

# Year 9 - Cycle Three

## 100% Book



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## Your 100% book and knowledge organisers

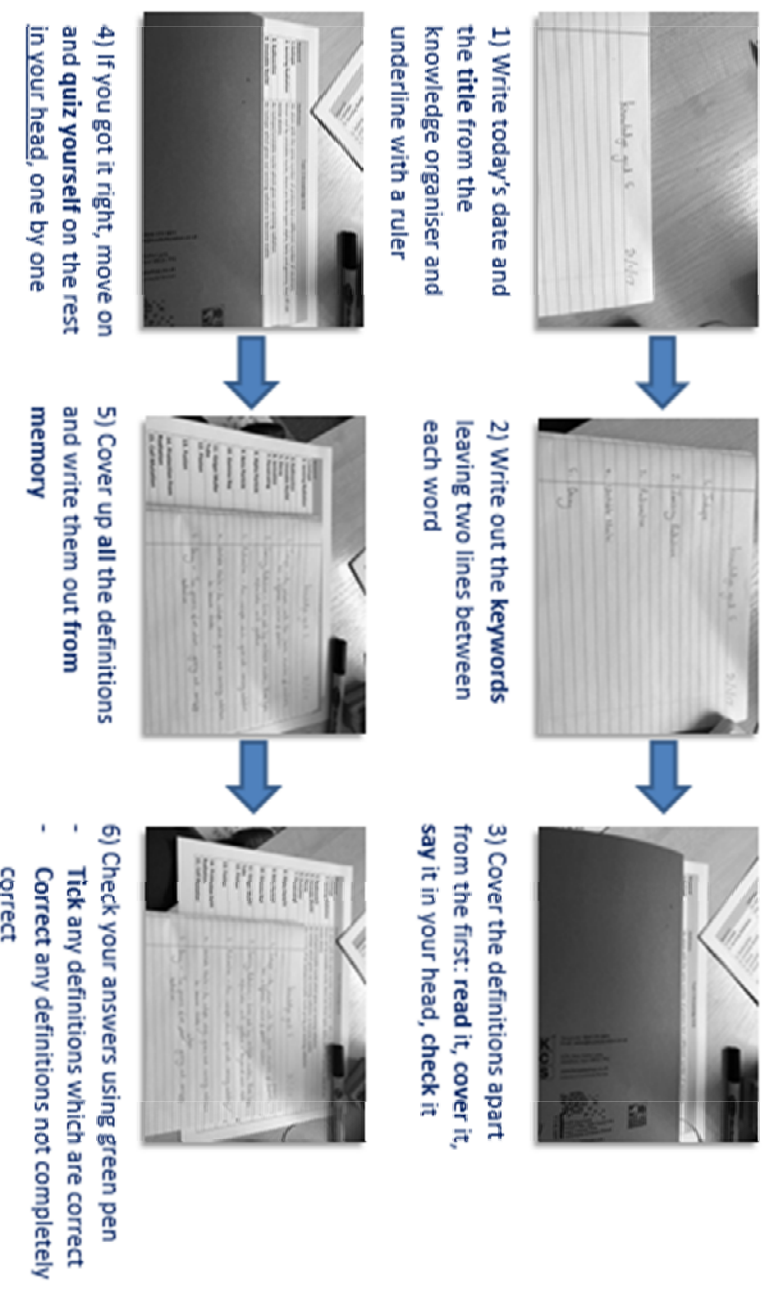
Knowledge organisers contain **critical** knowledge you must know. This will help you recap, revisit and revise what you have learnt in lessons in order to remember this knowledge for the long-term.

**Students remember 50% more when they test themselves after learning.**

You must have this 100% book for **every lesson** – it is part of your equipment.

You must keep your 100% books (even after you have finished the cycle or the year).

## How do I use my 100% book for self-quizzing?



# Correcting spelling, punctuation and grammar

Your work will be marked across all subjects to help you improve your literacy. This is the code that will be used.

| Correcting your spelling, punctuation and grammar |   |
|---|---|
| <b>Sp + underlined word</b>                       | The underlined word is spelt incorrectly.<br><br>Look, cover, write then check. Do this at least three times so you spell it correctly. |
| <b>A circle around part of a word or a space</b>  | Your punctuation is incorrect, or something is missing (including capital letters).   |
| <b>? + wobbly line</b>                            | You haven't explained your ideas clearly enough.  |
| <b>/</b>  | You need to start a new sentence here.<br><br>Remember: full stop, capital letter.  |
| <b>//</b>   | You need to start a new paragraph here.<br><br>Remember: new paragraphs for time, place, topic, person (TiPToP).                        |
| <b>^</b>  | A word is missing where the arrow is pointing.  |



# YEAR 9 | ART AND DESIGN | KNOWLEDGE ORGANISER | MARK-MAKING



## 1. Mark-making Terms

|                 |   |
|-----------------|---|
| Scumble         | Rough dull marks that apply semi-transparent marks to an image                  |
| Stipple         | Mark a surface with numerous small dots or specks                               |
| Broken Line     | A line composed of a series of dashes often                                     |
| Continuous Line | The line in a continuous line drawing is unbroken from the beginning to the end |
| Gestural        | Application of marks in free sweeping gestures                                  |
| Loose           | Uncontrolled and often expressive marks   |
| Controlled      | Deliberate and specific marks   |
| Hatching        | Create tone by drawing closely spaced parallel lines                            |
| Cross Hatching  | Two layers of hatching at right-angles to create a mesh-like pattern            |

## 2. Media

| Medium         | Properties   |
|----------------|--|
| Charcoal       | Non-permanent marks that vary in intensity                         |
| Oil Pastels    | Expressive lines by applying more or less pressure to the drawing  |
| Chalk Pastels  | Non-permanent soft and powder-like texture                         |
| Graded Pencils | Large range of soft to hard leads that produce dark to light tones |
| Pen and Ink    | Range of rough marks that drag along the surface                   |
| Felt Tip       | Bold and sharp lines that bleed through the surface                |
| Graphite       | Greasy texture and dull metallic grey marks                        |

## 3. Notable Portrait Artists Throughout History

| Name              | Born - Died | Characteristics of work   |
|-------------------|-------------|---|
| Leonardo Da Vinci | 1452-1519   | <ul style="list-style-type: none"><li>soft and gentle lighting</li><li>muted 'earthy' colours</li></ul>                                     |
| Rembrandt         | 1606-1669   | <ul style="list-style-type: none"><li>painter of light and shade</li><li>dedicated to portraying realism</li></ul>                          |
| Vincent Van Gogh  | 1853-1890   | <ul style="list-style-type: none"><li>bold and expressive colours</li><li>textured and wavy brushstrokes</li></ul>                          |
| Pablo Picasso     | 1881-1973   | <ul style="list-style-type: none"><li>Blue Period paintings of sad women</li><li>Cubism - abstract geometric shapes</li></ul>               |
| Frida Kahlo       | 1907-1954   | <ul style="list-style-type: none"><li>honest and truthful self depiction</li><li>inspired by nature and Mexico</li></ul>                    |
| Francis Bacon     | 1909-1992   | <ul style="list-style-type: none"><li>grotesque manipulation of faces</li><li>emotionally charged</li></ul>                                 |
| Lucian Freud      | 1922-2011   | <ul style="list-style-type: none"><li>very thick 'fleshy' paint</li><li>painter of truthful human forms</li></ul>                           |
| Cindy Sherman     | 1954-       | <ul style="list-style-type: none"><li>photographs herself in range of costumes</li><li>subverts the stereotypes of women in media</li></ul> |

## 4. Portrait Terms

|                       |   |
|-----------------------|---|
| Portrait              | A representation of a particular person   |
| Self Portrait         | Portrait of the artist by the artist, often in a reflective way                               |
| Pose                  | To perform a particular attitude or stance  |
| Posture               | The position and attitude of the body and the position of the limbs                           |
| Three-quarter Profile | A representation of a head or figure posed about halfway between front and profile views      |
| Subject               | The main idea that is represented in the artwork  |
| Viewer                | Someone who looks at a picture, photograph, or piece of art                                   |
| Subtext               | Less obvious meaning or message in the artwork that comes to be known by the viewer over time |

## Y9 Cycle 3 | Drama | Duologues

### A: Lesson 1

|            |   |
|------------|---|
| Duologue   | Part of a play with a speaking part for only two actors       |
| Subtext    | The true meaning behind what someone is saying                |
| Motivation | The reason behind a person's actions                          |
| Climax     | The moment in a scene that has the most excitement or tension |

### B: Lesson 2

|                     |  |
|---------------------|--|
| Refinement          | The process of improving a product by removing unwanted elements |
| Atmosphere          | The overall feeling of a location                                |
| Stage Configuration | The layout of a stage  |
| Reacting            | The process of changing in response to an external factor        |

### C: Lesson 3

|                       |  |
|-----------------------|--|
| Formal Language       | Speech that includes full sentences, correct grammar and used in official situations such as a job interview |
| Informal Language     | Speech including slang, short sentences and phrases common to where a character is from                      |
| Stage Directions      | Guidance written in the script by the playwright to support how the play should be staged and performed      |
| Performance Intention | The impact you want to have on your audience, e.g. to make them think or to make them laugh                  |

### D: Lesson 4

|            |   |
|------------|---|
| Blocking   | The process of deciding where characters should stand on stage using stage directions |
| Masking    | Standing between the audience and another actor blocking their view                   |
| Projection | Speaking clear enough for people to hear you from a distance (not shouting)           |
| Setting    | The location or environment a play takes place in                                     |

