|  | Vocabulary: |  |
| :---: | :---: | :---: |
| 1 | The Formal Elements of Art | The formal elements of art are used to make a piece of artwork. The art elements are line, tone, texture, shape, pattern and colour. They are often used together, and how they are organised in a piece of art determines what the finished piece will look like. |
| 2 | line | A line is a mark or link between two points. |
| 3 | mark | Mark making describes the different lines, dots, marks, patterns and textures to produce a work of art. Artists use gesture to express their feeling and emotions in response to something seen or something felt . |
| 4 | tone | Tone refers to the light and dark values of an object when drawing. There are three different types of tone: shadows, mid tones and high lights. Value in art is essentially how light or dark something is on a scale and refers to tone. |
| 5 | texture | The texture stimulates two different senses: sight and touch. |
| 6 | shape | Shape is a flat, enclosed area such as a square or triangle. |
| 7 | form | A form can refer to a three-dimensional composition or object. |




## KEY VOCABULARY

| 1 | Bitmap | Bitmap graphics are made up of pixels. Each pixel is stored <br> on the computer as a series of 1 s and Os. When you take a <br> photo with your smart phone it stores the digital image as a <br> bitmap. | 2 | Vector | Vector graphics do not have any pixels. Instead they are made up <br> of lines and shapes. When a vector is enlarged the lines and <br> shapes are <br> redrawn; making them great for resizing. |
| :--- | :--- | :--- | :--- | :--- | :--- |

## FILES TYPES

| 3 | JPG | A system used to express numbers |
| :--- | :--- | :--- |
| 4 | PNG | Bitmap format that does not <br> compress digital images (bigger <br> file size than JPG). Supports <br> transparent background. |
| $\mathbf{5}$ | GIF | Bitmap format that compresses <br> digital images. Supports <br> transparent background, <br> animation and web safe colours |
| $\mathbf{6}$ | TIFF | Bitmap format that does not <br> compress digital images (file <br> sizes tend to be bigger). Great <br> for printing good quality images. |
| 7 | SVG | Vector format; not widely <br> supported. SWF files can be <br> viewed using a web browser, <br> such as Internet Explorer. |

## EDITING TOOLS

ZOOM IN/OUT
Allows you to enlarge an area
of the graphic (zoom in) to see
it more clearly. Zoom out to

see the whole graphic. | CROP |
| :--- |
| Allows you to chop off parts |
| of an image you don't want |
| to see. This will also change |
| the dimensions of the image. |
| Allows you to separate parts |
| of a graphic into different |
| layers, making it much easier |
| to edit the graphic. |

## BRIGHTNESS/CONTRAST

Brightness will
lighten/darken
the image. Contrast makes the lights lighter and darks darker.

## ROTATE

Allows you to turn your Images
clockwise/anticlockwise by a certain degrees.

## DESATURATE

Desaturation turns colour photos black \& white. Try 'colour splash' to
enhance a
desaturated photo.

## FILTERS

You can apply different filters to your photo, such as Mosaic Tiles, Stained Glass and Chalk \& Charcoal.

Mi vida-Year 8-A Comer

|  | Key Vocabulary / grammar |
| :--- | :--- |
| 1 | 1. Key verbs |
| Present | Past |



2 magdalenas - cupcakes pollo - chicke carne - meat avocado
leche - milk
té - tea
tostadas - toast pescado - fish un aguacate - an
vegetables galletas - biscuits plátanos - bananas queso - cheese limones - lemons jamón - ham chorizo - spicy sausage
pan - bread uvas - grapes lechuga - lettuce spicy sausage zanahorias -
bocadillo - sandwithater
bocadillo - sandwich manzanas - apples el marisco - seafood huevos - egg arroz - rice yogur - yoghurt patatas fritas - chips/crisps
cola-cao - chocolate mil
zumo de naranja - orange juice
La ensalada mixta - mixed salad
os huevos fritos - fried eggs
as gambas - prawns
El pan-bread
Las chuletas de cerdo - pork chops
El filete - steak
La tortilla española - Spanish omelette El helado de chocolate/vainilla/fresa chocolate/vanilla/strawberry ice cream
a tarta de queso - cheesecake
Quesadillas - toasted cheese tortillas
Un pimiento rojo/verde - a red/green pepper

$3 \quad$| $i Q$ |
| :--- |
| $i Q$ |

¿Que va a tomar usted? - What are you going to have? (singular)
¿Qué van a tomar ustedes? - What are you lot going to have? (plural)
¿Y de segundo? - And for main course?
¿Para beber? - To drink?
¿Algo más? - Anything else?
Voy a tomar... - I'll have
De primer plato - as a starter
De segundo plato - for main course
De postre - for dessert
Tengo sed - I'm thirsty
Tengo hambre - I'm hungry
Nada más - nothing else
La cuenta, por favor - the bill, please

## Let's show off

4 Lo que más me gusta es... - the thing I like the most is.
Lo que menos me gusta es... - the thing I like the least is... Siempre me ha gustado comer/beber - l've always liked eating/drinking...
Acabo de ir a un restaurante
chino/indio/italiano... - I have just been to a Chinese/Indian/Italian restaurant.

