



Year 7

Knowledge Organiser

Summer Half Term 1

‘Practice of what is taught’

Name:
Tutor:

Work hard. Be kind. Belong.

How to use your Knowledge Organiser

This booklet contains a selection of subject **knowledge organisers** in alphabetical order. Each knowledge organiser has the key information to be learned and **memorised** over the term to help you master your subjects and be successful in lessons. Use this with your homework booklet.

Year 7 subjects Page/s number

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DESIGN & TECHNOLOGY

Design and Technology – Year 7

In Design and Technology there are different areas of study.

These are covered under the Key Constructs. They are:

- **Understanding Materials,**
- **Understanding Product Function**
- **Designing Solutions**
- **Manufacturing and Prototyping**
- **Health and Safety in Design**
- **Evaluation and improvement**

There is also the important overarching knowledge needed about the **Design and Technology Process** and Key Terms such as **ACCESSFAME**.

1. Health & Safety

A Hazard is – Something that can cause you or others harm

A Risk is – The likelihood or severity of the hazard occurring

A Control Measure is – Something that is put in place to stop or reduce the risk of the hazard occurring.

Visit: www.technologystudent.com and click on **Health and Safety** for more information.

2. Health and safety - 5 things do you need to consider when in the work shop to keep you and others safe?

1. Wear goggles
2. Wear an apron
3. Tie long hair back when using equipment
4. Ensure only 1 person uses the machinery at a time
5. Clamp work down when drilling

3. Tools and what they are used for? Visit: www.technologystudent.com and click on **Equipment and Processes** for more information.



Tenon saw for cutting straight lines in wood and plastic



Hole Saw for cutting larger diameter holes than a standard drill bit.



Bench hook for helping to hold wood when sawing.



Steel rule for measuring accurately



Sewing needle for tacking and hand sewing.



Dressmaking or fabric shears for cutting fabric



Forstner bit is a drill bit for flat-bottomed holes in wood.



Jig is a tool for guiding workpieces to ensure consistency.



Coping saw for cutting unusual shapes & curves

4. To help us remember key bits of information for investigating, designing, analyzing & evaluating we use **ACCESS FAME** acronym.

It stands for:

- **Aesthetics**- what it looks like
- **Cost**- cost to make or buy
- **Client Customer Consumer**- who asks for it to be made, who buys it, who uses it?
- **Environment** – where is it made, is it sustainable, is it recyclable?
- **Size** – how big/small is it?
- **Safety** – what potential hazards are there?
- **Function** – what does it do?
- **Anthropometrics** – what human dimensions are needed so it can be used by the majority of people?
- **Materials/Manufacture** – what will it be made of? How will it be made?
- **Ergonomics** – how will it fit the person using it to make it easy to use?

5. Materials: Timber

- A **hardwood** is from a broad-leaved deciduous tree which has a close grain due to its slow growth. The annual growth rings are close together.



E.g. beech, oak (Pictured), walnut, Sycamore, birch, mahogany and teak

- A **soft wood** comes from a coniferous tree that has needles instead of leaves. It does not shed these in winter. It grows fast and the annual growth rings are further apart.



E.g.. cedar, larch, pine (pictured) and redwood

Manufactured boards are industrial made from recycled or waste wood. They are available in large flat sheets and are can be a sustainable resource. They come in different sizes and thicknesses.

MDF: made from tiny fibers /sawdust that is mixed with a formaldehyde-based glue and compressed together. **The surface layer could be a hard wood to make it look better.** This does not have a grain.

Plywood: made from thin layers of wood that is arranged so that each layer is at 90° to each other making it stronger.



The surface layer could be a hard wood to make it look better.

Chipboard: made from small particles of wood that is recycled or waste wood mixed with a formaldehyde-based glue and compressed.

Visit: www.technologystudent.com and click on **Resistant Materials** for more information on wood.

6. Metals

There are two main types of metals, ferrous and non-ferrous. Put simply, **ferrous metals** contain **iron** and **non-ferrous metals do not**.

Non-ferrous metals are rarer, more valuable and resistant to corrosion than ferrous metals. Ferrous and non-ferrous metals can both be **recycled**. Magnetising the iron in ferrous metals can separate ferrous and non-ferrous materials.

Alloys = A metal alloy is a substance that combines more than one metal or mixes a metal with other non-metallic elements.

For example, brass is an alloy of two metals: copper and zinc. Visit: www.technologystudent.com and click on **Resistant Materials** for more information on metals.

