Stafford Manor High School

Every Child Reaching their Full Potential

Year 9 Spring Term 2

Core Knowledge

- Art
- Biology
- Chemistry
- Design Technology
- Digital Communications
- English
- French
- Geography
- History
- Maths
- Performing Arts
- Physical Education
- Physics
- SEL
- Textiles

1. What are portraits?

- A **portrait** is a picture or painting that focuses on a person's face or the way they look.
- It's a way to capture and show what someone looks like, often emphasizing their facial features, expressions, and personality in a visual form.
- Portraits can be created using various art techniques, such as drawing, painting, or photography.

2. Different ways to draw.

There are countless ways to draw, each offering unique techniques, styles, and approaches to artistic expression. Here are some different ways to draw: Observational drawing, sketching, contour drawing, cross-hatching, mixed media drawings, graphite drawing, digital drawing, expressive drawing, the list is endless!

3.What is a collage?

A collage is a visual art form that involves creating a new image or composition by combining various materials and elements, such as photographs, magazine clippings, fabric, paper, found objects, and other items. These materials are arranged and adhered to a surface, such as paper, canvas, or wood, to create a cohesive and expressive artwork.

Collage allows for endless possibilities in terms of creativity and experimentation. Artists can explore different textures, colors, shapes, and compositions by layering and juxtaposing diverse materials. Collage also offers a versatile means of storytelling, self-expression, and communication, allowing artists to convey ideas, emotions, and narratives through their compositions.

4. What is included in an artist research page?

- A title which is the artist’s name.
- Images of the artist’s work.
- A copy of the artist’s work which is called an artist recreation.
- Information about the artist.
- A background that links with the artist.

BIOLOGY

1. What are enzymes?

- Enzymes are proteins that act as a biological catalyst. This means that they speed up reactions without taking part in or changing as a result of the reaction. They can digest (break down) or synthesise (join up) substances.
- Examples: Carbohydrases (amylase); Proteases (pepsin); Lipases.

2. What is the Lock and Key hypothesis?

- The shape of the active site of the enzyme is complimentary to the shape of the substrate molecule. They fit together like and lock and key.
- Each enzyme will only catalyse one particular reaction.

3. How do different factors affect enzyme function?

- Temperature: below the optimum (best) temperature molecules move too slowly to react; above the optimum temperature the active site changes shape and the enzyme becomes denatured.
- pH: below and above the optimum (best) pH the active site changes shape and the enzyme becomes denatured.
- Substrate Concentration: as the amount of substrate increases the enzyme activity increases than stays constant.

4. Investigating how pH affects enzyme activity.

- Use iodine to test how quickly amylase changes starch to sugar at different pH values.
- Rate of Activity = amount of substrate used or product formed ÷ time.

5. How do substances move into and out of cells?

- Through the partially permeable cell membrane.
- Diffusion: movement of substances from high to low concentration.
- Active Transport: movement of substances from low to high concentration requiring energy from respiration.
- Osmosis: movement of water from a dilute to concentrated solution.

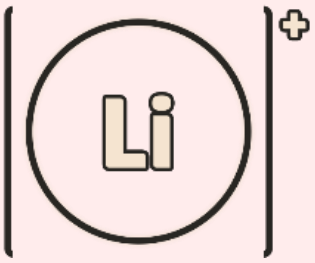
6. Investigating Osmosis.

- Weigh potato cylinders; place potato cylinders into different concentrations of sugar solution; re-weigh potato cylinders; calculate change in mass. They will gain mass if they gain water by osmosis; they will lose mass if they lose water by osmosis.
- Change in mass = (end mass – start mass ÷) start mass x 100