## Camarero: " ¿Y de segundo?

 de vainilla."Camarero: "¿Para beber?"
Cliente: "Quiero agua."
6. Parallel Text:

| 1 | Generalmente desayuno cereales 0 tostadas | Generally I eat toast or cereal for breakfast |
| :---: | :---: | :---: |
| 2 | y bebo agua | and I drink water |
| 3 | pero ayer tomé huevos. | but yesterday I had eggs. |
| 4 | ¡Qué delicioso! | How delicious! |
| 5 | Siempre ceno patatas con carne y verduras | I always eat potatoes with meat and veg for tea |
| 6 | sin embargo acabo de ir a un restaurante chino | however l've just been to a Chinese restaurant |
| 7 | donde comí fideos con pollo. | where I ate noodles with chicken. |
| 8 | De postre tomé un helado de chocolate | For dessert, I had chocolate ice cream |
| 9 | porque siempre me ha gustado comer helado. | because I've always liked eating ice cream. |
| 10 | Además, bebí zumo de naranja. | Moreover, I drank orange juice. |
| 11 | En el futuro voy a intentar | In the future l'm going to try |
| 12 | comer más fruta y verduras | To eat more fruit and veg |
| 13 | ya que son más sanas. | because they're healthier. |

## Restaurant dialogue

## nar usted?'

Camarero: "Hola. ¿Qué va a tomar usted?
Cliente: "De primer plato quiero ensalada mixta."

Cliente: "De segundo plato voy a tomar pollo con pimientos y arroz. De postre quiero helado

Camarero: "Muy bien. ¿Algo más?"
Cliente: "Nada más, gracias."

Year 8 Drama Spring Term Knowledge Organiser


Year 8 Animal Farm Half Term 2 Knowledge Organiser

| Key Vocabulary: |  |  |
| :---: | :---: | :---: |
| 1 | Allegory | A story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one. |
| 2 | Revolution | The usually violent attempt by many people to end the rule of one government and start a new one/a sudden or extreme change. |
| 3 | Exploitation | The action or fact of treating someone unfairly in order to benefit from their work. |
| 4 | Manipulation | The action of influencing or controlling someone or something to your advantage. |
| 5 | Propaganda | The spreading of ideas, information, or rumour for the purpose of helping or injuring an institution, a cause, or a person. |
| 6 | Totalitarianism | A government that has complete and utter control over society. |
| 7 | Dictatorship | A form of government in which one person or a small group possesses absolute power. |
| 8 | Oppression | Prolonged cruel or unjust treatment or exercise of authority. |
| 9 | Capitalism | An economic and political system in which a country's trade and industry are controlled by private owners for profit, rather than by the state. |

YEAR 8 HALF TERM 3 - EXPLORING BIOMES

5. Difierent types of management

## International agreements and debt for nature swaps, selective logging, afforestation.

YEAR 8 HALF TERM 4 - EXPLORING CITIES


[^0] school.

Urban sprawl is an issue as the city continues to grow rapidly, encroaching on surrounding rural (countryside) areas. Air pollution can be a problem, particularly from traffic congestion in the city centre and from industrial zones.

## 9. Opportunities for Rio de Janeiro

To reduce congestion, Rio de Janeiro has invested in public transport. The city has a series of BRT (bus rapid transit) corridors.

The Schools of Tomorrow programme has helped to improve the quality of education across the city. The programme targeted 155 schools in Rio's most violent neighbourhoods.