	Ferrous Metals	Non- Ferrous Metals
 Magnetic		
 Value		
 Resistance to Rust/Corrosion		
 Weight		
 Recyclable		

7. Types of glues are:

- 1) PVA for wood
- 2) Epoxy Resin for all materials
- 3)Contact adhesive for textiles/carpets and fixing different types of materials together, such as plastic to wood.
- 4) Super glue for all materials
- 5) HOT glue gun for temporary fixing and modelling



8. Plastics:

- **Thermoforming plastics are recyclable and bendy** – They don't resist heat, easily formed into different shapes. They are easy to recycle. (water bottles)
- **Thermosetting plastics are heat resistant**, so they do not change when heat is applied. They are not recyclable.

Visit: www.technologystudent.com and click on **Resistant Materials** for more information on Plastics.

9. Textiles construction

Temporary is by pinning and tacking two or more fabrics together.

Permanent is when they are hand/machine stitched. This can be unpicked but this is time consuming.

10. Properties of Fibres

There are 2 main classifications of Fibres

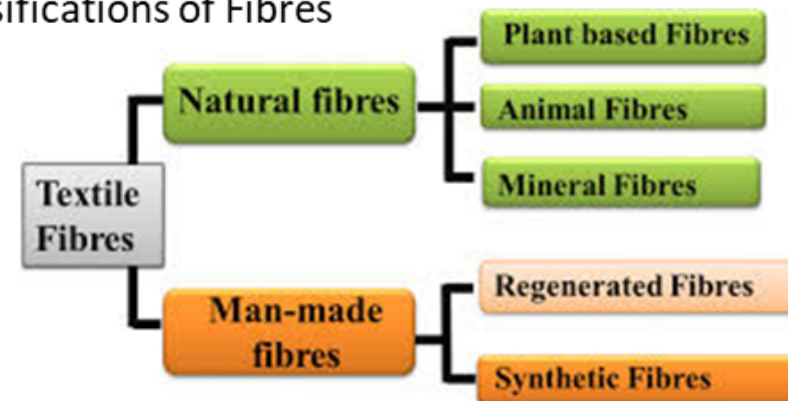
Examples

Natural fibres =

- Plant – flax [linen], cotton [Straw and Bamboo]
- Animal – wool and silk

Man-Made fibres =

- Re-generated – Viscose, Rayon
- Synthetic – Nylon, Polyester and Acrylic



- **Cotton** – absorbent, creases, washable, lightweight – chemical used to bleach it. Needs a lot of water to grow it which damages the environment.
- **Elastane/LYCRA** - flexible and warm. Cannot be recycled.
- **Polyester**: crease resistant, wind proof, can be waterproof, lightweight. Manmade fabric.
- **Wool**: comes from sheep. It has to be shorn from a sheep, spun and then woven. It is an insulator and absorbent to sound and water. It may shrink when washed.

11. The health and safety rules for textiles when using an iron/sewing machine/shears.

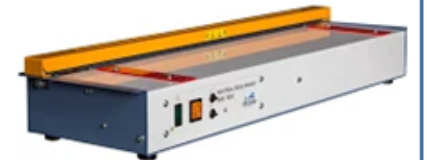
1. Do not run around with sharp tools in your hand.
2. Pass the shears holding the blade end.
3. Remove all pins after tacking when you are about to machine sew.

12. Printing onto Fabric

Mono-printing is a single one-off print with ink onto a surface or fabric.

Screen printing is created when a stencil has been used to lock out certain areas within a design. It can be used a multiple of times in batch production processes.

13. A line bender is used to bend acrylic and high impact polystyrene to a specific angle using a bending jig.



Fixing a design in fabric is when heat is applied to the surface either using an iron or a heat press.



14. Design Process

To design a product there is usually a problem or need. This then generates a design Brief and specification. The specification will include requirements or needs. The designer must follow this when designing a new product. An example of one requirement for a toy car made from mixed materials would be; There must be no friction between the body of the car and any moving part as this would spoil any entertainment for the user.