CHEMISTRY

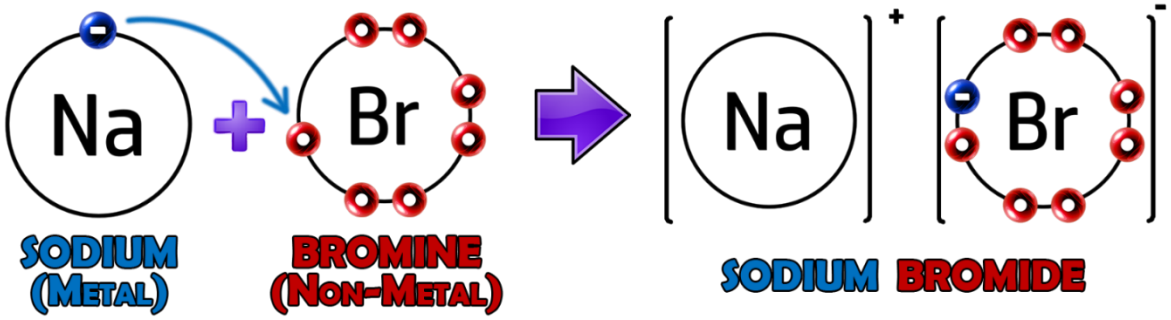
1. What are ions?

- An ion is an atom that has ***lost*** or ***gained*** electrons and become a ***charged*** particle.
- **Cation:** 'PAW'sitive ions formed when metals **lose electrons**.
- **Anion: A N**egative **ION** formed when non-metals **gain electrons**.



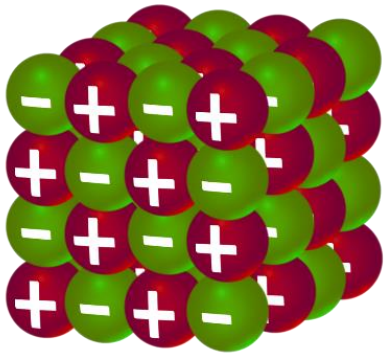
2. What is an ionic bond?

- When a metal **transfers its electrons** to a non-metal, there is a strong electrostatic attraction between the ions.
- An ionic bond is the ***strong force of attraction between metal and non-metal ions***.



3. Why do ionic compounds only conduct when molten / dissolved?

- Solid: ***IONS*** not free to move
- Melted/Liquid: **IONS** are free to move



4. Why do ionic compounds have high melting points?

- **Lots of energy** to break the **strong electrostatic attraction** between **ions**

5. What is the difference between an -ide and an -ate?

- If a compound ends in **-ide** it contains just one metal and one non-metal.
- If a compound ends in **-ate** it contains one metal, a non-metal, **AND** oxygen.

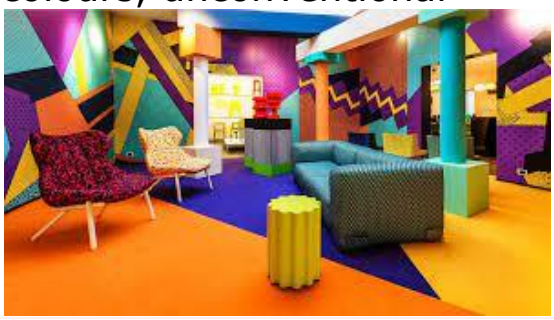
Example: Describe the difference, in terms of elements present, between lithium bromide and lithium bromate.

- Lithium brom**ide** contains lithium and bromine.
- Lithium brom**ate** contains lithium, bromine, **and** oxygen.

DESIGN TECHNOLOGY

1. What is the Memphis Design Movement?

- The Memphis Design Movement in the 1980s was all about bold, playful designs with vibrant colours, unconventional shapes, and a mix of influences.
- It created eye-catching furniture and objects that broke away from traditional design norms, leaving a significant mark on 1980s aesthetics.



2. What do the following DT equipment look like?

3D Printer	Coping Saw	Disc Sander
		
Plane	**Strip Heater**	**Wet and Dry Paper**
		

3. Key Word Definitions:

- **Acrylic**: Transparent plastic known for versatility.
- **Aluminium**: Lightweight, corrosion-resistant metal.
- **CAD/CAM**: Computer tools for design and manufacturing.
- **Chisel**: Sharp tool for carving or shaping.
- **Cold Forming**: Shapes metal at room temperature.
- **Coping Saw**: Small saw for curved cutting.
- **Epoxy Resin**: Durable adhesive material.
- **Flat File**: Tool for smoothing and shaping.
- **Hacksaw**: Saw for cutting metal.
- **Mallet**: Hammer for striking or shaping.
- **MDF (Medium Density Fibreboard)**: Engineered wood for furniture.
- **Memphis Design**: 1980s style with bold colours and geometric shapes.
- **PVA (Polyvinyl Acetate)**: Common glue for woodworking.
- **Strip Heater**: Device to heat and bend plastic sheets.

