such as the elderly.

Disease	Nutrient	Symptoms
Kwashiorkor	Essential nutrients, cause unknown	Inflamed skin, tiredness, poor growth, enlarged stomach, persistent infection
Ricketts	Vitamin D and Calcium	Bone pain, poor growth, deformation of the skeleton
Scurvy	Vitamin C	Muscle and joint pain, bleeding and swelling of the gums
Anaemia	Iron	Tiredness, lack of breath, heart palpitations (noticeable heartbeats), pale complexion

Food groups

There are 7 major food groups, a balanced diet will contain the correct amounts of all of these for the person's needs, e.g. someone who does a lot of exercise will need a lot more carbohydrate than someone who does not. The seven food groups are summarised below:

Food Group	Example	Function
Protein	Fish, meat, dairy	For growth and repair.
Fat	Butter, oils, nuts	To provide energy. Fat provides a long term store of energy. It also provides insulation for the body.
Carbohydrate	Bread, pasta, sugar	To provide energy.
Fibre	Vegetables, Bran	To help food move through the gut.
Minerals	Dairy (calcium)	Required in small amounts to remain healthy, for example calcium is crucial for healthy teeth and bones.
Vitamins	Oranges (vitamin C), Carrots (vitamin A)	Required in small amounts to remain healthy, for example vitamin D is needed to keep teeth and bones healthy.
Water	Water, fruit juice, milk	Needed to form the cytoplasm of the cells and other fluids.

Where to find extra support/information:
https://www.bbc.com/bitesize/topics/zf339j6
Doddle- https://www.doddlelearn.co.uk/app/login

Food Tests

Starch test: Add iodine liquid, if starch is present substance will change to a blue/black colour.
Sugar/Glucose test: Add benedict's solution to the substance. Warm in a water bath. If substance changes green/orange/ red sugar is present.
Protein test: Add Biuret reagent. If substance changes to a purple colour protein is present.
Fat test: Wipe substance on filter paper. If paper becomes translucent fat is present. Alternatively add ethanol and water. Milky white emulsion appears in presence of fats.

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Knowledge organiser: (2) Nutrition and digestion.

Intent: Evaluate how different lifestyles have different energy need.

Food labelling

Food labels give you information about which food groups and how much energy each food contains. They give guidance to tell you what percentage of nutrients each food contains.

We measure the energy stored in food in calories.

MED	LOW	MED	HIGH	MED
Calories	Sugar	Fat	Sat Fat	Salt
353	0.9g	20.3g	10.8g	1.1g
18%	1%	29%	54%	18%

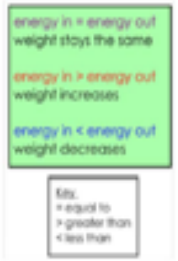
Food labelling

Different people require different amounts of energy depending upon their energy needs. For example an accountant who sits at his desk all day may only require 2,500kcal of energy whereas a builder may require 4,500kcal.

Eating too much can cause obesity which can lead to heart disease and diabetes. Eating too little can lead to malnutrition and can be caused by diseases such as anorexia or bulimia.

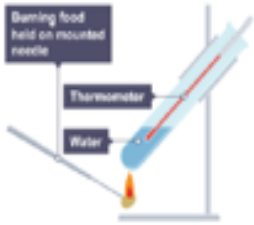
Energy in Food

The energy in food is often measured in kJ, the amount of energy you need depends on your lifestyle. If there is an imbalance you will put on or loose weight.



Measuring Energy in Food

The energy in different foods can be measured using a simple experiment. If the food is set on fire, it can be used to heat up water and by measuring the temperature change, you should be able to see which foods cause the greatest rise in temperature and have given out the most energy.



Balanced and healthy diets

Eating food from only one group can be very harmful. In order for a diet to be healthy the food that is consumed must come from a variety of food groups and contain enough calories.

People who have unhealthy diets are more likely to develop diseases either as a result of deficiency of food groups or from consuming too few or too many calories.

Where to find extra support/information:
https://www.bbc.com/bitesize/topics/zf339j6
https://www.bbc.com/bitesize/guides/zdjfr82/revision/1
Doddle-
https://www.doddlelearn.co.uk/app/login

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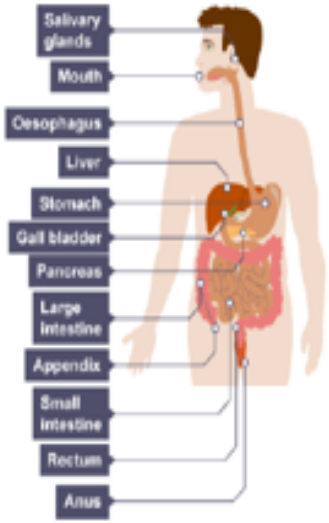
Knowledge organiser: (3) Nutrition and digestion.