## English Cycle 3 Knowledge Organiser – Gothic

| A  | Structural Key Terms    | Definition  | Linked Words                |
|----|-------------------------|---|-----------------------------|
| 1  | perspective (n)         | A point of view   |                             |
| 2  | focus (n)               | The centre of interest or activity  | focal point                 |
| 3  | omniscient narrator (n) | A narrator who does not participate in the action of the story but instead is an 'all-seeing' third-person narrator |                             |
| 4  | focaliser (n)           | The person from whose perspective a third-person narrative is written   |                             |
| 5  | setting (n)             | The place or type of surroundings where something is positioned   |                             |
| 6  | pace (n)                | The speed or rate at which something happens or develops  |                             |
| 7  | shift                   | Change in emphasis, direction, or focus   |                             |
| 8  | tricolon (n)            | Listing or talking about things in groups of three  |                             |
| 9  | cyclical (adj)          | Happening in cycles, coming back to the beginning   |                             |
| 10 | language pattern        | Pattern of a group of words linked by meaning   |                             |
| 11 | dialogue (n)            | A conversation between two or more people   |                             |
| 12 | in medias res (n)       | Beginning in the middle of things   | Exposition                  |
| 13 | quintain (n)            | A stanza of five lines of poetry linked through a regular rhyme pattern   |                             |
| 14 | iambic tetrameter (n)   | Meter in poetry consisting of four iambic feet  |                             |
| 15 | listing (n)             | Grouping ideas in lists to add emphasis   |                             |
| B  | Literary Methods        | Definition  | Linked Words                |
| 1  | hyperbole (n)           | Overstatement or exaggeration to magnify the importance of something  | hyperbolic (adj)            |
| 2  | symbolism (n)           | The use of objects to represent an idea   | symbolic (adj) / symbol (n) |
| 3  | allusion (n)            | A reference to something  | allude (v)                  |
| 4  | motif (n)               | Any repeated idea, theme or image with symbolic significance in the text  |                             |

| 5  | characterisation (n)    | The description of the features or qualities of someone in order to create a fictional character                         |                     |
|----|-------------------------|--|---------------------|
| 6  | characteristic (n)      | A feature or quality of a particular person  |                     |
| 7  | direct speech (n)       | When something is being repeated exactly as it was said, usually in between a pair of inverted commas                    |                     |
| 8  | irony (n)               | The use of words that mean the opposite of what is really meant in order to make a point                                 | ironic (adj)        |
| 9  | inclusive pronouns (n)  | Pronouns used to make the audience/reader feel included, e.g. 'we' and 'our'   |                     |
| 10 | direct address (n)      | Speaking directly to the reader / audience by name or by saying 'you'  |                     |
| 11 | rhetorical question (n) | A question which is asked in order to produce an effect or make a statement instead of gaining an answer for information |                     |
| C  | Thematic Keywords       | Definition   | Linked Words        |
| 1  | atmospheric (adj)       | Creating a distinctive mood  | atmosphere (n)      |
| 2  | uncanny (adj)           | Strange or mysterious, especially in an unsettling way   |                     |
| 3  | eerie (adj)             | Strange and frightening  |                     |
| 4  | supernatural (n)        | A manifestation or event attributed to some force beyond scientific understanding or the laws of nature                  |                     |
| 5  | superstition (n)        | A widely held but irrational belief in supernatural influences, especially as leading to good or bad luck                | superstitious (adj) |
| 6  | oppressive (adj)        | Weighing heavily on the mind or spirits  | oppression (n)      |
| 7  | prodigious (adj)        | Unnatural or abnormal  |                     |
| 8  | malignant (adj)         | Evil in nature or effect; malevolent   |                     |
| 9  | hysteria (n)            | Exaggerated or uncontrollable emotion or excitement  | hysterical (adj)    |
| 10 | repulsion (n)           | A feeling of intense distaste or disgust   | repulsive (adj)     |
| 11 | macabre (adj)           | Used to describe something that is strange or disturbing as it is connected with death or gruesome acts                  |                     |
| 12 | terror (n)              | Extreme fear   |                     |

Year 9 French - Cycle 3

| 1. Position               |                    | 4. Routines              |                    | 8. Quantity   |              | 9. Time        |               | 11. Numbers       |              |
|---------------------------|--------------------|--------------------------|--------------------|---------------|--------------|----------------|---------------|-------------------|--------------|
| Loin                      | Far                | Se réveiller             | To wake up         | Presque       | Almost       | Fois           | Time          | Un                | One          |
| Dans                      | In                 | Se lever                 | To get up          | Trop          | Too much     | Tôt            | Early         | Deux              | Two          |
| Devant                    | In front           | Se doucher               | To shower          | Sans          | Without      | Tard           | Late          | Trois             | Three        |
| Proche                    | Near               | Se coiffer               | To do hair         | Sauf          | Except       | Le soir        | The evening   | Quatre            | Four         |
| A côté de                 | Next to            | Se brosser               | To brush           | Moins         | Less         | L'hiver        | Winter        | Cinq              | Five         |
| Derrière                  | Behind             | Se maquiller             | To put make up     | Plus          | More         | L'été          | Summer        | Six               | Six          |
| Proche                    | Near               | S'ennuyer                | To get bored       | Un peu        | A little     | Le printemps   | Spring        | Sept              | Seven        |
| Près                      | Near               | Se coucher               | To go to bed       | Un peu près   | About        | Le matin       | The morning   | Huit              | Eight        |
| A gauche                  | To the left        | Se raser                 | To shave           | Certaines     | Some         | L'après midi   | The afternoon | Neuf              | Nine         |
| A droite                  | To the right       | S'habiller               | To get dressed     | Seulement     | Only         | 10. Adjectives |               | Dix               | Ten          |
| 2. Reflexive - Infinitive |                    | Se dépêcher              | To hurry           | Seule         | Only / alone | Mal éduqué     | Not educated  | Onze              | Eleven       |
| S'entendre                | To get on          | 5. Conjugated Reflexives |                    | Assez         | Quite        | Menteur        | Liar          | Douze             | Twelve       |
| Se disputer               | To argue           | Je me dispute            | I argue            | Plutôt        | Rather       | Le meilleur    | Best          | Treize            | Thirteen     |
| S'aimer                   | To love each other | On s'aime                | We love each other | Plusieurs     | Many         | Fidel          | Loyal         | Quatorze          | Fourteen     |
| S'énervier                | To annoy           | Il m'énervie             | He annoys me       | Rien          | Nothing      | Fou            | Crazy(m)      | Quinze            | Fifteen      |
| S'embêter                 | To irritate        | Elle m'embête            | She irritates me   | Guère         | Hardly       | Folle          | Crazy (f)     | Seize             | Sixteen      |
| Se séparer                | To separate        | 6. Reflexive Past        |                    | Le moindre    | The least    | Gentil         | Kind          | Dix-sept          | Seventeen    |
| Se marier                 | To marry           | Ils se sont séparés      | They separated     | Personne      | No one       | Patient        | Patient       | Vingt             | Twenty       |
| Se moquer                 | To make fun        | Il s'est marié           | He got married     | Tout / tous   | All          | Sincère        | Sincere       | Trente            | Thirty       |
| 3. Question Words         |                    | Il s'est moqué de moi    | He made fun of me  | Tout le monde | Everyone     | Timide         | Shy           | Quarante          | Forty        |
| Où?                       | Where ?            | 7. Relationship Status   |                    | 9. Time       |              | Pénible        | Unbearable    | Soixante-dix      | Seventy      |
| Qu'est- ce que?           | What do..?         | Je suis                  | I am...            | Le lendemain  | The next day | Barbant        | Boring        | Quatre-vingt      | Eighty       |
| Est-ce-que?               | Do.. ?             | Marié                    | Married            | Il y a        | Ago          | Ennuyeux       | Boring        | Quatre-vingt- dix | Ninety       |
| Quel ?                    | What is?           | Divorcé                  | Divorced           | Depuis        | Since        | Drôle          | Funny         | Cent              | One hundred  |
| Quand?                    | When?              | En couple                | In a relationship  | L'aube        | Dawn         | Sympa          | Nice          | Mille             | One thousand |
| Combien?                  | How much?          | Célibataire              | Single             | Lorsque       | When         | Généreux       | Generous      | Un million        | One million  |
| Comment?                  | How?               | Amoureux                 | In love            | Quand         | When         | Méchant        | Nasty         |                   |              |

## Geographical Challenges

| A  | What can geography tell us about why Trump has come to power? |  |
|----|---|--|
| 1  | Donald Trump  | The current president of the USA   |
| 2  | Hillary Clinton   | The opposing candidate to Trump in the 2016 presidential election              |
| 3  | Populism  | A political approach which strives to appeal to ordinary people                |
| 4  | Globalisation   | The process of businesses operating on an international scale                  |
| 5  | Unemployment  | People who are not in work or full-time education                              |
| 6  | Immigration   | The action of coming to live permanently in a foreign country                  |
| 7  | Secondary Sector  | The sector of the economy which involves manufacturing                         |
| 8  | Rust Belt States  | A group of states in America which experienced industrial decline from the 80s |
| 9  | Industrial Decline  | The process of manufacturing jobs going into decline                           |
| 10 | Gerrymandering  | The process of changing the geography (size and shape) of political boundaries |