## Year 8 History Spring Term Knowledge Organiser

| Key Vocabulary: |  |  |
| :---: | :---: | :---: |
| 1 |  | a period of rapid change in science and technology. Britain transformed from a rural to an urban society. |
| 2 | Reform | to change and make something better. |
| 3 | Protest | a statement or action to express disapproval or objection to something. |
| 4 | Revolution | to cause rapid and sudden change. |
| 5 | Martyr | someone who has killed for their religious or other beliefs |
| 6 | Democracy | a political system which is rule of the people. |
| 7 | election | an organized choice by people for MPs to represent them in parliament. |
| 8 | Chartism | - a reform movement of 1837-48, who called for universal suffrage for men, equal electoral districts, voting by secret ballot, abolition of property qualifications for MPs, and annual general elections. |

## What were people rights in 1800 and who tried to improve these rights?

9 What were people's rights in 1800?
a. No man under 21 can vote ... no women at all.
b. Only men who own property worth 40 shillings a year could vote- $5 \%$ of population.
c. Voting is not in secret ... you have to announce who you're voting for. d. Each man standing for elections is called a candidate. The candidate with the most votes becomes an MP. They are not paid!
e. As an MP you will probably belong to one of the two main political parties.
f. The political party which has the most MPs forms the government and its leader becomes Prime Minister. The government make the laws. g. Huge new towns like Manchester and Birmingham had no MPs. h. Workers cannot form unions or groups to support them in their efforts to get better pay and conditions.

## 10 What was the Peterloo Massacre? <br> 16 August 1819 - up to 60,000 people attended a speech by Henry Hunt they were angry about working conditions and that Manchester had no

 MP and only the rich could vote. Soldiers called in to stop the protest and18 people died and 650 injured. Initially the impact was negative as henry Hunt was arrested and radical newspapers were shut down and meetings of over 50 people were made illegal. However in the long run it inspired the 1832 Great Reform Act and led to the establishment of the Manchester Guardian.
## 11 What was the $\mathbf{1 8 3 2}$ Great Reform Act?

the Reform Act of 1832 increased the electorate from around 366,000 to 650,000 , which was about 18 per cent of the total adult-male population in England and Wales. The vast majority of the working classes, as well as women, were still excluded from voting and the Act failed to introduce a secret ballot.

## 12. Who were the Tolpuddle Martyrs?

The Tolpuddle Martyrs were workers were agricultural workers who were convicted in 1834 of swearing an illegal oath and sentence to transportation to Australia. The public protested with the Copenhagen Field Demonstration where 35,000 to 100,000 people attended and then sent a petition to Parliament. This resulted in the government pardoning the Tolpuddle Martyrs and led to the establishment of trade unions

What were people rights in 1800 and who tried to improve these rights?

## 13

## Who were the Chartists?

The Chartists were a reform movement of 1837-48 who sent petitions to parliament with many signatures demanding six things.

1. Vote for all men over 21.
2. Secret ballot.
3. No property qualification for MPs.
4. Payment of MPs.
5. Equal constituencies.
6. Annual elections.

While none of these changes happened when the Chartists were campaigning, eventually all but one of their aims were achieved.

- 1858- the property qualification was abolished.
- The vote was extended to more men in $\mathbf{1 8 6 7}$ \& 1884.
- In 1918 all men over 21 and many women over 30 could vote.
- Secret ballot introduced in 1872.
- In 1885 electoral districts = equal.
- 1911 MPs received a wage


## 14 What are people's rights in the $\mathbf{2 1}^{\text {st }}$ century?

a. Men and women can vote - be 18 or over on the day of the election
b. elections every 5 years and usually the first Thursday in May
c. Voting is in secret ... you will cast your vote in private and then place in the box folded. You can also vote by post.
d. Each person standing for elections is called a candidate. The candidate with the most votes becomes an MP. They are well paid.
e. There are a variety of different parties to choose from and each has very different ideas - Conservatives, Labour, Lib Dems, Independent Parties.
f. The political party which has the most MPs forms the government and its leader becomes Prime Minister. The government make the laws.
g. The UK has 650 parliamentary constituencies each providing 1 MP. Every person in the country is represented by an MP
h. People have the right to join a trade union and take part in variety of union activities such as striking on order to achieve better pay and conditions.

## Key Vocabulary:

Form is the shape, visual appearance, or configuration of an object.
In other words - how a product looks.
An activity that is natural to or the purpose of a person or thing. In other words - how a produce works.
The condition of a system in which all competing influences are balanced.
There are three types of equilibrium: stable, unstable, and neutral.
A design brief is a document for a design project developed by a person or team in consultation with the client/customer. They outline the deliverables and scope of the project; function and aesthetics, timing, budget, etc.
It is a list of criteria that the product needs to meet if it is to be successful.