DIGITAL COMMUNICATION

1. What is a scrolling background?

Two sprites that move to the left. Once one reaches the edge, it is repositioned on the right. This gives the illusion of a moving background.

2. What is a sprite?

A programmable object

3. What are coordinates?

Two numbers that identify the position of an object

4. What is annotation?

Labelling the features of your game/level in your design

5. What are success criteria?

What your game or product needs to have for it to be successful

6. Objectives

The aim/purpose of the game (or level)

7. What are graphics?

The way things look in your game

8. What is gameplay?

How fun and/or challenging your game is to play

ENGLISH

1. What is 'Sephy' short for?

- Persephone

2. What happened to Lynette three years earlier?

- She and her boyfriend were beaten up

3. Why is the teacher, Mr Jason especially hard on Callum?

- Mr Jason's mother was a Nought and he hated them. He hated them being at school

4. What does Sephy discover in Chapter 31?

- She has a half-brother

5. What are the names of Sephy's mother and father?

- Kamal and Jasmine

6. Where do Callum and Sephy like to meet?

- The beach

7. What happened when Callum and Sephy went on the train?

- Two Cross policemen accused Callum – the only Nought in first class – of stealing his ticket

FRENCH

1. Je veux, j'aime, je sais, je dois, je peux – which is not a modal verb ?

- J'aime (I like)

2. pouvoir: to be able to (can) Complete the full verb paradigm for je (I), tu (you sing.), il / elle (he, she), on (we), nous (we), vous (you pl.), ils / elles (they)

- Je peux; tu peux; il / elle peut; on peut ; nous pouvons ; vous pouvez ; ils / elles peuvent

3. vouloir: to want to Complete the full verb paradigm for je (I), tu (you sing.), il / elle (he, she), on (we), nous (we), vous (you pl.), ils / elles (they)

- Je veux; tu veux; il / elle veut ; on veut ; nous voulons ; vous voulez ; ils / elles veulent

4. savoir: to know how to Complete the full verb paradigm for je (I), tu (you sing.), il / elle (he, she), on (we), nous (we), vous (you pl.), ils / elles (they)

- Je sais; tu sais; il / elle sait ; on sait ; nous savons ; vous savez ; ils / elles savent

5. devoir: to have to (must) Complete the full verb paradigm for je (I), tu (you sing.), il / elle (he, she), on (we), nous (we), vous (you pl.), ils / elles (they)

- Je dois; tu dois; il / elle doit ; on doit ; nous devons ; vous devez ; ils / elles doivent

6. Make these negative : Ils doivent prendre le bus (they have to get the bus); je peux faire mes devoirs (I can do my HW); il sait jouer au handball (he knows how to play handball)

- Ils ne doivent pas prendre l'autobus (they musn't take the bus) ; je ne peux pas faire mes devoirs (I cannot do my HW) ; il ne sait pas jouer au handball (he doesn't know how to play handball)

7. What do these adjectives mean? Actif; créatif; sportif; compréhensif?

- Active, sporty / athletic, creative, understanding

8. Make these adjectives feminine

- Active, créative, sportive, compréhensive

9. What does 'il faut' mean?

- You have to; one has to; we have to

GEOGRAPHY

1. What does derelict mean?

- Abandoned buildings and wasteland

2. What is a brownfield site?

- The land has already been developed/built on and is no longer in proper use.

3. What is a greenfield site?

- A greenfield site is one that has not been built on.

4. What is urban sprawl?

- Unplanned growth of urban areas into the surrounding rural areas.

5. What is urban regeneration?

- Reversing the urban decline by modernising or redeveloping, aiming to improve the local economy.