Intent: Describe how and explain why foods are broken down in the digestive system, in terms of enzymes.

The Digestive System

Food is digested in the digestive system, this is an organ system. You should be able to name all parts of diagram below:

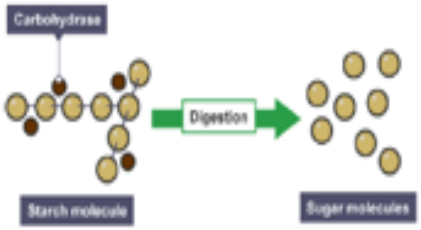


- The mouth has teeth that mechanically digest the food, it also has a salivary gland that releases enzymes to break the food down.
- The oesophagus is a muscular tube that pushes the food into the stomach
- The stomach churns the food up, while also adding acid and enzymes to break the food down.
- In the small intestine, food is broken down further and is absorbed thorough the walls of the intestine into the blood stream.
- The large intestine absorbs any remaining water
- Finally the food passes through the anus as faeces

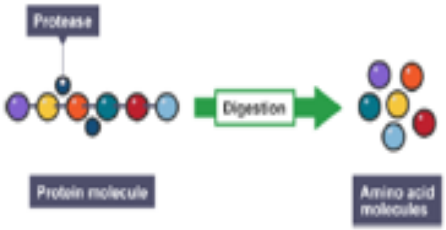
Enzymes

Enzymes are chemicals that help break down food molecules into smaller molecules. This enables the food to be absorbed by the body through the walls of the small intestine.

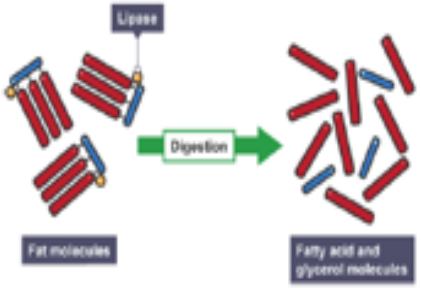
Breaking down starch (carbohydrates) – Enzyme = Carbohydrase



Breaking down proteins – Enzyme = Protease



Breaking down fats – Enzyme = Lipase (helped by bile to break fat into droplets)



Where to find extra support/information: https://www.bbc.com/bitesize/guides/z9pv34j/revision/1

Doddle- https://www.doddlelearn.co.uk/app/login

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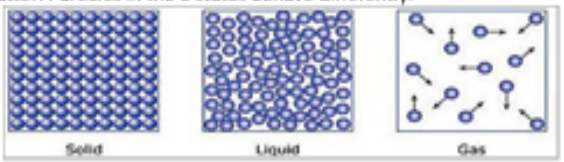
Knowledge organiser: (1) Particulate Nature of Matter

Intent: Describe the arrangement of particles in a solid, liquid and gas, and link this to their properties

Particle Theory

All matter is made up of particles. Particles are found in all 3 states of matter. Particles in the 3 states behave differently.



In solids, particles are arranged in a regular pattern and they can only vibrate in a fixed position. Particles in solids are not free to move.
In liquids, particles can slide pass each other. They are arranged randomly.
In gases, particles carry a lot of energy and they move in all directions in a high speed. Particles are far apart and are arranged randomly.

Diffusion and Factors Affecting Diffusion

Diffusion is the movement of particles from a higher concentration to lower concentration. Diffusion will stop when particles spread themselves evenly. Diffusion occurs in liquids and gases but not in solids, because particles in a solid are not free to move.

There are 2 factors affecting the rate of diffusion:
1. Temperature: When temperature increases, particles gain more energy. They can then move and spread out at a higher rate.
2. Concentration: When concentration increases, the rate of diffusion increases.

State	Properties
Solid	Fixed shape, cannot flow, cannot be compressed (squashed) Particles can vibrate in a fixed position but cannot more past each other. Particles are close together.
Liquid	Can flow, will take the shape of a container, cannot be compressed (squashed) Particles are close together but are able to move past each other.
Gas	Flow, completely fill any space that they occupy, can be compressed (squashed). Particles can move quickly in all directions, are far apart and have space to move into.