Bottle Balance
$\left.\begin{array}{|l|l|l|}\hline 8 & \text { Coping Saw } & \begin{array}{l}\text { A coping saw is a type of bow saw } \\ \text { used to cut intricate external } \\ \text { shapes and interior cut-outs in } \\ \text { woodworking or carpentry. }\end{array} \\ \hline 9 & \text { File } & \begin{array}{l}\text { File (tool), a tool used to remove } \\ \text { fine amounts of material from a } \\ \text { workpiece. }\end{array} \\ \hline 10 & \text { Glasspaper } & \begin{array}{l}\text { Glasspaper and sandpaper are } \\ \text { names used for a type of coated } \\ \text { abrasive that consists of sheets of } \\ \text { paper or cloth with abrasive } \\ \text { material glued to one face. }\end{array} \\ \hline 11 & \text { Edge Treatment } & \begin{array}{l}\text { The edge treatment can affect } \\ \text { functionality and performance. }\end{array} \\ \hline & \begin{array}{l}\text { Edging is done for safety, } \\ \text { aesthetic, functionality, } \\ \text { cleanliness, improved } \\ \text { dimensional tolerance, and to } \\ \text { prevent chipping. Edging is } \\ \text { generally described as a grinding } \\ \text { process used to remove the sharp } \\ \text { or raw edge of cut wood. }\end{array} \\ \hline 12 & \text { Dimension } & \begin{array}{l}\text { a measurable extent of a } \\ \text { particular kind, such as length, } \\ \text { breadth, depth, or height. }\end{array} \\ \hline 13 & \text { Radius } & \begin{array}{l}\text { Diameter } \\ \text { A diameter of a circle is any } \\ \text { straight line segment that passes } \\ \text { through the centre of the circle } \\ \text { and whose endpoints lie on the } \\ \text { circle. }\end{array} \\ \hline \text { A radius of a circle or sphere is } \\ \text { any of the line segments from its } \\ \text { centre to its perimeter, and in } \\ \text { more modern usage, it is also } \\ \text { their length. The name comes } \\ \text { from the Latin radius, meaning } \\ \text { ray but also the spoke of a chariot } \\ \text { wheel. }\end{array}\right\}$

## $15 \quad$ Bottle Balance - What is it?

A unique device to display or store a bottle!


## 16 Manufacture - What is it?

Use specialist tools techniques processes equipment and machinery precisely and use a wider more complex range of materials components taking into account their properties.


## 15 Isometric Projection

It is a simple type of technical drawing of graphical projection used for producing three-dimensional (3D) images of objects.


## Evaluation

Designers evaluate their finished products to test whether they work well and if design can be corrected or improved. It is important to evaluate your work constantly during the project to see if it is on track and so that improvements can be built-in throughout the design process, not just at the end.

## Year 8 Science Spring Term - Magnetism

## Key Vocabulary:

| 1 | Attract | A pulling force causing objects to move towards each other. |
| :---: | :---: | :---: |
| 2 | Bar magnet | A permanent magnet with a North pole and South pole. |
| 3 | Coil | A length of wire wrapped to form a spiral. |
| 4 | Core | The centre of an object. |
| 5 | Current | The rate of flow of charge. |
| 6 | Electromagnet | A solenoid (coil of wire) with a current flowing through it, containing an iron core. |
| 7 | Field Lines | Imaginary lines running from the North to South pole of a magnet, showing the direction and strength of the magnetic field. |
| 8 | Geographical Pole | Either of the two points on Earth where the axis of rotation meets the surface. |
| 9 | Induced | When something is caused or produced as a result of being near something else. |
| 10 | Magnet | A material that produces a magnetic field, causing other magnetic materials to be attracted or repelled. |
| 11 | Magnetic | Relating to magnetism and magnetic fields. |
| 12 | Magnetic Field | The area around a magnet that is affected by the non-contact magnetic force. |
| 13 | Permanent | Lasting forever or indefinitely. |
| 14 | Repel | A pushing force causing objects to move away from each other. |
| 15 | Solenoid | A coil of wire with a current flowing through it. |
| 16 | Steel | An alloy made up of iron and other substances. |
| 17 | Temporary | Lasting for a limited period of time, not permanent. |

18

## Magnetic Force

- The magnetic force is a non-contact force.
- Only some metals are magnetic: iron, cobalt, nickel and their alloys (such as steel).
19


## Magnets

- Magnets have a north and a south pole.
- The poles of a magnet are where the magnetic force is the strongest.
- Opposite poles attract and like poles repel (remember, opposites attract!)

- Permanent magnets are magnetic all the time. Bar magnets are permanent magnets.
- Magnetic materials, including the Earth, create magnetic fields.
20


## Magnetic Fields

- Magnetic field lines are used to describe the strength and direction of the magnetic field.
- The direction of the magnetic field at any point is given by the direction of the force that would act on another north pole placed at that point
- The arrows on the magnetic field lines always point from the North pole to the South pole.
- Magnetic field lines never cross or touch.
- Field lines flow from the North pole to the South pole.
- Closer field lines demonstrate that the magnetic force is stronger.