6. What biomes are found within Russia?

- Tundra
- Taiga
- Temperate forest
- Steppe
- Mountain

7. How many time zones are in Russia?

- 9 time zones

HISTORY

1. Whose assassination sparked the outbreak of the First World War?

- Archduke Franz Ferdinand

2. Why did Britain declare war on Germany?

- Germany invaded France by attacking Belgium. Belgium was an ally of Britain.

3. Where was the Western Front?

- Through Belgium and France

4. What was the area known as 'no man's land'?

- The area between the trenches of the two opposing armies

5. Name two new technologies used during the First World War

- Aeroplanes
- Tanks

6. How did Britain blockade Germany?

- By laying mines

7. What caused the most deaths on the Home Front?

- Air-raids

8. What was conscription?

- Men were made to join the army, by the government

9. What are the years for the First World War?

- 1914 - 1918

10. What jobs were carried out by women during the First World War?

- Nursing
- Factory work
- Farm work

1. Key word definitions:

- **Numerator:** The number on the top of the fraction
- **Denominator:** The number on the bottom of the fraction

2. What are equivalent fractions?

Equivalent fractions have the same value but are represented with different numbers.

3. How do you add/subtract with fractions?

You can only add or subtract fractions when they have the same denominator. (You will need to convert the fractions first if they are not the same)

4. What are the seven key equivalent FDP?

Fraction	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{8}$	$\frac{1}{10}$	$\frac{1}{20}$	$\frac{1}{100}$
Decimal	0.5	0.25	0.2	0.125	0.1	0.05	0.01
%	50%	25%	20%	12.5%	10%	5%	1%

5. What is a multiplier?

The decimal equivalent of a percentage.
Multiply an amount by a multiplier to calculate a percentage of an amount.

6. How do you find the multiplier for a percentage increase?

(100 + percentage) ÷ 100

7. How do you find the multiplier for a percentage decrease?

(100 - percentage) ÷ 100

8. How do you find the original amount?

Divide by the multiplier that had been used.

9. What is VAT?

VAT stands for value added tax, and is an amount of money paid to the government on items that you might buy.

PERFORMING ARTS

1. How are the following techniques used in performances?

- **Naturalism**: A style of performance where actors and designers try to create the illusion that what is happening on stage is 'reality'.
- **Target Audience-** Who the play was intended for
- **Protagonist-** The good guy/Main character
- **Antagonist-** The bad guy/ Evil Villain
- **Props-** Short for properties and used in performances like a hair brush, mop, books etc.
- **Project-** To project your voice so you can be heard
- **Multi-role playing**: An actor plays multiple characters.
- **Fourth Wall**: An imaginary wall between the actor and the audience.

2. What are "genres" in performing arts?

- The genre refers to the type or style.

Examples:

- Action
- Adventure
- Comedy
- Drama
- Horror
- Musical
- Mystery
- Romantic
- Romantic Comedy
- Sci-fi
- Soap
- Thriller
- Tragedy

3. What are "themes" in performing arts?

- Themes refer to what the performance is about.

Examples:

- War
- Crime
- Bullying
- Revenge
- Sacrifice
- Death
- Love
- Hate
- Desire
- Jealously
- Witchcraft
- Magic

4. How can we be safe when performing?

- Listen to instructions.
- No running in the drama space.
- No eating.
- Ensure equipment is put away.
- Be careful when using props especially breakables.
- Ensure the space is clear of obstructions.
- Ensure the stage is clicked together properly.
- Be aware of the space on the stage. Do not step back without checking how close you are to the edge.
- Ensure backstage is clear of obstructions.
- Tape any wires down- trip hazard.

PERFORMING ARTS

1. What is Ground Bass (basso ostinato)?

- A repeating melodic pattern in a musical composition's bass line.
- It persists throughout the piece, providing unity while other elements above it change.
- This technique is employed across various music genres and periods.

2. What are the characteristics of Ground Bass:

- **Repetition:** A defining feature of ground bass is its repetitive nature, persisting throughout the composition.
- **Stability:** It offers a stable foundation, allowing variations in upper voices or instruments.