Where to find extra information and support:
www.bbc.com/bitesize
https://www.youtube.com/watch?v=frFFoiXwqww

Key Terms	Definitions
State of Matter	Matter is divided into three states: solid, liquid, and gas.
Melting	Change of state from solid to liquid.
Freezing	Change of state from liquid to solid
Evaporation	Change of state from liquid to gas.
Condensation	Change of state from gas to liquid.
Diffusion	Particles spread from a region of higher concentration to a region of lower concentration.
Rate	How fast an event, e.g. diffusion, is happening.
Concentration	The number of particles in a known volume.
Particles	All matter is made up of tiny particles.
Pressure	Pressure is formed when particles collide with the walls of containers.

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Knowledge organiser: (1) Chemical Reactions

Intent: Identify substances as acid, alkali or neutral based on observations with indicators and the pH scale.

Universal pH scale

Universal indicator is supplied as a solution or as universal indicator paper. It is a mixture of several different indicators. Unlike litmus, universal indicator can show us how strongly acidic or alkaline a solution is, not just that the solution is acidic or alkaline. This is measured using the pH scale, which runs from pH 0 to pH 14.

Universal indicator has many different colour changes, from red for strongly acidic solutions to dark purple for strongly alkaline solutions. In the middle, neutral pH 7 is indicated by green.

These are the important points about the pH scale:

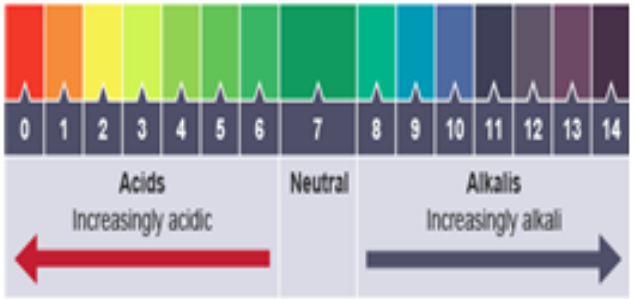
neutral solutions are pH 7 exactly

acidic solutions have pH values less than 7

alkaline solutions have pH values more than 7

the closer to pH 0 you go, the more strongly acidic a solution is

the closer to pH 14 you go, the more strongly alkaline a solution is



Indicators and the pH scale

Solutions can be acidic, alkaline or neutral:

we get an acidic solution when an acid is dissolved in water

we get an alkaline solution when an alkali is dissolved in water

solutions that are neither acidic nor alkaline are neutral

Pure water is neutral, and so is petrol.

An indicator is a substance that changes colour when it is added to acidic or alkaline solutions. You can prepare homemade indicators from red cabbage or beetroot juice - these will help you see if a solution is acidic or alkaline. Litmus and universal indicator are two indicators that are commonly used in the laboratory.

Question

John has a solution. It turns yellow when he adds red cabbage juice. Predict what colour the solution would turn if he added hibiscus flower juice. Explain your answer.

Hint: Before you can answer this question, you will have to carry out some research on the two indicators mentioned in the question.

Use this link to help:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&cad=rja&uact=8&ved=2ahUKEwjAvqPwopLjAhUZQEEAHfTOAkYQFjAJegQIARAB&url=https%3A%2F%2Fwww.bbc.com%2Fbitesize%2Fguides%2Fz89jq6f%2Frevision%2F1&usg=AOvVaw2kDtO3X8Ay2XPz8e93XrNE

Litmus indicator

Litmus indicator solution turns red in acidic solutions and blue in alkaline solutions. It turns purple in neutral solutions.

Litmus paper is usually more reliable, and comes as red litmus paper and blue litmus paper. The table shows the colour changes it can make.

	Red Litmus	Blue Litmus
Acidic solution	Stays red	Turns red
Neutral solution	Stays red	Stays blue
Alkaline solution	Turns blue	Stays blue

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Knowledge organiser: (2) Chemical Reactions

Intent: Describe neutralisation in terms of acids and alkalis reacting.

Neutralisation

A chemical reaction happens if you mix together an acid and an alkali. The reaction is called neutralisation. A neutral solution is made if you add just the right amount of acid and base together.

The products formed are salt and water.

acid + alkali → salt + water

- When an alkali reacts with hydrochloric acid, the salt produced is a chloride.
- When an alkali reacts with sulfuric acid, the salt produced is a sulfate.
- When an alkali reacts with nitric acid, the salt produced is a nitrate.

E.g:

Hydrochloric acid + Sodium hydroxide → Sodium + water chloride

Other ways to neutralise

metal oxide + acid → salt + water

metal hydroxide + acid → salt + water

metal carbonate + acid → salt + water + carbon dioxide

Notice they all produce **a salt and water…**

Question:

How is neutralisation useful?