## 21 Induced Magnetism

- Induced magnets are materials that become magnetic when placed in a magnetic field and when removed, lose their magnetism.
- When a current flows through a conducting wire a magnetic field is produced around the wire.


21

- The strength of the magnetic field depends on the current through the wire and the distance from the wire
- When a wire is wrapped around into a coil shape, we call it a solenoid.
- Shaping a wire to form a solenoid increases the strength of the magnetic field created by a current through the wire. The magnetic field inside a solenoid is strong.
- The magnetic field around a solenoid has the same pattern as the magnetic field around a permanent bar magnet.


## Electromagnets

- An electromagnet is a solenoid with an iron core. We can make an electromagnet by wrapping a wire around an iron nail and turning on the current.

- The strength of the magnetic field around a solenoid is increased by adding more turns in the coil, adding a magnetic material as a core or increasing current.
23
Earth's Magnetic Field
- The Earth has a magnetic field.

- A compass will point to Earth's North "magnetic" pole which is different to Earth's geographic North pole which is also different to the true North pole of the Earth's magnetic field.
- The Earth behaves like it has a giant bar magnet inside it, because of currents of molten iron and nickel in its core.
- Molten means melted.
- The Earth's magnetic field has the same pattern as a permanent bar magnet.


Year 8 Music Spring Term 2 Knowledge Organiser


## Strophic form

Pop songs are structured by Strophic form - this is the blocks of music that make up the song

Intro - normally an 8 bar pattern where the chords, drums and bass play without the singer - possibly a lead guitar melody

Verse - the story of the song - the facts - you did this, I did this etc

Chorus - the feelings of the singer about the story

Bridge - the overall crux of the story and feelings often the climatic point

Outro - either a repeated chorus fading out or an instrumental ending to bring the song to a close

14

## Playing chords

Chords don't have to be just played in groups of 3 notes all together.

Adele often uses broken chords - the notes of the chord (CEG) played one after the other

Other types of playing chords include: Alberti bass CGEG - notes of the chords played in note 1-5-3 order

Bass and chords - Bass note and other 2 notes together afterwards


## Year 8 Music Spring Term Knowledge Organiser




## Ukulele facts

The word 'ukulele' is the Hawaiian word for 'jumping flea'.

Ukuleles most commonly have four strings but some are paired and have as many as eight strings. The
tuning of a four string ukulele is $G, C, E, A$

Year 8 Science Spring Term Knowledge Organiser - Respiration \& Photosynthesis

| Key Vocabulary: | Requiring oxygen. |  |
| :--- | :--- | :--- |
| $\mathbf{1}$ | Aerobic | Requer |
| $\mathbf{3}$ | Anodomes | Without oxygen. <br> A self-contained and self-sufficient <br> environment. |
| 4 | Breathing | The movement of air into and out of <br> the lungs through the nose and <br> mouth. |
| 5 | Chloroplast | Organelle that contains the green <br> pigment, chlorophyll, which absorbs <br> light energy for photosynthesis |
| $\mathbf{7}$ | Chlorophyll | One among a group of pigments used <br> to convert sunlight energy into <br> chemical energy through the process <br> of photosynthesis. |
| 8 | Fermentation | Epidermis is the outermost layer of <br> (skin or leaves). |
| An anaerobic process in which energy <br> can be released from glucose even if <br> oxygen is not available. |  |  |
| 9 | Glucose | One of a group of carbohydrates <br> known as simple sugars |
| 10 | Lactic acid | An acid present in muscle tissue as a <br> product of anaerobic respiration. |
| 11 | Mitochondria | Part of the cell where energy is <br> released. |
| 12 | Oxygen Debt | The volume of extra oxygen the body <br> needs after exercise to react with the <br> afcumulated lactic acid and remove it <br> from the cells. |
| 14 | Transpiration | Movement of water through a plant <br> from where is absorbed at the roots to <br> where it evaporates from stomata. |
| Microscopic pores found on the <br> epidermis of plants. |  |  |



Year 8 Physical Education Spring Term Knowledge Organiser

Key Vocabulary:

Components of fitness

Muscle

Agonist Antagonist

Training

Physical fitness refers to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living..

The abilities that are necessary for successful sports performance.

The PHYSICAL and SKILL parts that keep the body healthy
a band or bundle of fibrous tissue in a human or animal body that has the ability to contract, producing movement in or maintaining the position of parts of the body:
Agonist works when the muscles relax and antagonist works when muscles contract. Agonists can be called as 'prime movers' as these very much responsible for producing specific movements.
the regular use of exercises to promote bodily fitness and strength.