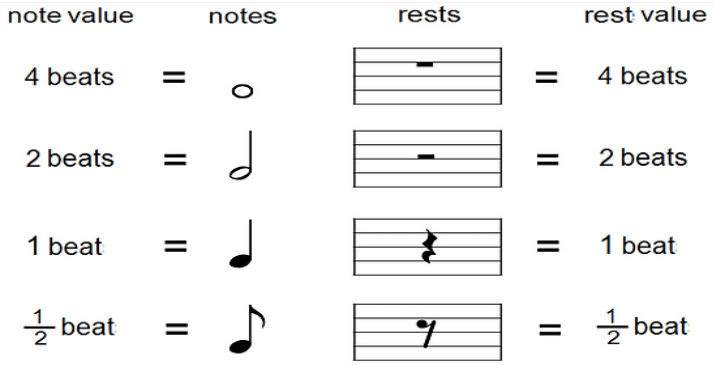
3. What are the genres and forms of ground bass?

- Ground basses span genres like opera, dance suites, and chamber music, particularly in Baroque and early Classical compositions.

4. Case Study: Pachelbel's Canon

- **Composition and Structure:** Johann Pachelbel wrote Canon in D around 1680 for three violins and basso continuo.
- **Canon Form:** The piece utilizes a canon, with a melody imitated by successively entering voices.
- **Ground Bass:** Featuring a ground bass (basso ostinato), the Canon's repeating bassline provides a foundation for harmonically rich variations in the upper voices.

5. These are the note values which you need to know in order to know how long to play the notes for:



6. Key word definitions:

- **Ostinato**: A persistently repeating musical motif in any part of the musical texture.
- **Canon**: A musical form where a melody is played and successively imitated by entering voices, as seen in Pachelbel's Canon in D.
- **Rhythm**: The pattern of sounds and silences in music, including beat, tempo, and meter.
- **Melody**: A sequence of single pitches, representing the tune or main musical line.
- **Tempo**: The speed or pace of a piece, indicated by terms like "allegro" (fast) or "adagio" (slow).

PHYSICAL EDUCATION

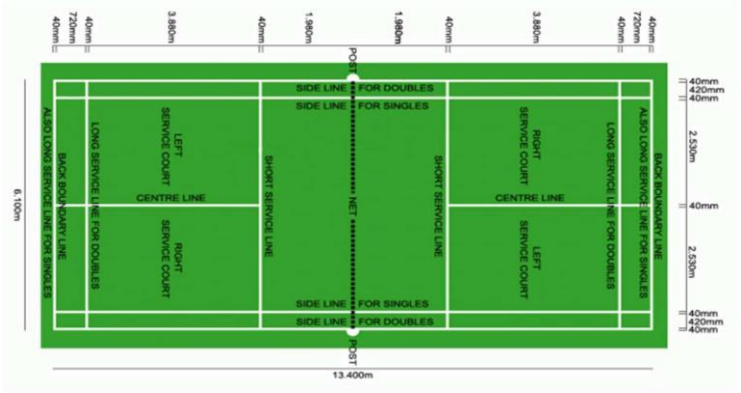
1. Badminton -Key Skills

Key Skills:
READY POSITION – balanced position, side on, racket up and ready, on toes.
GRIP- shake hands with the racket sideways on. Wrap fingers round the tape.
SERVING –There are several types of serve – short/backhand, long ,flick. A backhand serve should land close to the service line on your opponents side of the net. The racket head must start from below the waist.
UNDERARM CLEAR (long serve) **–** This shot is played high to the back of your opponents court. Start sideways on and use a whip action with the wrist to create power.
OVERHEAD CLEAR – Played to the back of your opponents' court and is a defensive shot. Start sideways on, racket up and behind you, focus on making contact with the shuttle in front of you.
DROP SHOT- a shot played with finesse to land the shuttle as close as possible to the net on your opponent's side.