Use this link to help:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwjQxbvBq5LjAhX9QEEAHedkCe4QFjABegQIDBAE&url=https%3A%2F%2Fwww.bbc.com%2Fbitesize%2Fguides%2Fz89jq6f%2Frevision%2F2&usg=AOvVaw0aqVNIhtgnF_kGB2yTqcso

Displacement reactions:

A more reactive metal will displace a less reactive metal from its compounds. For example magnesium is more reactive than copper. So it will displace copper from its compound to produce:

$Mg + CuSO_4 \rightarrow MgSO_4 + Cu$

Go to this link to see the experiment:

https://www.bbc.com/bitesize/guides/zqwmxnb/revision/3

Word and symbol equations

sodium hydroxide + hydrochloric acid → sodium chloride + water

$NaOH + HCl \rightarrow NaCl + H_2O$

copper oxide + sulfuric acid → copper sulfate + water

$CuO + H_2SO_4 \rightarrow CuSO_4 + H2O$

sodium hydroxide + sulfuric acid → sodium sulfate + water

$2NaOH + H_2SO_4 \rightarrow Na_2SO4 + 2H_2O$

Copper carbonate + sulfuric acid → copper sulfate + water + carbon dioxide

$CuCO_3 + H_2SO_4 \rightarrow CuSO_4 + H_2O + CO_2$

Combustion:

Combustion is the scientific word for **burning**.

In a combustion reaction a substance reacts with **oxygen** from the air and transfers energy to the surroundings as light and heat.

The products of a combustion reaction are called **oxides**.

Go to this link to learn more about combustion.

https://www.bbc.com/bitesize/articles/zcwxcj6

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Forces and Motion (1)

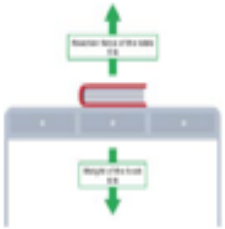
KPI 7PF 1: Use diagrams with correctly labelled force arrows to display a range of forces in different situations

Force Diagrams

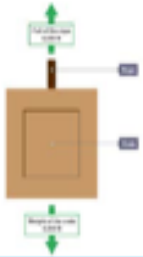
To show the forces acting on a body we use a free body force diagram. A **free body force diagram** shows all of the forces that are acting on the body. It has arrows that show the direction the force acts, the larger the arrow, the larger the force. A free body fore diagram should always have labelled arrows.

A boat floating

A book on a desk



A crate held up by a rope



Types of force

In the table below different forces are summarised:

Name of Force	What causes it?	Example
Friction	When two objects rub together	Car tyres moving on a road.
Air resistance	When an object rubs against air particles	A sky diver falling through the air
Reaction	A force that acts in the opposite direction	A book on a desk, the force acting up is a reaction force
Weight	The force an object exerts on the ground due to gravity	You will exert a force on the ground, that is your weight
Thrust	The force that drives on objects with an engine	Thrust moves a plane forwards

A force can be a **push or a pull**, for example when you open a door you can either push it or pull it. You can not see forces, you can only see what they do.

When a force is applied to an object it can lead to a change in the objects

- **Speed**
- **Direction of movement**
- **Shape (think about a rubber band)**

Forces can also be divided into 2 types, contact forces and non contact forces.

1. Contact forces for example friction, are caused when two objects are in contact.
2. Other forces for example gravity, are non contact forces. The two objects do not need to be in contact for the force to occur.

Where to find extra support/information:

https://www.bbc.com/bitesize/topics/z4brd2p/resources/1
https://www.bbc.com/bitesize/subjects/zh2xsbk

Doddle-
https://www.doddlelearn.co.uk/app/teacher?#!Science/resources
PHET:-
https://phet.colorado.edu/en/simulation/forces-and-motion-basics
https://phet.colorado.edu/sims/html/friction/latest/friction_en.html

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Forces and Motion (2)

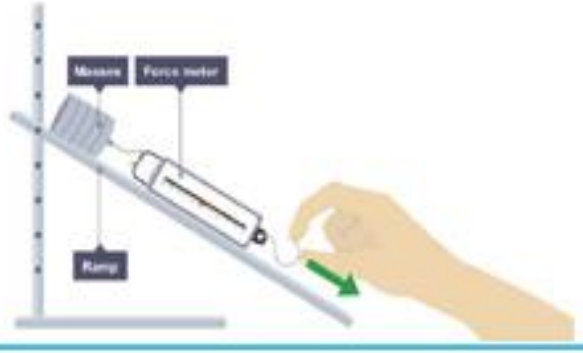
KPI 7PF 2: Interpret force diagrams to determine the motion of an object

Measuring the size of forces

To measure the size of frictional forces on different surfaces you can drag some masses along the different surfaces and record how much force is required.