A tendon is a fibrous connective tissue which attaches muscle to bone.
A ligament is a fibrous connective tissue which attaches bone to bone.


|  | Function | Example in sport |
| :---: | :---: | :---: |
| Deltoid | Abduction of the shoulder (moving the arm outwards and oway from the body) | Outward arm action in a jumping jack |
| Pectoralis major | Adduction of the shoulder (moving the orm towards the body); Shoulder horizontal flexion (moving the orms forwards in front of the body) | Upwards phose of a press up |
| Triceps | Extend the elbow (stroightening the arm) | Shooting in netball |
| Biceps | Flex the elbow (bending the arm) | Drawing a bow in archery |
| External obliques | Trunk rotation (turning the body sidewoys) | Turning the body to breathe to the side when performing front crowl in swimming |
| Latissimus dorsi | Shoulder adduction (moving the orm towords the body); Shoulder horizontal extension | Butterfly stroke in swimming |
| Hip flexors | Hip flexion (moving knee up towards the chest) | Performing a rugby conversion kick |
| Gluteus maximus | Hip extension (moving the leg bockwords) | Pulling back leg before kicking a boll |
| Quadriceps | Extend the knee (stroightening the leg) | Kicking a boll |
| Hamstrings | Flex the knee (bending the leg) | Performing a hamstring curl on a weights mochine |
| Gastrocnemius | Plantor flexion of the ankle (pointing the toes downwords) | Standing on tiptoe to mork a gool shoot in netboll |
| Tibialis anterior | Dorsiflexion of the ankle (bringing the toes up towards the shin) | Foot making contact with a football |


| 9 | Components of fitness |  |
| :--- | :--- | :---: |
| Physical | Skill |  |
| Aerobic Endurance | Agility |  |
| Muscular Endurance | Balance |  |
| Flexibility | Coordination |  |
| Strength | Power |  |
| Speed | Reaction time |  |
|  |  |  |

Body Composition
10

## Methods of training

Continuous - a steady pace, moderate intensity training method used for developing aerobic endurance. Can be running, swimming or cycling

Circuit Training- circuit training involves a series of different activities. Lots of people ca take part in a range of activities with little equipment needed

Interval training - is where periods of exercising are followed by a rest of recovery period at slower speeds. Useful for games players

11 School focus

RESPECT - BE polite and considerate
Shaking hands after the game
RESILIENCE - Positivity
Trying that skill again even though its difficult
ASPIRATION - belief in our self
What can I do to improve my performance

Year 8 Food Technology Spring Term Knowledge Organiser


Year 8 Maths Autumn Term Knowledge Organiser - Addition \& subtraction of fractions

## Key Vocabulary:

1 Denominator
2 Numerator
3 Divide

| 4 | Greater than |
| :--- | :--- |
| 5 | Less than |

6

Mixed number:

| 7 | Improper <br> fractions |
| :---: | :---: |

8

Whole

Equivalent

The number below the line on a fraction. The number represent the total number of parts

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

To separate into parts

To be more than or have more value than another number

To be smaller than or have a smaller value than another number.

A number with an integer and a proper fraction

A fraction where the numerator is greater than the denominator.

A fraction where the numerator is one

An integer or when the numerator is the same value as the denominator.

Something that is essentially the same or equal to something else, but might have a difference in how it is represented.



## 12 Add/Subtract unit fractions

With the same denominator ONLY the numerator is added or subtracted

## 13 Mixed numbers and fractions

An improper fraction has a numerator which is greater than the denominator. For example:

$\frac{7}{5}$
A mixed number is made up of an integer and a proper fraction. For example:
$\mathbf{1} \frac{2}{\mathbf{5}} \begin{aligned} & \text { Mixed number } \\ & \text { Fractions can be }\end{aligned}$ e bigger than a whole
To convert between improper fractions and mixed numbers, we need to look at how many parts make up the whole.

The bar models show $\frac{13}{6}$.
There are 6 parts in the whole.
$13 \div 6=2$ remainder 1
$\frac{13}{6}=2 \frac{1}{6}$
The bar models show $3 \frac{2}{5}$.
There are 5 parts in the whole.

$$
3 \times 5=15
$$

$$
\frac{15}{5}+\frac{2}{5}=\frac{17}{5}
$$

$$
\begin{aligned}
& \frac{1}{12}+\frac{1}{12}-\frac{1}{12} \square \nmid\| \|\| \| \|=\frac{2}{12} \\
& \frac{1}{4}+\frac{1}{4} \stackrel{\text { ค }}{\text { ค }}=\frac{2}{4}
\end{aligned}
$$