## Y9 Geography

| B  | Are natural disasters entirely natural? |   |
|----|---|---|
| 1  | Natural Disasters                       | A natural event such as a flood, earthquake, or hurricane that causes great damage                              |
| 2  | Atmospheric Circulation                 | Large-scale movements of air which redistribute heat around the world   |
| 3  | Tropical Cyclones                       | A low pressure storm formed over tropical oceans  |
| 4  | Storm Surges                            | A rising of the sea as a result of storms   |
| 5  | Coastal Flooding                        | Flooding found at the coastline   |
| 6  | Hurricanes                              | The name given to tropical storms in the USA and Caribbean  |
| 7  | Coriolis Effect                         | A rotational force in the atmosphere which causes tropical storms to rotate                                     |
| 8  | Hurricane Katrina                       | A devastating storm that hit the area of New Orleans, USA, on 25 <sup>th</sup> of August 2005                   |
| 9  | George W. Bush                          | The President of the USA when Hurricane Katrina struck  |
| 10 | Social Impact                           | <ul style="list-style-type: none"> <li>1,800 died</li> <li>three million without electricity</li> </ul>         |
| 11 | Economic Impact                         | <ul style="list-style-type: none"> <li>\$300 billion of damage</li> <li>oil platforms were destroyed</li> </ul> |

## Cycle 3

| C  | What is the future of energy? |   |
|----|-------------------------------|---|
| 1  | Abiotic Resources             | These are non-living resources such as oil  |
| 2  | Biotic Resources              | These are living resources such as animals and plants                                 |
| 3  | Renewable Resources           | These are resources which can be replaced naturally                                   |
| 4  | Non Renewable Resources       | These are resources which cannot be replaced once it has been used                    |
| 5  | Pollution                     | The release of harmful substances into the environment                                |
| 6  | Fossil Fuels                  | A fuel such as gas and oil, formed from the remains of living organisms               |
| 7  | Wind Energy                   | Energy obtained from using the wind   |
| 8  | Hydro-electric Power          | Energy obtained from turbines placed in rivers  |
| 9  | Solar Power                   | Energy obtained by using the energy from the sun                                      |
| 10 | Nuclear Energy                | Energy obtained through nuclear material  |
| 11 | Sustainability                | Meeting the needs of today and protecting the environment and resources of the future |
| 12 | Carbon Footprint              | The amount of carbon dioxide released from one individual or organisation             |



| Box 1 - World War One                     |  |
|---|--|
| <b>0. The 'Great War'</b>                 | <ul style="list-style-type: none"> <li>name originally given to World War One</li> <li>lasted from 1914-1918</li> <li>a global conflict involving the main European powers and their empires</li> <li>many believed it would be “over by Christmas”</li> </ul>   |
| Box 2 - Long-term Causes of World War One |  |
| <b>1. Napoleonic Wars</b>                 | <ul style="list-style-type: none"> <li>lasted from 1803-1815</li> <li>led by Napoleon (leader of France)</li> <li>Fought against Britain and other European countries</li> <li>Prussia became dominant power</li> <li>conscription used for the first time</li> <li>conscription = being forced by law to join the army</li> </ul> |
| <b>2. American Civil War</b>              | <ul style="list-style-type: none"> <li>lasted from 1861-1865</li> <li>new technology emerged that would be used during the Great War</li> <li>use of artillery, rifles, and railway supply lines</li> <li>trench warfare used for the first time</li> <li>concept of Total War – removing the enemy's economic base</li> </ul>     |
| <b>3. Franco-Prussian War</b>             | <ul style="list-style-type: none"> <li>lasted from 1870-1871</li> <li>Prussians united with German states to form Germany In 1871</li> <li>railways used to move soldiers around quickly</li> <li>quick defeat of the French led to over-confidence by the Prussians</li> </ul>  |
| <b>4. Alliances</b>                       | <ul style="list-style-type: none"> <li>a group of countries who promise to support and protect each other in the event of war</li> <li>triple alliance included Germany, Italy and Austria-Hungary</li> <li>triple Entente included Great Britain, France and Russia</li> </ul>  |
| <b>5. Militarism</b>                      | <ul style="list-style-type: none"> <li>belief that a country should build and maintain a strong military capability</li> <li>Germany and Britain competed against each other for the largest Navy</li> </ul>   |

|                       |  |
|-----------------------|--|
| <b>6. Imperialism</b> | <ul style="list-style-type: none"> <li>process of colonising (taking over) other nations for economic power</li> <li>Africa was an area of competition for Britain, France, Germany and other European nations</li> <li>linked to nationalism</li> </ul> |
|-----------------------|--|

| Box 3 - Short-term Causes of World War One |  |
|--|--|
| <b>7. Moroccan Crisis</b>                  | <ul style="list-style-type: none"> <li>took place in 1905 and again in 1911</li> <li>Germany attempted to protect Morocco's independence from France (they did not want it to be colonised by France)</li> <li>Britain and France became suspicious of Germany</li> </ul>  |
| <b>8. Bosnian Crisis</b>                   | <ul style="list-style-type: none"> <li>1908</li> <li>Germany supported Austria-Hungary's annexation (takeover) of Bosnia and Herzegovina</li> <li>Serbia were very close to Bosnia and Herzegovina and were angered by this takeover</li> <li>Russia tried to defend its ally Serbia, but failed</li> </ul>  |
| <b>9. Assassination of Franz Ferdinand</b> | <ul style="list-style-type: none"> <li>June 1914</li> <li>the Archduke Franz Ferdinand was the heir to the throne of Austria-Hungary</li> <li>Franz Ferdinand visited Bosnia and Herzegovina with his wife</li> <li>Franz Ferdinand and his wife were assassinated by Gavrilo Princip, a Serbian man</li> <li>Gavrilo Princip was protesting for the freedom of Bosnia and Herzegovina from Austria-Hungary</li> </ul> |
| <b>10. Schlieffen Plan</b>                 | <ul style="list-style-type: none"> <li>Alfred von Schlieffen's plan to invade France</li> <li>began in 1897 and revised in 1906 by Germany</li> <li>plan was to enter France through Belgium</li> <li>Britain sent soldiers to defend Belgium and France</li> </ul>  |

| Box 4 - The Cold War |   |
|----------------------|---|
| <b>11. Cold War</b>  | <ul style="list-style-type: none"> <li>a type of war when two countries are hostile (aggressive) towards each other but do not directly fight</li> <li>the Cold War was between the USA &amp; USSR</li> </ul> |

|                                   |  |
|-----------------------------------|--|
| <b>12. Causes of the Cold War</b> | <ul style="list-style-type: none"> <li>USA feared the spread of communism in Europe and an attack from USSR</li> <li>USSR disliked capitalism</li> <li>USA and USSR disagreed about how Germany should be controlled after WW2</li> <li>USA refused to share secrets about nuclear weapons</li> </ul>  |
| <b>13. Cuban Missile Crisis</b>   | <ul style="list-style-type: none"> <li>October 1962</li> <li>a critical moment in the Cold War</li> <li>USA placed missiles in Turkey pointing towards the USSR</li> <li>USSR placed missiles on island of Cuba pointing towards USA</li> <li>tense 13-day negotiations took place</li> <li>both countries removed their missiles</li> </ul> |

| Box 5 - Key Terms           |  |
|-----------------------------|--|
| <b>14. Nationalism</b>      | <ul style="list-style-type: none"> <li>support for one's own country and the dislike of other countries</li> <li>linked to militarism and imperialism</li> </ul> |
| <b>15. Arms Race</b>        | <ul style="list-style-type: none"> <li>competition between different countries to have the best military forces</li> <li>linked to militarism</li> </ul>         |
| <b>16. Short-Term Cause</b> | <ul style="list-style-type: none"> <li>factors / causes which happen shortly before an event takes place</li> </ul>  |
| <b>17. Long-Term Cause</b>  | <ul style="list-style-type: none"> <li>factors / causes that build up over a long period of time before an event takes place</li> </ul>                          |
| <b>18. Trigger Cause</b>    | <ul style="list-style-type: none"> <li>a factor / cause which takes place right before an event that 'sparks' or 'triggers' it to take place</li> </ul>          |
| <b>19. Communism</b>        | <ul style="list-style-type: none"> <li>a political system where everything is owned by the state and wealth is shared equally</li> </ul>                         |

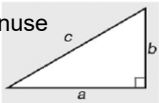
# Maths Knowledge Organiser

## Year 9 Cycle 3

### A: Index Laws

|                  |                 |
|------------------|-----------------|
| $a^m \times a^n$ | $a^{m+n}$       |
| $a^m \div a^n$   | $a^{m-n}$       |
| $(a^m)^n$        | $a^{mn}$        |
| $a^0$            | 1               |
| $a^{-1}$         | $\frac{1}{a}$   |
| $a^{-n}$         | $\frac{1}{a^n}$ |
| $\frac{1}{a^n}$  | $\frac{1}{a^n}$ |

### B: Pythagoras' Theorem

|                     |   |
|---------------------|---|
| Hypotenuse          | The longest side, opposite the right angle ( $c$ in Pythagoras' theorem)            |
| Pythagoras' Theorem | $a^2 + b^2 = c^2$   |
| Labelled Triangle   |  |

### C: Transformations

|             |  |
|-------------|--|
| Rotation    | Angle<br>Direction<br>Centre of rotation |
| Reflection  | Line of symmetry                         |
| Translation | Vector                                   |
| Enlargement | Scale Factor<br>Centre of enlargement    |

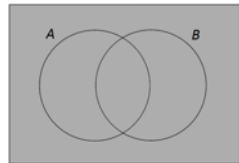
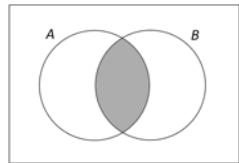
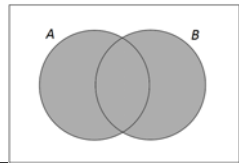
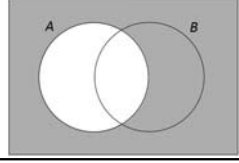
### D: Probability

|                              |   |
|------------------------------|---|
| Probability                  | $\frac{\text{Number of successful outcomes}}{\text{Total number of possible outcomes}}$ |
| $P(A)$                       | Probability of event $A$  |
| $P(\text{not } A) / P(A')$   | $1 - P(A)$  |
| Predicted Number of Outcomes | Probability $\times$ number of trials   |
| $P(A \text{ and } B)$        | $P(A) \times P(B)$  |
| $P(A \text{ or } B)$         | $P(A) + P(B)$   |
| Experimental Probability     | $\frac{\text{Frequency of event}}{\text{Total frequency}}$                              |