2. Tactics

- Hitting into space – moving partner around the court
- Shot selection – selecting the right shot for the right situation
- Targeting opponents weaknesses

3. Rules



- Game starts with a diagonal serve- right hand side to right hand side Serve must land over the service line
- Play to 21 points – but must win by 2 clear points. A point is won every rally
- Whoever wins the point serves next
- When score is even, serve from right, when score is odd, serve from left Court is long and thin for singles, short and wide for doubles
- You cannot hit the net with your racket or body

PHYSICAL EDUCATION

1. Fitness

Aerobic means "with oxygen and anaerobic means "without oxygen." **Aerobic Exercise:** This occurs when blood is carried through your vessels to deliver oxygen to the muscles to keep you moving, and you sustain the activity for more than just a few minutes.
Anaerobic Exercise: short, high intensity exercise. At the point in time where the energy you are using does not allow the body to create enough oxygen.
Training Methods:-
Interval -Athletes training with periods of work followed by periods of rest
Continuous -Training for a specific period of time with no rest
Fartlek -A combination of slow and fast running over a variety of distances and terrains
Cross -A mixture of training
Circuit -A number of exercises, set out at 'stations' to avoid exercising the same muscle group consecutively
Weight -Using progressive resistance, either in the form of actual weight lifted or in terms of the number of times the weight is lifted
Flexibility – Either Ballistic; Static or PNF.
Plyometric – Involves jumping and immediately Jumping again.
Speed Training – Could include Hollow Sprints ; Acceleration and Interval Training

2. Effects of exercise

Effects of exercise on the body – Breathing and Heart Rate increase with intensity of exercise.
Pulse rate – Pulse rate (the number of times your heart beats in a minute) can be taken at either your wrist or neck. The normal rate
=70-100BPM
How to take your pulse rate: -
Gently place 2 fingers of your other hand on this artery.
1. Do not use your thumb, because it has its own pulse that you may feel.
Count the beats for 30 seconds, and then double the result to get the number of beats per minute.

3. Fitness Tests

Key Skills: Components of Fitness/ Tests for Components of Fitness:- *M*uscular endurance- The ability to use muscles repeatedly for a long period. 1 Minute Sit-Up Test &
1 Minute Press-Up Test
***C*ardiovascular/Aerobic Endurance** - Being able to exercise the whole body for a long period using oxygen and nutrients efficiently. Cooper 12-Minute Test; multi stage & Harvard Step Test
***M*uscular Strength-** The amount of force that muscle produces in one contraction. Grip Dynamometer
***F*lexibility-** The range of movement possible at a joint. Sit and Reach Test ***B*ody Composition-** The measure of how much of your body is made up of fat-free mass, vital organs and fat. Body Mass Index
***A*gility-** The ability to change direction at speed (quickly) without losing balance. Illinois Agility Run Test
***B*alance-** The ability to maintain centre of mass over a base of support. Stork Balance Test
***C*o-ordination-** The smooth flow of movement needed to perform a motor task efficiently and accurately using two or more body parts together.
Alternate Hand Wall Toss Test
***P*ower-** Speed X Strength Vertical Jump Test
***R*eaction time-** How quickly someone can react to a stimulus. Ruler Drop Test
***S*peed-** How quickly an object or human moves from 'A' to 'B'. 30m/40mSprint Test

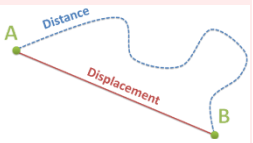
PHYSICS

1. What are scalar and vector quantities?

- **Scalar quantities** have a **size** (magnitude) but **no direction**.
- **Vector quantities** have **both size and direction**.

Examples of scalar quantities:	**Examples** of scalar quantities:
Distance (m) Speed (m/s) Time (s) Energy (J) Mass (kg)	Displacement (m) Velocity (m/s) Acceleration (m/s^2) Force (N) Weight (N) Momentum (kg·m/s)

2. Vector V Scalar



- **Distance** and **displacement** are both measured in **meters**, distance is how far the journey is, and displacement is the distance covered, and the direction travelled, in a straight line.
- **Speed** and **velocity** are both measured in **metres per second**, speed is how far moved every second & velocity is speed in a certain direction.

3. What is speed?

- Speed tells us how far an object is travelling every second.