14
Adding or Subtracting Fractions
Find the LCM of the denominators to find a common denominator. Use equivalent fractions to change each fraction to the common denominator. Then just add or subtract the numerators and keep the denominator the same

$$
\frac{2}{3}+\frac{4}{5}
$$

Multiples of $3: 3,6,9,12,15$. Multiples of $5: 5,10,15$.
LCM of 3 and $5=15$

$$
\begin{aligned}
& \frac{15}{3}=\frac{10}{15} \\
& \frac{4}{5}=\frac{12}{15}
\end{aligned}
$$

$$
\frac{10}{15}+\frac{12}{15}=\frac{22}{15}=1 \frac{7}{15}
$$

15
Understand and use equivalent fractions.

Equivalent fractions have different numerators and denominators but share the same value.


16 Add and subtract proper fractions and mixed numbers.

Use the bar models to help you work out the calculation.

$$
\begin{aligned}
& 1 \frac{1}{4}+\frac{3}{8}=1 \frac{2}{8}+\frac{3}{8}=1+\frac{5}{8}=1 \frac{5}{8} \\
& 1 \frac{1}{4}+\frac{3}{8}=\frac{5}{4}+\frac{3}{8}=\frac{10}{8}+\frac{3}{8}=\frac{13}{8}=1 \frac{5}{8}
\end{aligned}
$$

17 Use equivalence to add and subtract decimals and fractions

## Example: Convert decimal to equivalent fraction 0.7 to $7 / 10$ then add these fraction together.



## Key Vocabulary:

| 1 | Ratio | Used to compare values; says <br> how much of thing there is, <br> compared to another thing. |
| :--- | :--- | :--- | :--- |
| 2 | Proportion | When two ratios or fractions are <br> equal to each other. |
| $\mathbf{3}$ | Multiplier | The number that we are <br> multiplying by. |
| 4 | Placeholder | Something that holds a place in a <br> number, e.g. zero. |

10 Representing Ratios

Ratios can be represented in many different ways:


## 11

Ratios are represented as numbers with colons in between, for example 3:1.
The order of the numbers in the ratio is always important; this tells us what the information is about.
Most ratios have two parts, but ratios can have more than two parts, for example 2:3:1.

## Solving Problems in the Ratio 1:n

The ratio 1:n means any ratio beginning with 1, followed by any number, for example 1:1, 1:4, 1:200 etc.
n can be any number, including decimals, but for this topic, n will always be an integer (a whole number).

## 13 Dividing Values into Given Ratios

We can use a bar model to help us understand how to divide values into a given ratio.

## Example

Share $£ 56$ in the ratio 2:5.


There are 7 parts altogether, so we can share the $£ 56$ into these 7 parts by doing $56 \div 7=8$.

Now we know that 1 part = $£ 8$, we can work out how much 2 parts are $(2 \times 8=£ 16)$ and how much 5 parts are $(5 \times 8=£ 40)$.

We can check our answer is correct by adding together our amounts and seeing if we get our original value: $16+40=56$, so we are correct.

## 14 Expressing Ratios in Simplest Form

We can simplify ratios by finding factors in all parts of the ratio.

## Example

Simplify the ratio 12:18.
We know the highest factor of both 12 and 18 is 6 , so we can divide both numbers by 6 .
$12 \div 6=2$
$18 \div 6=3$
So, the simplified ratio is $2: 3$.
(Remember, the order is important, this shouldn't change!)
15

## Comparing Ratios and Fractions

We can use representations (like those in section 8) to help us compare ratios and fractions.

Example

|  | Ratio <br> Red : Yellow <br> 2 : 5 |  |  | Fraction |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\frac{2}{7}$ are red |
|  |  |  |  | are yellow |

## $16 \quad$ Understanding $\pi$ as a Ratio

$\pi$ is a number that represents the ratio of the circumference of a circle to the diameter of a circle, so $\pi=\frac{C}{d}$.
This can be rearranged to find the formula for the circumference of a circle: $C=\pi \times d$.
We can substitute values of the diameter into this formula to calculate the circumference of any circle.

## Example

The radius of a circle is 8 m . Find the circumference.
$C=\pi \times 8=25.132 \ldots \mathrm{~m}^{2}$
17 Understanding Gradient as a Ratio
Gradient (or slope) describes how steep a line is.
We can calculate the gradient of a line using the ratio of width : height of a triangle.
Once we make the width equal 1 , the height tells us the gradient of the line.

## Example

Here the width : height ratio is 2:4.
This can be simplified to 1:2.
The width is 1 , and the height is 2 , so the gradient is 2 .