### E: Averages and Range

|        |   |
|--------|---|
| Mean   | Add the numbers up and divide by how many numbers there are |
| Median | Write the numbers in order and find the middle number       |
| Mode   | The most common number                                      |
| Range  | Biggest number – smallest number                            |

### F: Venn Diagrams

|            |                                  |   |
|------------|----------------------------------|---|
| $\xi$      | Universal set                    |    |
| $A \cap B$ | $A$ intersect $B$<br>$A$ and $B$ |   |
| $A \cup B$ | $A$ union $B$<br>$A$ or $B$      |  |
| $A'$       | Complement of $A$<br>Not $A$     |  |

# Year 9 Music – Knowledge Organiser – Cycle 3 – Ensemble Performance

## 1. Cycle 3 Keywords

|                              |  |
|------------------------------|--|
| <b>Ensemble</b>              | A musical group  |
| <b>Notation</b>              | Written music  |
| <b>Tablature</b>             | A way of writing music down using numbers, most commonly used with the guitar  |
| <b>Count-in</b>              | A way of setting a steady pulse and ensuring everybody starts at the same time   |
| <b>Tuning</b>                | A set of pitches to which an instrument is tuned   |
| <b>Balance</b>               | The relative volume level of two or more instruments playing together in an ensemble   |
| <b>Technique</b>             | The way you play an instrument or sing in order to get the best quality performance  |
| <b>Musical Communication</b> | Any method which musicians can use to communicate during an ensemble performance without speaking, e.g. eye contact, foot tapping, body language |

## 2. Musical Equipment Used in Ensemble Work

|                        |  |
|------------------------|--|
| <b>Plectrum / Pick</b> | A small piece of plastic used to pluck the strings of a guitar                   |
| <b>Amplifier</b>       | A piece of electronic equipment used to amplify (make louder) an electric guitar |
| <b>Guitar Lead</b>     | A wire used to connect an electric guitar to an amplifier                        |

## 3. Social Skills Required for Successful Ensemble Rehearsal and Performance

|                   |   |
|-------------------|---|
| <b>Rapport</b>    | Having the ability to work well with others in order to develop a successful ensemble performance |
| <b>Resilience</b> | The ability to keep working at a task, no matter how challenging                                  |
| <b>Team Work</b>  | Excellent team working skills are needed to produce a successful ensemble performance             |

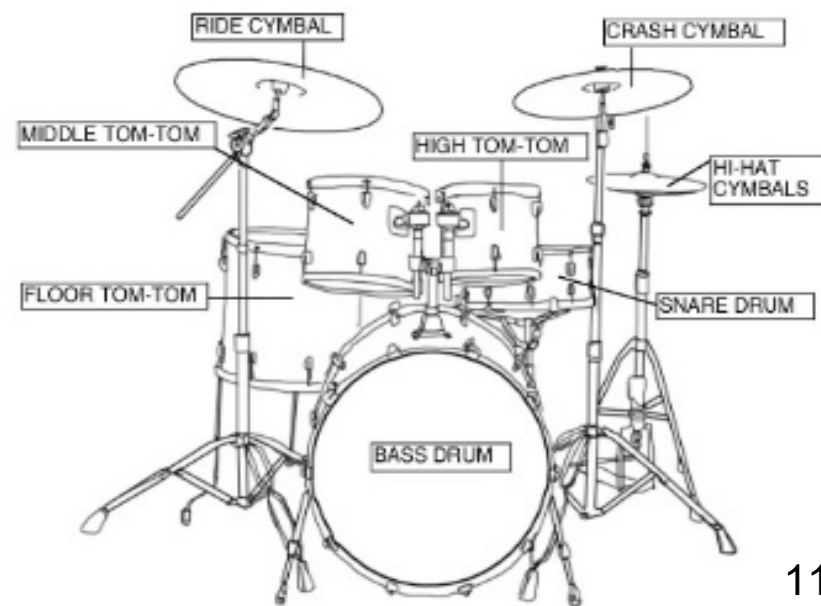
## 4. Musical Layers Found in Ensemble Performances

|                       |   |
|-----------------------|---|
| <b>Chord Sequence</b> | A group of chords played repeatedly   |
| <b>Drum Beat</b>      | Any repeated musical phrase played on drums or a drum kit                                     |
| <b>Drum Fill</b>      | A short break in a drum beat where a new rhythm is played to signal the start of a new phrase |

## 5. Elements of Music for Ensemble Performance

|                          |  |
|--------------------------|--|
| <b>Pitch</b>             | How high or low sounds are   |
| <b>Pulse</b>             | The constant beat running through a piece of music (aka beat or click)                           |
| <b>Metre</b>             | How pulses are grouped together, e.g. in 3s or 4s etc., noted on sheet music as a time signature |
| <b>Rhythm</b>            | The arrangement of sound as it moves through time  |
| <b>Tempo</b>             | The speed of a piece of music  |
| <b>Dynamics</b>          | The volume of music  |
| <b>Timbre / Sonority</b> | Used to describe the instrument or sound of the instrument                                       |
| <b>Texture</b>           | The word used to describe the way layers of music relate to each other                           |
| <b>Harmony</b>           | The sound created by notes played together   |
| <b>Structure</b>         | The word used to describe the order of sections in a song, e.g. verse 1, chorus 1, verse 2, etc. |
| <b>Style</b>             | The type of music, e.g. Rock, Jazz, Classical, Hip Hop, etc.                                     |

## 6. Parts of a Drum Kit



## RE Knowledge Organiser: Issues of Life and Death

| Section 1: Key Concepts |                                     |   |
|-------------------------|-------------------------------------|---|
| 1                       | <b>Afterlife</b>                    | Life after death; the belief that existence continues after physical death  |
| 2                       | <b>Environmental Sustainability</b> | Ensuring that the demands placed on natural resources can be met without stopping people, animals and plants living well, now and in the future |
| 3                       | <b>Euthanasia</b>                   | The act of killing or permitting the death of a person who is suffering from a serious illness  |
| 4                       | <b>Evolution</b>                    | The process by which different living creatures have developed from earlier, less complex forms   |
| 5                       | <b>Abortion</b>                     | When a pregnancy is ended so it does not result in the birth of a child   |
| 6                       | <b>Quality of Life</b>              | The extent to which life is meaningful and pleasurable  |
| 7                       | <b>Sanctity of Life</b>             | The belief that life is precious, or sacred   |
| 8                       | <b>Soul</b>                         | The spiritual aspect of a being which connects someone to God. The soul is often regarded as non-physical and as living on after death          |

| Section 2: The World |                           |  |
|----------------------|---------------------------|--|
| 1                    | <b>Genesis</b>            | The creation story in the Bible; Muslims believe the same story  |
| 2                    | <b>Creationist</b>        | Believes the world was made in six actual days; they have a <b>literal</b> understanding of Genesis  |
| 3                    | <b>Big Bang</b>           | The scientific theory to explain the beginning of the universe   |
| 4                    | <b>Liberal</b>            | Some religious people take a liberal view about the creation of the world; they say stories in scripture should be understood <b>non-literally</b> |
| 5                    | <b>Intelligent Design</b> | <b>William Paley</b> and <b>Michael Behe</b> argue that the world is so complicated that someone must have designed it, i.e. God                   |
| 6                    | <b>Illusion of Design</b> | <b>Richard Dawkins</b> argues that evolution is the best way to explain how life came about. If there was a designer, who designed the designer?   |
| 7                    | <b>Dominion</b>           | To rule over nature  |
| 8                    | <b>Stewardship</b>        | To look after the Earth and care for it  |
| 9                    | <b>Khalifah</b>           | People who care for the world and rule it as God would wish  |

| Section 3: Sanctity of Life |                                      |  |
|-----------------------------|--------------------------------------|--|
| 1                           | <b>Medical Ethics</b>                | The process of deciding what is good and acceptable in medicine  |
| 2                           | <b>Attitudes to Sanctity of Life</b> | Both Christians and Muslims argue life is sacred because it is made by God   |
| 3                           | <b>Conception</b>                    | The union of the sperm and egg (when some say life begins)   |
| 4                           | <b>Pro-life</b>                      | People who argue that abortion is always wrong   |
| 5                           | <b>Pro-choice</b>                    | People who believe that every woman should be able to choose what happens with her body, including abortion  |
| 6                           | <b>Voluntary Euthanasia</b>          | When a person asks for help to die; usually due to a terminal illness  |
| 7                           | <b>Non-voluntary Euthanasia</b>      | Where a person cannot make a decision about whether they want to die, either because they are in a coma or they are too young to decide for themselves   |
| 8                           | <b>Active Euthanasia</b>             | When a person takes a specific course of action to end their own life  |
| 9                           | <b>Passive Euthanasia</b>            | When life-sustaining treatment is removed, for example a feeding tube or a respirator  |
| 10                          | <b>Living Wills</b>                  | A legal document which says what a person wants to happen to them if they find themselves critically or terminally ill   |
| 11                          | <b>Hospice</b>                       | A place where people with terminal illnesses can go to die with dignity. Focuses on relieving the symptoms of pain and does not try to cure a patient but make them as comfortable as possible |

| Section 4: Death and the Afterlife |   |   |
|------------------------------------|---|---|
| 1                                  | <b>Dualism</b>  | The belief that we are made of two separate parts: a physical body and spiritual soul                                 |
| 2                                  | <b>Materialism</b>  | The view that nothing else exists apart from matter. All we have as human beings is a physical body, there is no soul |
| 3                                  | <b>Ensoulment</b>   | When the soul is believed to enter the body   |
| 4                                  | <b>Heaven (Christianity)</b><br><br><b>Janna (Islam)</b>  | A place regarded as the home of God where good people will go after death   |
| 5                                  | <b>Hell (Christianity)</b><br><br><b>Jahannan (Islam)</b> | A place regarded as a spiritual realm of evil and suffering   |
| 6                                  | <b>Purgatory (Roman Catholic)</b>                         | A place of suffering where sinners are being cleansed before going to heaven  |
| 7                                  | <b>Barzakh (Islam)</b>                                    | A place of waiting, after death, before Judgement Day comes   |
| 8                                  | <b>Mahdi (Islam)</b>                                      | The 'guided one' who will appear on the Day of Judgement  |
| 9                                  | <b>Funeral Rites</b>                                      | A ceremony held in connection with the burial of a dead person  |