DRAMA

DRAMA - Commedia Del' Arte

Exploring Component Knowledge of Drama



1. Theatrical Elements	1. Physical Skills	2. Theatrical Skills	2. Key Terms	3. Commedia Characters	3. Commedia Characters
	Body Language: using your body to show the characters emotion Physicality: using your body to show the character Gesture: a movement of part of the body to show meaning. Gait: the way a character <u>walks</u> Exaggeration: Making performance bigger than real life. Posture: the physical alignment of the performers body (how straight they stand) Mannerisms: habitual movements of a character (specific movement links to a specific character e.g. playing with their hair) Pace: the speed at which a character does something Stance: the way a character stands		Exaggeration: to magnify (make bigger, more over the top) a performance skill/s Clocking the audience: a moment when a character breaks the fourth wall and looks at the audience (or interacts with the audience) Improvisation: creating a scene without a script Point of focus: creating a moment where the audience's focus is on a character or point on the stage same time Lazzi: A basic outline for a scene, which is then improvised by the actors Status: Who has the most power or authority.		Zanni: Physicality: Leads with his nose, his legs and arms are forward. He gazes up and looks at everything in wonder. He arches his back when he walks. Pantalone: Physicality: Leads with his head. Walks with a crooked back, with one hand in front of him (ready to steal something) and the other behind his back. He shuffles with his legs bent. He pretends he is fragile with old age and then moves very fast when stealing. He moves his hands a lot. Il Dottore (the Doctor): Physicality: He is extremely fat and moves very slowly. He often holds his belly and runs out of breath very easily. He is usually very drunk. He sticks his belly out and leans back on his feet when walking. Il Capitano (the captain): Physicality: Talks in a loud voice to be the centre of attention. When he gets scared, he screams, he walks with his head held high, nose in the air and shoulders back. He thinks he is very important and leads with his chest. Magnifico: Physicality: Leads with his head, like an eagle. He looks down on everything. He walks and stands with his hands behind his back. He swishes his cloak around when he turns or stops.
4. Characters info			5. History		
- The actors wore half masks - They had to show emotion through their body language as they couldn't use their facial expressions - They had big gestures - The longer the nose on the mask, the more stupid the character.			 Commedia Del' <u>Arte</u> is a type of improvised play. The actors would know scenario's and then improvise. This type of performance originated in Italy in the 16th century. Commedia Del' <u>Arte</u> (roughly translated) means 'comedy of the profession. This type of theatre came after the 'Black Death / Plague'.		



MATHS

YEAR 7 — FRACTIONAL THINKING

Addition and subtraction of fractions

@whisto_maths

What do I need to be able to do?

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

- Convert between mixed numbers and fractions
- Add/Subtract unit fractions (same denominator)
- Add/Subtract fractions (same denominator)
- Add/Subtract fractions from integers
- Use equivalent fractions
- Add/Subtract any fractions
- Add/Subtract improper fractions and mixed numbers
- Use fractions in algebraic contexts

Keywords

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

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

Equivalent: of equal value

Mixed numbers: a number with an integer and a proper fraction

Improper fractions: a fraction with a bigger numerator than denominator

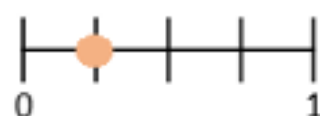
Substitute: replace a variable with a numerical value