## 14 <br> Dividing an Integer by a Fraction

We can use bar models to understand how to divide an integer by a fraction, e.g. $1 \div \frac{1}{4}=4$. We can link dividing by a fraction with multiplying by an integer to

| 1 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |  | help us understand the relationship between the two. For example: $3 \div \frac{1}{4}=12$ and $3 \times 4=12$.

15 Dividing a Fraction by a Unit Fraction
We can use a fraction wall to help us divide a fraction by a unit fraction. Think about how many unit fractions we would need to make the original fraction. E.g. $\frac{1}{2} \div \frac{1}{16}=8$.
$16 \quad$ Understanding and Using the Reciprocal We need to know that:
$\square$ The reciprocal of a number is always 1 divided by the number.
Division is the same as multiplying by the reciprocal.
A number multiplied by its reciprocal is always 1.
For example: $7 \div \frac{1}{5}=35$ and $7 \times 5=35$.
17 Dividing any Pair of Fractions
Now that we know dividing by a number is the same as multiplying by it's reciprocal, we can apply this to divide any pair of fractions.
For example:
$5 \div \frac{2}{3}=5 \times \frac{3}{2}=\frac{15}{2}=7 \frac{1}{2}$
$\frac{5}{9} \div \frac{2}{3}=\frac{5}{9} \times \frac{3}{2}=\frac{15}{18}=\frac{5}{6}$

## 18 Multiplying and Dividing Improper and Mixed Fractions

When multiplying mixed numbers, we can convert them into improper fractions first before multiplying the numerators and denominators, then simplifying. Another way would be to use a grid method splitting up the mixed number into integers and fractions, e.g. $2 \frac{4}{5} \times 1 \frac{6}{11}$


## 19 Multiplying and Dividing Algebraic Fractions

 Although we are using algebra, multiplying and dividing algebraic fractions follow the same rules as numerical fractions.
## Key Vocabulary:



## 14 Ratio between Similar Shapes

Corresponding lengths on similar shapes are always in the same ratio.

$3 \mathrm{~m}: 6 \mathrm{~m}$
$8 \mathrm{~m}: 16 \mathrm{~m}$
These lengths are in ratio so the rectangles are similar.
10 m

$3 \mathrm{~m}: 5 \mathrm{~m}$
$8 \mathrm{~m}: 10 \mathrm{~m}$
These lengths are not in ratio, so the rectangles are not similar.
15

## Understanding Scale Factors

A scale factor tells us the ratio between corresponding measurements of an actual object and a copy of the object. If the scale factor is bigger than 1 , the copy will be larger. If the scale factor is less than 1 (e.g. $1 / 2$ ), the copy will be smaller.
16
Drawing and Interpreting Scale Diagrams
Scale diagrams (or drawings) are used to represent a smaller or larger object, shape or image.
The scale used will depend on the reduction or enlargement of the object.
Some common scale ratios that are used:
A medium sized wall map of the World (1:30,000,000 which represents 1 cm to 300 km )

- A road map for motorists (1:250,000 which represents 1 cm to 2.5 km )
- An Ordnance survey map for walkers or hikers (1:25,000 which represents 1 cm to 250 m )
- An architects drawing (1:100 which represents 1 cm to 1 m ) 17

Interpreting Maps with Scale Factors
We can use scale factors to interpret maps.

Example
$f$ the scale is $1: 25,000$, this means 1 cm on the map is
$25,000 \mathrm{~cm}$ in real life.

Year 8 Term 4 - ¿Qué hacemos?


| 7. Parallel Text: |  |  |
| :---: | :---: | :---: |
| 1 | Normalmente llevo unos vaqueros azules. | Normally \| wear blue jeans, |
| 2 | una camisetay | a t-shirt and |
| 3 | unas zapatillas de deporte blancas | some white trainers |
| 4 | porque son muy <br> cómodos | because they're very comfy |
| 5 | y prácticos. | and practical. |
| 6 | Sin embargo, acabo de ir a un restaurante | However l've just been to a restaurant |
| 7 | y llevé un vestido rojo | and I wore a red dress |
| 8 | y unas zapatos negros | and some black shoes |
| 9 | ya que son muy elegantes | because they're very smart. |
| 10 | El fin de semana me gustaría | At the weekend I would like |
| 11 | ir a la bolera con mis amigos. | to go bowling with my friends. |
| 12 | Pienso que voy a llevar | I think I'm going to wear |
| 13 | una falda negra con medias | a black skirt with tights |
| 14 | y un jersey azul. | and a blue jumper. |
| 15 | Va a ser muy divertido. | It's going to be really fun. |

Me pongo gomina - I put gel on my hair


[^0]:    Violence can be a barrier to education as in some neighbourhoods it is not always safe for children to travel to