## Year 9 Knowledge Organiser: Issues of Relationships

| Key Concepts |                         |   |
|--------------|-------------------------|---|
| 1            | <b>Adultery</b>         | Voluntary sexual intercourse between a married person and a person who is not their spouse                                |
| 2            | <b>Divorce</b>          | To legally end a marriage   |
| 3            | <b>Cohabitation</b>     | To live together in a sexual relationship without being married or in a civil partnership                                 |
| 4            | <b>Commitment</b>       | A sense of dedication and obligation to something   |
| 5            | <b>Contraception</b>    | Methods used to prevent a woman from becoming pregnant during or following sexual intercourse                             |
| 6            | <b>Gender Equality</b>  | People of all genders enjoying the same rights and opportunities in all aspects of their lives                            |
| 7            | <b>Responsibilities</b> | Actions / duties you are expected to carry out  |
| 8            | <b>Roles</b>            | Position, status or function of a person in society, as well as the characteristics and social behaviour expected of them |

| Types of Family |                      |   |
|-----------------|----------------------|---|
| 1               | <b>Nuclear</b>       | Most common; two parents and one or more children all living in the same house  |
| 2               | <b>Extended</b>      | A number of adults and children who are related living in the same home, e.g. cousins, aunts, all living together and sharing in family roles |
| 3               | <b>Reconstituted</b> | Some divorced adults remarrying or cohabiting and creating a new family, e.g. step children   |
| 4               | <b>Single-parent</b> | Where one parent raises the child alone   |
| 5               | <b>Childless</b>     | Where a married or cohabiting couple are either unable to have children or decide not to; same-sex couples are often a childless family       |

| Attitudes to Marriage |                  |  |
|-----------------------|------------------|--|
| 1                     | <b>Humanist</b>  | Marriage is a significant part of human life and will have a ceremony but it will not be religious                         |
| 2                     | <b>Christian</b> | Marriage is a gift from God – a sacrament. The couple exchange vows to show their commitment to each other in front of God |
| 3                     | <b>Muslim</b>    | Marriage is the basis of family life. All Muslims are encouraged to marry; they have a ceremony called the 'nikah'         |

| Attitudes to Divorce |                               |  |
|----------------------|-------------------------------|--|
| 1                    | <b>Humanist</b>               | Divorce is best avoided but when needed it may be the best thing to do   |
| 2                    | <b>Christian (Catholic)</b>   | <ul style="list-style-type: none"> <li>• does not recognise divorce</li> <li>• <i>"What God has joined together let no man separate."</i></li> <li>• are allowed an annulment if the marriage was not legally valid</li> </ul>   |
| 3                    | <b>Christian (Protestant)</b> | <ul style="list-style-type: none"> <li>• divorce is best avoided, but can happen</li> <li>• remarriage is permitted if suitable to all concerned</li> <li>• no minister can be forced to conduct a marriage ceremony against their will</li> </ul>   |
| 4                    | <b>Muslim</b>                 | <ul style="list-style-type: none"> <li>• accepted as a last resort</li> <li>• <i>"Of all things permitted divorce is the most hated by Allah."</i></li> <li>• couple must try to reconcile</li> <li>• husband must state the marriage is over on three occasions</li> <li>• couple then stays in the house but does not sleep together</li> <li>• if they decide to divorce still the wife is given the final part of her dowry</li> </ul> |

## RE - Issues of Relationships

| Sexual Relationships |                    |   |
|----------------------|--------------------|---|
| 1                    | <b>Chastity</b>    | Not having a sexual relationship until married            |
| 2                    | <b>Celibacy</b>    | When a person decides to never have a sexual relationship |
| 3                    | <b>Promiscuity</b> | Having a number of casual sexual relationships            |
| 4                    | <b>Fidelity</b>    | Two people being sexually faithful to each other          |
| 5                    | <b>Procreation</b> | Reproduction (having children)                            |

| Gender Equality |                               |  |
|-----------------|-------------------------------|--|
| 1               | <b>Christians (Catholics)</b> | <ul style="list-style-type: none"> <li>women can be a nun or 'sister'</li> <li>can support the church in administration</li> <li>women cannot be ordained (made a priest)</li> <li>men and women are equal but have different strengths and contributions to make</li> </ul>   |
| 2               | <b>Christians (Anglicans)</b> | <ul style="list-style-type: none"> <li>women can become ministers and lead Christians in worship</li> <li>the first female bishop was ordained in 2014</li> </ul>  |
| 3               | <b>Muslims</b>                | <ul style="list-style-type: none"> <li>women cannot be imams and lead men in prayer</li> <li>some Sunni groups allow women to lead prayer if the congregation is made up of other women</li> <li>women are usually separated from men during worship</li> <li>in recent years there has been a push to have mixed-sex congregations</li> </ul> |

| Contraception |                                 |  |
|---------------|---------------------------------|--|
| 1             | <b>Christians (Protestants)</b> | Believe in the use of different forms of contraception for family planning purposes  |
| 2             | <b>Christians (Catholics)</b>   | <ul style="list-style-type: none"> <li>Thomas Aquinas Natural Law</li> <li>Aquinas says one of God's laws is the continuation of the species, therefore contraception is wrong as it goes against this rule</li> </ul> |
| 3             | <b>Muslim</b>                   | Contraception is allowed if: <ul style="list-style-type: none"> <li>it does not harm the body</li> <li>that it should only be used if both husband and wife want to use it</li> </ul>                                  |
| 4             | <b>Humanists</b>                | Contraception is permissible to help people enjoy their lives and limit the size of families   |

| Same-sex Relationships |                                     |  |
|------------------------|-------------------------------------|--|
| 1                      | <b>Christians (Quakers)</b>         | Allow same-sex marriage in the same way as heterosexual couples  |
| 2                      | <b>Christians (Roman Catholics)</b> | Disagree with same-sex relationships, as same-sex relationships don't produce children and one of God's rules is to continue the species   |
| 3                      | <b>Christians (Anglicans)</b>       | Do not believe same-sex marriages should take place in church, however; there are some people in the Anglican church who disagree with this  |
| 4                      | <b>Muslims</b>                      | <ul style="list-style-type: none"> <li>most Muslims believe homosexuality is wrong</li> <li><i>"You approach men with desire, instead of women. You are a transgressing people."</i></li> <li>there are Muslims who believe it is okay to have same-sex relationships and be Muslim, e.g. Imam Daayiee Abdullah</li> </ul> |



# 9 Science: Biological Systems



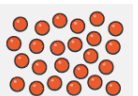
|   |                                  |  |
|---|----------------------------------|--|
| 1 | <b>Skeleton Functions</b>        | <ul style="list-style-type: none"> <li>• protection of vital organs</li> <li>• support</li> <li>• making blood cells in the bone marrow</li> <li>• movement</li> </ul>   |
| 2 | <b>Muscles</b>                   | <ul style="list-style-type: none"> <li>• are attached to bones with tendons</li> <li>• muscle contracts causing the bone to move</li> </ul>  |
| 3 | <b>Antagonistic Muscle Pairs</b> | <ul style="list-style-type: none"> <li>• a pair of muscles that work against each other</li> <li>• when one muscle contracts, the other relaxes</li> </ul>   |
| 4 | <b>Diffusion</b>                 | The movement of particles from an area of high concentration to a low concentration  |
| 5 | <b>The Respiratory System</b>    | <ul style="list-style-type: none"> <li>• trachea, bronchi, bronchioles, alveoli</li> <li>• lungs</li> <li>• ribcage</li> <li>• diaphragm</li> </ul>  |
| 6 | <b>Gas Exchange</b>              | <ul style="list-style-type: none"> <li>• oxygen diffuses out of the alveoli into the blood stream</li> <li>• carbon dioxide diffuses out of the blood into the alveoli</li> </ul>  |
| 7 | <b>Lung Adaptations</b>          | <ul style="list-style-type: none"> <li>• moist</li> <li>• good blood supply</li> <li>• alveoli, which give a large surface area</li> </ul>   |
| 8 | <b>Ventilation</b>               | The process of breathing in and out  |
| 9 | <b>Inspiration</b>               | <ul style="list-style-type: none"> <li>• breathing in</li> <li>• diaphragm contracts and moves down</li> <li>• intercostal muscles contract</li> <li>• ribcage moves up and out</li> <li>• pressure in thorax decreases, volume increases</li> </ul> |