For this experiment :

- Independent variable: Surface
- Dependent variable: Force
- Control variable: Mass



Unbalanced Forces

If the forces are unbalanced on an object there are two things that could happen:

1. If the object is stationary then it will move in the direction of the resultant force
2. If the object is moving, then the object will speed up or slow down in the direction of the resultant force.

For example, what is the resultant force on the lorry below?

100N-60N= 40N (to the right)

Remember the resultant force does not tell you what direction the lorry is moving in.

- If the resultant force is in the same direction as the movement of the lorry then the lorry will speed up
- If it is in the opposite direction the lorry will slow down

The larger the resultant force the larger the change in movement.

Balanced Forces

When we talk about the total force acting on object we call this the **resultant force.** When the forces acting in opposite directions are the same size we say the forces are **balanced**. This means one of two things:

1. The object is stationary (not moving)
2. The object is moving at a constant speed

This is known as Newton's first law.

For example, the resultant force acting on this object is 5N-5N=0N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Forces and Motion (3)

KPI 7PF 3: Calculate pressure, weight and average speed using appropriate equations

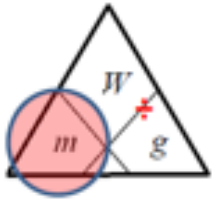
Setting out equations

e.g. A car travels 1,000m in a time of 40 seconds. What is the cars average speed?

Average speed = Distance ÷ Time
= 1,000 ÷ 40
= 25m/s

e.g. A crate has a weight of 500N. On Earth the gravitational field strength is 10N/kg. What is the mass of the crate?

Weight = Mass × Gravitational field strength



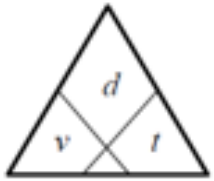
We need to find the mass so we cover up the mass term in the triangle and it tells us to find mass we do:

Mass = Weight ÷ Gravitational field strength
= 500 ÷ 10
= 50kg

Average speed

Average speed (m/s) = Distance (m) ÷ Time (s)

$$v = \frac{d}{t}$$



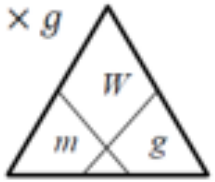
Average speed can also be measured in other units like km/h, mph or cm/s

You need to be careful which units you are using.

Weight

Weight (N) = Mass (kg) × Gravitational field strength (N/kg)

$$W = m \times g$$



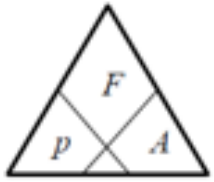
Weight is a measure of the size of the gravitational pull acting on an object.

This pull depends upon the size and mass of an object.

Pressure

Pressure (N/m²) = Force (N) ÷ Area (m²)

$$p = \frac{F}{A}$$



Pressure is caused by an object pushing on another.

The bigger the force applied by the object and the smaller the area over which the force is applied the larger the pressure

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Forces and Motion (4)

KPI 7PF 4: Relate the description of a journey to a distance-time graph

Distance-time graphs

A distance-time graph shows how far an object has moved from its starting point over time.

Distance travelled is always plotted on the y-axis (vertical)
Time taken is always plotted on the x-axis (horizontal)

You can find the speed of an object from a distance-time graph by finding the gradient of the graph. This is the 'steepness' of the line.

Gradient = Change in y-axis ÷ Change in x-axis

Using the graph opposite we can find the speed of the object represented by the green line between 6 and 10 seconds by:

Gradient = Change in y-axis ÷ Change in x-axis
= (7-6) ÷ (10-6)
= 1 ÷ 4
= 0.25m/s

We can also find the average speed of the green object by drawing a line from the start of its motion to the end of its motion. This is shown opposite by the **blue line** and how to find the average speed is shown below.

Gradient = Change in y-axis ÷ Change in x-axis
= (7-0) ÷ (10-0)
= 7 ÷ 10
= 0.7m/s

Interpreting Distance-time graphs

- A straight diagonal line of a distance-time graph shows that the object is travelling at a steady/constant speed.
- A straight horizontal line on a distance-time graph shows that the object is not moving (stationary)
- If a curved line were to appear on a distance-time graph (orange line) this shows the object is accelerating.