Speed = distance ÷ time

- Some ***typical*** speeds are:

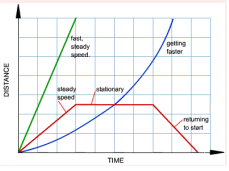
Walking	Running	Cycling	Cars in town	Car on the motorway	Trains
1-3 m/s	3-6 m/s	7-10 m/s	13 m/s	31 m/s	55 m/s

4. How can we investigate speed?

- We measure speed by measuring distance and time.
- We often use a ruler for measuring distances. For longer distances we may use a tape measure or a trundle wheel.
- We often use a stopwatch to measure time but a light gate can measure time, especially for faster speeds, with much more accuracy.

5. How do we read distance-time graphs?

- A **horizontal** line tells us that the object is **stationary**.
- A **straight sloping** line tells us the object has a **steady speed**.
- A **steeper line** indicates a **higher speed**.
- A **curved line** tells us that the **speed is changing**



6. How do we calculate acceleration?

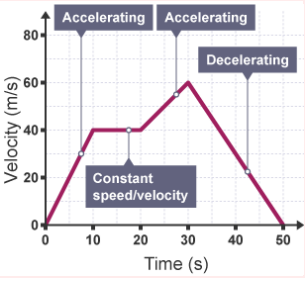
- Acceleration is the rate of change of velocity (how quickly velocity is changing).

Acceleration = change in velocity ÷ time

- The **acceleration** due to **gravity,** '**g**', on Earth is **10 m/s^2**.

7. How do we read velocity-time graphs?

- A **horizontal** line tells us the object is travelling at a **constant speed**
- A **straight sloping** line tells us the object is **accelerating** at a steady rate
- A **steeper line** indicates **higher acceleration**
- A **curved line** tells us the **acceleration is changing** (getting steeper = increasing acceleration)



1. Define consent

- Consent is an agreement which is given willingly and freely without exploitation, threat or fear, and by a person who has the capacity to give their agreement**.**

2. The age of sexual consent in the UK is?

- Sixteen

3. Strategies for being assertive include:

- Use a reasonable voice
- Describe the problem
- Express how you feel
- Ask for a specific change
- List the improvements

4. Features of a healthy relationship include:

- Trust
- Communication
- Support
- Enjoyment
- Attraction
- Affection
- Boundaries respected
- Safety
- Independence

5. Before being sexually active you should consider?

- Am I physically ready?
- Am I emotionally ready?
- Is this the right thing to do?
- Am I old enough by law?
- Do I trust this person?
- What contraception will I use?
- Where will I have sex?
- How will it impact my relationship?

6. Examples of sexually transmitted infections (STI) include:

- Chlamydia
- Gonorrhoea
- Genital warts
- Syphilis
- HPV
- HIV
- Genital herpes

TEXTILES

1. The bookmark Story

- The earliest existing **bookmark dates from the 6th century AD** and it is made of ornamented leather lined with vellum on the back and was attached with a leather strap to the cover of a Coptic codex (Codex A, MS 813 Chester Beatty Library, Dublin). ... The modern abbreviation is usually 'bookmark'.
- **Who invented the first bookmark?**
- In fact, it is said that one of the earliest references to the use of bookmarks was in 1584 when the Queen's Printer, **Christopher Barker**, presented Queen Elizabeth I with a fringed silk bookmark.
- **What is the purpose of a bookmark?**
- A bookmark is a web browser feature **used to save a web site's URL address for future reference**. Bookmarks save user and browser time, which is especially useful for Web pages with long URLs or accessing a specific part of the site that might not be the homepage for the site.
- **What are bookmarks made out of?**
  Cardstock is of the most widely available and easiest materials for making bookmarks. However, bookmarks are more popular with sewing techniques including binca.

2. Artist information – Micha Bulter

Who is Tina Leahey?

Micha Bulter is a free lance craft artist from Norwish in the UK who sells her work online. She has a page on Etsy where she takes commissions. Her work involves accessorises with embroidery and cross stitch. Her most successful work is binca bookmarks.

Her work involves a variety of embellishment and hand sewing techniques. She uses natural fabrics such as binca. Cotton Binca Fabric is **composed of 100% cotton** and is 50cm wide. Cotton Binca is a superior quality embroidery fabric suitable for creating a wide range of embroidery and cross stitch designs.