|    |                                     |  |
|----|-------------------------------------|--|
| 10 | <b>Expiration</b>                   | <ul style="list-style-type: none"> <li>• breathing out</li> <li>• diaphragm relaxes and moves down</li> <li>• intercostal muscles relax</li> <li>• ribcage move in and down</li> <li>• pressure in thorax increases, volume decreases</li> </ul> |
| 11 | <b>Central Nervous System (CNS)</b> | Consists of the brain and spinal cord  |
| 12 | <b>Receptor</b>                     | Cells that detect stimuli, e.g. receptors in ears, eyes, nose, skin, tongue  |
| 13 | <b>Sensory Neurones</b>             | Carries information as electrical impulses from the receptor to the CNS  |
| 14 | <b>Motor Neurone</b>                | These carry electrical impulses from the CNS to the effectors  |
| 15 | <b>Effectors</b>                    | <ul style="list-style-type: none"> <li>• respond to electrical impulses</li> <li>• can be a muscle or a gland</li> </ul>   |
| 16 | <b>Respiration</b>                  | A chemical reaction that creates energy  |
| 17 | <b>Aerobic Respiration</b>          | <ul style="list-style-type: none"> <li>• chemical reaction that uses glucose and oxygen, convertes it into water and carbon dioxide</li> <li>• glucose + oxygen -&gt; carbon dioxide + water</li> </ul>  |
| 18 | <b>Anaerobic Reaction</b>           | <ul style="list-style-type: none"> <li>• respiration in the absence of oxygen</li> <li>• glucose -&gt; lactic acid</li> </ul>  |

|    |                             |  |
|----|-----------------------------|--|
| 19 | <b>Nucleus</b>              | Part of a cell that controls cell activity   |
| 20 | <b>Chromosomes</b>          | Long lengths of DNA  |
| 21 | <b>DNA</b>                  | <ul style="list-style-type: none"> <li>• molecule made of genes that hold instructions</li> <li>• made of two strands twisted into a double helix</li> </ul> |
| 22 | <b>Gene</b>                 | Section of DNA that codes for a particular protein   |
| 23 | <b>Crick and Watson</b>     | Scientists that first built a model of DNA   |
| 24 | <b>Wilkins and Franklin</b> | Provided the data that helped the model of DNA to be developed   |
| 25 | <b>Inheritance</b>          | Inheriting genes from parents that determine our characteristics   |
| 26 | <b>Characteristics</b>      | The features that we have, e.g. eye colour or an inherited disorder  |
| 27 | <b>Drug</b>                 | A chemical that affects how the body works   |



# 9 Science: Matter

|   |   |  |
|---|---|--|
| 1 | <b>Solids</b><br>  | <ul style="list-style-type: none"> <li>particles in fixed, regular arrangement</li> <li>strong forces of attraction</li> <li>particles vibrate in a fixed position</li> </ul>  |
| 2 | <b>Liquids</b><br> | <ul style="list-style-type: none"> <li>particles close together, but can move past each other</li> <li>irregular arrangement</li> <li>weaker forces of attraction</li> <li>random movement</li> <li>can't be compressed significantly</li> </ul> |
| 3 | <b>Gases</b><br>   | <ul style="list-style-type: none"> <li>no forces of attraction between particles in ideal gases</li> <li>random movement</li> <li>more energy than solids / liquids</li> </ul>   |
| 4 | <b>Pressure</b>   | Can be calculated:<br>pressure = force / area<br>(Pa)      (N)      (m <sup>2</sup> )  |
| 5 | <b>Gas Pressure</b>   | <ul style="list-style-type: none"> <li>caused by gas particles hitting the insides of a container</li> <li>each collision exerts a force; this builds pressure</li> </ul>  |
| 6 | <b>Density</b>  | A measure of how much material there is in a given space   |
| 7 | <b>High Density</b>   | More matter in a given space, e.g. brick   |
| 8 | <b>Low Density</b>  | Less matter in a given space, e.g. polystyrene   |
| 9 | <b>Density Equation</b>   | Density = mass / volume<br>kg/m <sup>3</sup> kg      m <sup>3</sup>  |

|    |                               |  |
|----|-------------------------------|--|
| 10 | <b>Changes of State</b>       | Changing from solid to liquid to gas or back the other way   |
| 11 | <b>Freezing</b>               | Liquid to solid  |
| 12 | <b>Melting</b>                | Solid to liquid  |
| 13 | <b>Sublimation</b>            | Solid directly changes to gas and skips the liquid stage   |
| 14 | <b>Evaporation</b>            | Liquid to gas  |
| 15 | <b>Condensation</b>           | Gas to liquid  |
| 16 | <b>Internal Energy</b>        | <ul style="list-style-type: none"> <li>energy stored by particles</li> <li>in an ideal gas, the internal energy is the sum of the kinetic energies of the particles</li> </ul> |
| 17 | <b>Latent Heat</b>            | The heat required to change state without changing the temperature   |
| 18 | <b>Specific Heat Capacity</b> | The heat required to raise the temperature of 1g of substance by one degree Celsius  |

|   |  |
|---|--|
| 19  | <b>Finding the Density of a Solid Object</b> |
| <ol style="list-style-type: none"> <li>1. Use a balance to measure the mass</li> <li>2. If it is a regular solid, measure the length, width and height</li> <li>3. Calculate the volume using the formula</li> <li>4. For an irregular shape, you can find the volume by submerging it in a eureka can filled with water</li> <li>5. The water displaced by the object will be transferred to the measuring cylinder</li> <li>6. Record the volume of water. This is the volume of the object</li> <li>7. Use the density equation</li> </ol> |  |

|  |  |
|--|--|
| 20   | <b>Finding the Density of a Liquid</b> |
| <ol style="list-style-type: none"> <li>1. Place a measuring cylinder on a balance and zero it</li> <li>2. Pour 10ml of liquid in the cylinder and record the mass</li> <li>3. Pour another 10ml in the measuring cylinder and measure the mass</li> <li>4. Record the total volume and mass each time</li> <li>5. For each measurement, use the formula to calculate the density</li> <li>6. Finally take an average of your calculated densities</li> </ol> |  |

# Working Scientifically

## A) Terminology

|    |                             |   |
|----|-----------------------------|---|
| 1  | <b>Independent variable</b> | What you are investigating / changing in the investigation            |
| 2  | <b>Dependent variable</b>   | What you will measure in the investigation                            |
| 3  | <b>Control variables</b>    | What you will keep the same   |
| 4  | <b>Hazard</b>               | Something that could cause harm                                       |
| 5  | <b>Example hazards</b>      | Microorganisms, electricity, chemicals, fire                          |
| 6  | <b>Risk</b>                 | The chance that a hazard could cause harm                             |
| 7  | <b>Repeatable</b>           | If the same person does the experiment again and gets similar results |
| 8  | <b>Reproducible</b>         | If someone else does the experiment and gets similar results          |
| 9  | <b>Valid</b>                | Results that have been collected from a fair test                     |
| 10 | <b>Accurate results</b>     | Results that are close to the true value                              |
| 11 | <b>Precise results</b>      | Results that are close to mean of the repeated results                |

## B) Unit Conversions

|   |                                 |        |
|---|---------------------------------|--------|
| 1 | km → m                          | × 1000 |
| 2 | m → cm                          | × 100  |
| 3 | cm → mm                         | × 10   |
| 4 | mm → micrometre (μ)             | × 1000 |
| 5 | micrometre (μ) → nanometre (nm) | × 1000 |
| 6 | mega → kilo                     | × 1000 |
| 7 | giga → mega                     | × 1000 |

## C) Comparing units

|   |                  |                                       |
|---|------------------|---------------------------------------|
| 1 | <b>Mega (M)</b>  | 1 000 000 times bigger than base unit |
| 2 | <b>Kilo (k)</b>  | 1000 times bigger                     |
| 3 | <b>Deci (d)</b>  | 10 times smaller                      |
| 4 | <b>Centi (c)</b> | 100 times smaller                     |
| 5 | <b>Milli (m)</b> | 1000 times smaller                    |
| 6 | <b>Micro (μ)</b> | 1 000 000 times smaller               |

## D) Scientific equations

|   |  |   |
|---|--|---|
| 1 | <b>Equations</b>                           | Show relationships between variables  |
| 2 | <b>The subject of an equation</b>          | The variable by itself on one side of the equals sign                               |
| 3 | <b>Changing the subject of an equation</b> | Do the same thing to both sides of the equation until you have the subject you want |

### Example: changing the subject of an equation

**speed = distance / time**

**Aim:** To make distance the subject.

**a) Multiply both sides by time:**

$$\text{speed} \times \text{time} = \text{distance} \times \text{time} / \text{time}$$





**b) Time is now on the top and bottom of the fraction, so it cancels out:**

$$\text{speed} \times \text{time} = \text{distance} \times \cancel{\text{time}} / \cancel{\text{time}}$$

**c) This leaves distance as the subject:**

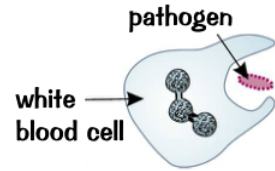
$$\text{distance} = \text{speed} \times \text{time}$$

# Biology Topic 3: Diseases and Infections (Paper 1)

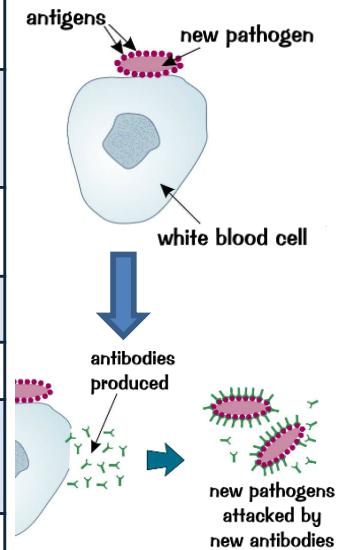
|    |                             |   |
|----|-----------------------------|---|
| 1  | <b>Pathogen</b>             | Micro-organism that causes disease  |
| 2  | <b>Bacteria</b>             | Make toxins that damage cells    |
| 3  | <b>Salmonella</b>           | Caught by eating food that contains bacteria. Bacteria make toxins that cause fever, stomach cramps and vomiting  |
| 4  | <b>Gonorrhoea</b>           | Bacteria that spread through unprotected sex. Causes genital discharge. Some strains of the bacteria are now resistant to antibiotics                                     |
| 5  | <b>Viruses</b>              | Replicate inside your cells – the damage this causes makes you ill                       |
| 6  | <b>Measles</b>              | Virus spread in the droplets released when a person coughs or sneezes. Causes fever and red rash as well as sometimes serious complications                               |
| 7  | <b>HIV</b>                  | Virus spread through unprotected sex and drug use. Attacks the immune system, leading to AIDS. Treated with antiretroviral drugs  |
| 8  | <b>Tobacco Mosaic Virus</b> | A viral disease of plants that discolours leaves, preventing photosynthesis   |
| 9  | <b>Fungi</b>                | Form thread-like arms called hyphae, which penetrate defences. Spread by making spores  |
| 10 | <b>Rose Black Spot</b>      | Fungus that spreads between roses through wind or water, causing leaf spots that prevent photosynthesis   |
| 11 | <b>Protists</b>             | Single-celled eukaryotes – often carried by another animal that spreads the disease (called a vector)   |
| 12 | <b>Malaria</b>              | Caused by a protest, which is spread by mosquitoes. Causes potentially fatal fever     |
| 13 | <b>Infected Water</b>       | A way that disease can be spread, e.g. cholera  |
| 14 | <b>Airborne</b>             | A way that disease can be spread, e.g. by breathing in droplets produced when a person infected with influenza coughs / sneezes   |
| 15 | <b>Direct Contact</b>       | A way that disease can be spread, e.g. touching a floor infected with athlete's foot fungus or having unprotected sex with someone with gonorrhoea                        |

|    |   |  |
|----|---|--|
| 16 | <b>Preventing Transmission of Disease</b> | <ul style="list-style-type: none"> <li>good hygiene, e.g. washing hands with antibacterial hand wash</li> <li>isolating people with the disease</li> <li>destroying vectors</li> </ul>   |
| 17 | <b>Physical Defences</b>                  | <ul style="list-style-type: none"> <li>skin acts as a barrier</li> <li>saliva and tears contain antibacterial enzymes</li> <li>mucus traps microbes, which are swept out by cilia</li> <li>stomach acid kills pathogens</li> </ul> |
| 18 | <b>Painkillers</b>                        | Drugs that relieve symptoms, but don't cure the disease, e.g. aspirin  |
| 19 | <b>Antibiotics</b>                        | <ul style="list-style-type: none"> <li>medicines that kill <u>bacteria</u>, but <u>NOT viruses</u></li> <li>some bacteria have mutated to become resistant to antibiotics, e.g. MRSA</li> </ul>                                    |
| 20 | <b>Phagocytosis</b>                       | When white blood cells destroy pathogens by engulfing them   |
| 21 | <b>Antibodies</b>                         | Produced by white blood cells to destroy pathogens   |
| 22 | <b>Antitoxins</b>                         | Produced by white blood cells to neutralise toxins   |
| 23 | <b>Immune</b>                             | If you're infected by the same pathogen again, the body quickly produces antibodies to kill the pathogen before it makes you ill   |
| 24 | <b>Vaccines</b>                           | Contain <u>dead/weakened pathogens</u> . The body recognises their antigens and you become immune – but the weakened pathogens don't make you ill  |
| 25 | <b>Preclinical Trials</b>                 | Drugs are tested on human cells and animals in the lab to check if they are poisonous  |
| 26 | <b>Clinical Trials</b>                    | <ul style="list-style-type: none"> <li><u>phase 1</u>: test low doses on healthy volunteers to check for side effects</li> <li><u>phase 2</u>: test on patients, comparing the effect of a placebo versus the drug</li> </ul>      |
| 27 | <b>Double Blind Trial</b>                 | The effect of a new drug is compared with a placebo (fake drug) to see if the drug works. Neither the doctor nor the patient knows who has been given the placebo  |
| 28 | <b>Peer Review</b>                        | When the results of scientific studies are checked by other scientists to ensure they are of high quality  |

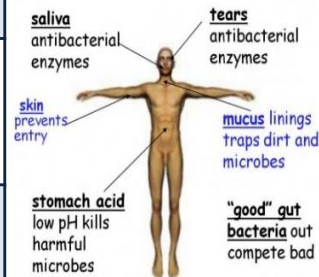
## Phagocytosis:



## Production of Antibodies:



## Physical Defences:

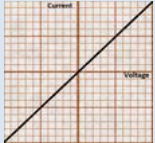
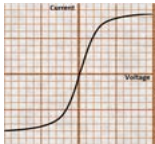
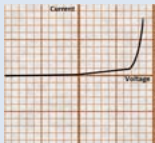


Knowledge Organiser Physics Topic 2 – Electricity

Charge, Current, Resistance, Potential Difference

|   |                              |   |
|---|------------------------------|---|
| 1 | Charge (Coulombs)            | Electrons are transferred when objects become charged   |
| 2 | Current (Amps)               | <ul style="list-style-type: none"><li>the rate of flow of electric charge</li><li>measured using an ammeter connected in series</li></ul>   |
| 3 | Resistance (Ohms)            | <ul style="list-style-type: none"><li><math>= \frac{\text{Potential Difference (Volts)}}{\text{Current (Amps)}}</math></li><li>electrons have to push their way through vibrating atoms in the metal</li></ul>                          |
| 4 | Potential Difference (Volts) | <ul style="list-style-type: none"><li>energy transferred per coulomb of charge</li><li><math>= \frac{\text{Energy Transferred (J)}}{\text{Charge (Coulombs)}}</math></li><li>measured using a voltmeter connected in parallel</li></ul> |

Component Characteristics

|   |               |   |   |
|---|---------------|---|---|
| 1 | Ohms Law      |    | Current through a resistor at a constant temperature is directly proportional to the potential difference across a resistor. A conductor which obeys this rule is described as an ohmic conductor |
| 2 | Filament Lamp |    | Current is not directly proportional to potential difference. The resistance increases as the temperature of the filament lamp increases  |
| 3 | Diode         |   | Only allows current to pass through it in one direction, this stops a circuit being damaged if the battery is connected the wrong way   |
| 4 | LDR           | The resistance of a light dependent resistor decreases if light intensity increases |   |
| 6 | Thermistor    | The resistance of a thermistor decreases if temperature increases                   |   |

Series and Parallel Circuits

|   |                        |  |
|---|------------------------|--|
| 1 | Series Circuit Rules   | <ul style="list-style-type: none"><li>potential difference is shared between the components</li><li>current is the same everywhere</li><li>total resistance = <math>R_1 + R_2 + \dots</math></li></ul>   |
| 2 | Parallel Circuit Rules | <ul style="list-style-type: none"><li>for components in parallel, the potential difference across each component is the same</li><li>total current is the sum of the currents through separate branches</li><li>the total resistance of two components in parallel is less than the resistance of the resistor with the least resistance</li></ul> |









Energy in Circuits

|   |                    |   |
|---|--------------------|---|
| 1 | Power              | Power (Watts) = Current (Amps) x Potential Difference (V)<br>$= \frac{\text{Potential Difference (Volts)}}{\text{Current (Amps)}}$  |
| 2 | Resistance Heating | When current passes through a resistor, the power supplied to the resistor heats it   |
| 3 | Fuses              | A fuse contains a thin wire which will break if too much current passes through it  |
| 4 | Energy Transfer    | <ul style="list-style-type: none"><li>= Charge (Coulombs) x Potential Difference (Volts)</li><li>= Power (Watts) x time (seconds)</li><li>= Potential Difference (V) x Current (A) x time (s)</li></ul> |
| 5 | Efficiency         | $= \frac{\text{Output Power (W)}}{\text{Input Power (W)}} \times 100$   |

National Grid

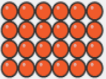


|   |                       |   |
|---|-----------------------|---|
| 1 | Direct Current        | Current goes in one direction only  |
| 2 | Alternating Current   | Repeatedly reverses its direction. Its frequency is the number of cycles per second                   |
| 3 | Mains Circuit         | Has a live wire and a neutral wire, an alternating potential difference occurs between the two wires  |
| 4 | National Grid         | A nationwide network of cables and transformers transferring electricity from power stations to homes |
| 5 | Step Up Transformer   | Used at a power station to increase voltage and decrease current so less power is lost heating cables |
| 6 | Step Down Transformer | Used at homes to decrease voltage so it is safe to use  |

Circuit Symbols

|  |  |   |   |
|--|--|---|---|
| <br>Filament Lamp | <br>Cell              | <br>Switch               | <br>Ammeter      |
| <br>Resistor      | <br>Variable Resistor | <br>Light Emitting Diode | <br>20 Voltmeter |

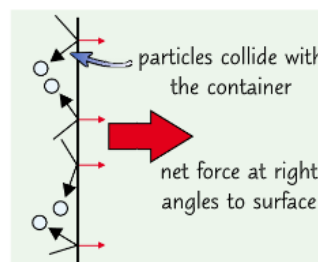
# Physics Topic 3: Particles

(Paper 1)

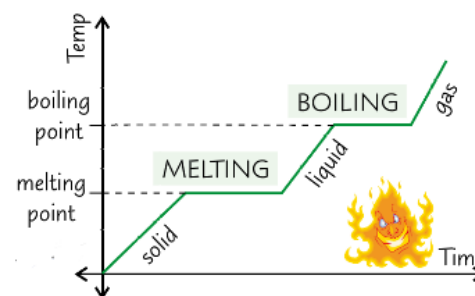
|    |  |   |    |  |  |
|----|--|---|----|--|--|
| 1  | <b>Particle</b>  | <ul style="list-style-type: none"> <li>all matter is made up of tiny particles</li> <li>there are three states of matter: solid, liquid, and gas</li> </ul>                       | 13 | <b>Changes to Particles when Substances Condense</b> | <ul style="list-style-type: none"> <li>lose energy</li> <li>become much closer together</li> <li>stay randomly arranged</li> <li>stop moving quickly in all directions, and can only move around each other</li> </ul> |
| 2  | <b>Solid</b><br>  | Particles are arranged in rows and are touching. The particles have strong bonds between them. They vibrate around a fixed position   | 14 | <b>Freezing</b>                                      | Change of state from liquid to solid   |
| 3  | <b>Liquid</b><br> | Particles are randomly arranged and most are touching. The particles have some bonds between them and can move  | 15 | <b>Changes to Particles when Substances Freeze</b>   | <ul style="list-style-type: none"> <li>lose energy</li> <li>stay close together</li> <li>become regularly arranged in rows</li> <li>stop moving around each other, and only vibrate on the spot</li> </ul>             |
| 4  | <b>Gas</b><br>    | Particles are randomly arranged and don't touch. The particles have no bonds between them and move quickly in all directions  | 16 | <b>Gas Pressure</b>                                  | <ul style="list-style-type: none"> <li>particles collide with the sides of a container – creating pressure</li> <li>increases when temperature increases</li> </ul>  |
| 5  | <b>Properties of Solids</b>  | <ul style="list-style-type: none"> <li>fixed shape and cannot flow</li> <li>cannot be compressed (squashed)</li> </ul>  | 17 | <b>Density</b>                                       | <ul style="list-style-type: none"> <li>density = <math>\frac{\text{Mass}}{\text{Volume}}</math></li> <li>density = <math>\text{kg/m}^3</math>, Mass = kg, Volume = <math>\text{m}^3</math></li> </ul>                  |
| 6  | <b>Properties of Liquids</b>   | <ul style="list-style-type: none"> <li>they flow and take the shape of their container</li> <li>they cannot be compressed (squashed)</li> </ul>                                   | 18 | <b>High Density</b>                                  | Particles tightly packed, e.g. solids  |
| 7  | <b>Properties of Gases</b>   | <ul style="list-style-type: none"> <li>they flow and completely fill their container</li> <li>they can be compressed (squashed)</li> </ul>  | 19 | <b>Low Density</b>                                   | <ul style="list-style-type: none"> <li>particles loosely packed, e.g. gases</li> <li>could be compressed to become more dense</li> </ul>   |
| 8  | <b>Melting</b>   | Change of state from solid to liquid  | 20 | <b>Internal Energy</b>                               | Total energy stored by particles in a system   |
| 9  | <b>Changes to Particles when Substances Melt</b>   | <ul style="list-style-type: none"> <li>gain energy</li> <li>stay close together</li> <li>arrangement becomes random</li> <li>start to move around each other</li> </ul>           | 21 | <b>Latent Heat</b>                                   | <ul style="list-style-type: none"> <li>energy being used for breaking bonds between particles, so that it can change state</li> <li>this energy doesn't raise the temperature</li> </ul>                               |
| 10 | <b>Evaporation</b>   | Change of state from liquid to gas  | 22 | <b>Specific Latent Heat of Fusion</b>                | Energy needed to change 1kg of a solid into a liquid without changing its temperature  |
| 11 | <b>Changes to Particles when Substances Evaporate</b>  | <ul style="list-style-type: none"> <li>gain energy</li> <li>become much further apart</li> <li>stay randomly arranged</li> <li>start to move quickly in all directions</li> </ul> |    |  |  |
| 12 | <b>Condensation</b>  | Change of state from gas to liquid  |    |  |  |

|    |                                      |  |
|----|--------------------------------------|--|
| 23 | <b>Density of a Regular Solid</b>    | <ul style="list-style-type: none"> <li>measure the sides using a ruler and the mass using scales</li> <li>find volume of the solid using the mathematical formula (e.g. length x width x height for a cuboid)</li> <li>use the density equation to work out density</li> </ul> |
| 24 | <b>Density of an Irregular Solid</b> | <ul style="list-style-type: none"> <li>use scales to find the mass</li> <li>put the solid in a eureka can full of water and measure the volume displaced using a measuring cylinder</li> <li>use the density equation to work out density</li> </ul>                           |
| 25 | <b>Density of a Liquid</b>           | <ul style="list-style-type: none"> <li>use scales to find the mass</li> <li>use a measuring cylinder to find the volume</li> <li>use the density equation to work out density</li> </ul>   |

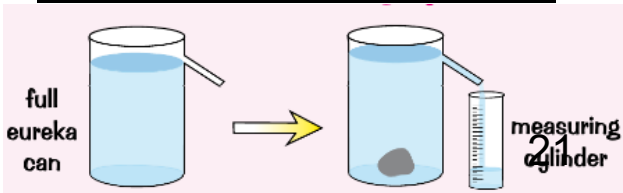
## How Gas Particles Create Pressure:



## Temperature Remains the Same During a Change of State:



## Finding the Volume of an Irregular Solid:



# Year 9 Spanish – Work and Relationships

## 1) ¿En qué trabajan tus padres? *What do your parents work as?*

| Mi madre trabaja como... | My mum works as... |
|--------------------------|--------------------|
| Cocinero                 | Chef               |
| Enfermero                | Nurse              |
| Azafata                  | Air hostess        |
| Periodista               | Journalist         |
| Bombero                  | Firefighter        |
| Abogado                  | Lawyer             |
| Contable                 | Accountant         |
| Albañil                  | Builder            |
| Dependiente              | Shop assistant     |
| Camarero                 | Waiter             |

## 2) Tiene que + infinitive *He / she has to...*

|                               |                     |
|-------------------------------|---------------------|
| Oragnizar reuniones           | Organise meetings   |
| Contestar el teléfono         | Answer the phone    |
| Ayudar a la gente             | Help people         |
| Cuidar a niños                | Look after children |
| Escribir correos electrónicos | Write e-mails       |
| Estar al aire libre           | Be in the open air  |
| Vender productos              | Sell products       |

## 3) Las ventajas y desventajas *The Advantages and Disadvantages*

| Se puede + inf           | You can                |
|--------------------------|------------------------|
| Ganar un buen sueldo     | To earn a good salary  |
| Trabajar en un equipo    | To work in a team      |
| Trabajar horas flexibles | To work flexible hours |
| Ayudar a otras personas  | To help other people   |
| Es un trabajo duro       | It's a hard job        |
| Hay variedad             | There is variety       |

| 4) ¿Tienes un trabajo a tiempo parcial? <i>Do you have a part-time job?</i> |                            | 7) Relaciones con la familia                             | <i>Relationships with Family</i> |
|---|----------------------------|--|----------------------------------|
| Planco la ropa  | I iron the clothes         | Me llevo bien con  | I get on well with               |
| Paso la aspiradora  | I Hoover                   | Me enfado con  | I get angry with                 |
| Hago de canguro   | I babysit                  | Me peleo con   | I fight with                     |
| Trabajo de cajero   | I work as a cashier        | Me relaciono bien con                                    | I get on well with               |
| Cocino y lavo los platos  | I cook and wash the dishes | Discuto con  | I argue with                     |
| Pongo y quito la mesa   | I set and clear the table  | Tenemos mucho en común                                   | We have a lot in common          |
| Lo hago los sábados   | I do it on Saturdays       | Pasamos tiempo juntos                                    | We spend time together           |
| Gano... a la hora/ a la semana  | I earn... an hour / a week | Me critica   | He / she criticises me           |
| 5) ¿Cómo eres? <i>What are you like?</i>                                    |                            | Me insulta   | He / she insults me              |
| Amable  | Kind                       | 8) Los planes para el futuro <i>Plans for the Future</i> |                                  |
| Simpático(a) / antipático(a)  | Nice / unpleasant          | Casarse  | To get married                   |
| Alegre  | Cheerful                   | El matrimonio  | Marriage                         |
| Cariñoso(a)   | Affectionate               | Una boda   | A wedding                        |
| Comprensivo(a)  | Understanding              | Una pareja   | A partner / couple               |
| Tacaño(a)   | Mean                       | Tener hijos  | To have children                 |
| Egoísta   | Selfish                    | 9) Ser (DOCTOR) <i>To Be</i>                             |                                  |
| Molesto(a)  | Annoying                   | Soy  | I am                             |
| Vago(a) / perezoso(a)   | Lazy                       | Eres   | You are                          |
| Travieso(a)   | Naughty                    | Es   | He / she / it is                 |
| Educado(a)  | Polite                     | Somos  | We are                           |
| Leal  | Loyal                      | Sois   | You all are                      |
| Fuerte  | Strong                     | Son  | They are                         |
| Trabajador(a)   | Hardworking                | 10) Estar (PLACE) <i>To Be</i>                           |                                  |
| 6) Cuantificadores <i>Quantifiers</i>                                       |                            | Estoy  | I am                             |
| Un poco   | A little                   | Estás  | You are                          |
| Bastante  | Quite                      | Está   | He / she / it is                 |
| Muy   | Very                       | Estamos  | We are                           |
| Demasiado   | Too / too much             | Estáis   | You all are                      |
|   |                            | Están  | They are                         |