Place value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

Representing Fractions

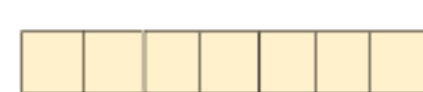


$\frac{1}{4}$
is represented in
all the images



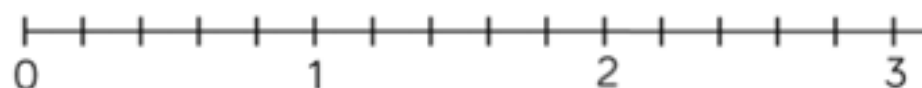
$$1 \div 4$$

Mixed numbers and fractions



$$\frac{7}{5}$$

Improper fraction



$$1\frac{2}{5}$$

Mixed number

In this model 5
parts make up a
whole

Fractions can be
bigger than a whole

Add/Subtract unit fractions

Same denominator

$$\frac{1}{12} + \frac{1}{12} - \frac{1}{12} = \frac{2}{12}$$



$$\frac{1}{4} + \frac{1}{4}$$



$$= \frac{2}{4}$$

With the same denominator ONLY the numerator is added
or subtracted

YEAR 7 — FRACTIONAL THINKING

Addition and subtraction of fractions

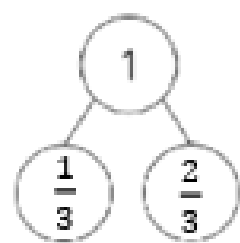
@whisto maths

Add/Subtract fractions

Same denominator

$$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$$


Sequences

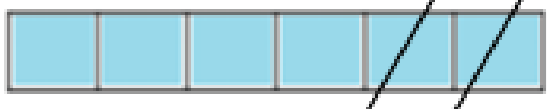


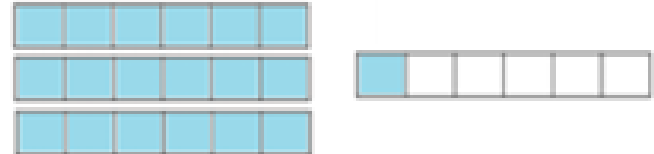
$$\frac{1}{3}, 1, 1\frac{2}{3}, 2\frac{1}{3}, 3, \dots$$

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

Represent this on a number line to help

Add/Subtract from integers

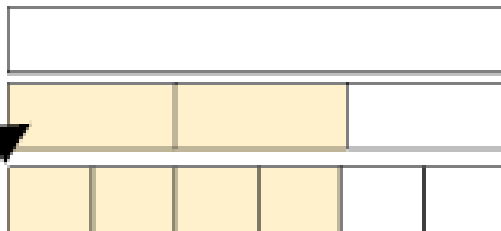
$$1 - \frac{2}{6} = \frac{4}{6}$$


$$3 + \frac{1}{6} = 3\frac{1}{6}$$


The denominator indicates the number of parts a whole is made up of

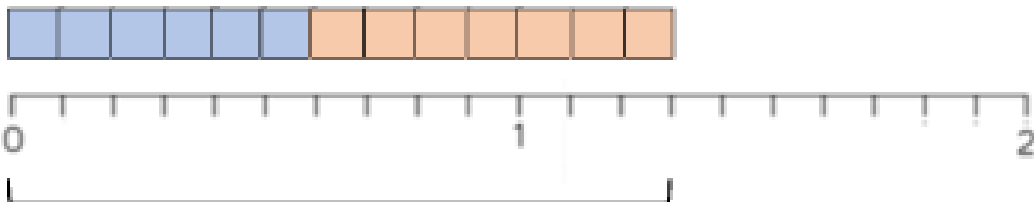
Equivalent fractions

Numerator and denominator have the same multiplier

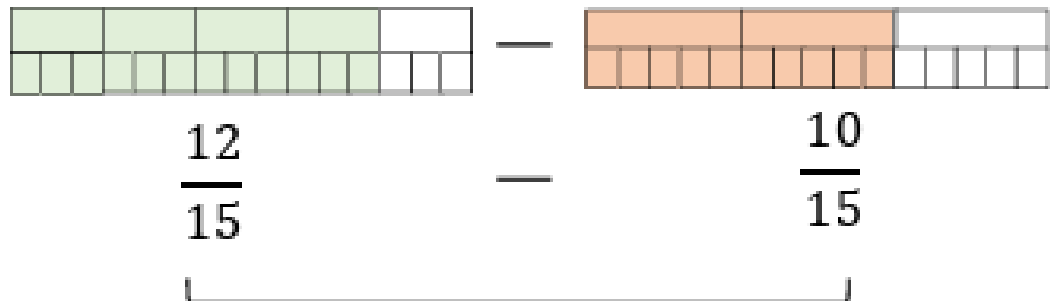
$$\frac{2}{3} = \frac{4}{6}$$


Add/Subtraction fractions (common multiples)

Addition/Subtraction needs a common denominator

$$\frac{3}{5} + \frac{7}{10} = \frac{6}{10} + \frac{7}{10} = \frac{13}{10}$$


Add/Subtraction any fractions

$$\frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$$


Use equivalent fractions to find a common multiple for both denominators

YEAR 7 — LINES AND ANGLES

Constructing, measuring and using geometric notation

@whisto_maths

What do I need to be able to do?

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

- Use letter and labelling conventions
- Draw and measure line segments and angles
- Identify parallel and perpendicular lines
- Recognise types of triangle
- Recognise types of quadrilateral
- Identify polygons
- Construct triangles (SAS, SSS, ASA)
- Draw Pie charts

Keywords

Polygon: A 2D shape made with straight lines

Scalene triangle: a triangle with all different sides and angles

Isosceles triangle: a triangle with two angles the same size and two angles the same size

Right-angled triangle: a triangle with a right angle

Frequency: the number of times a data value occurs

Sector: part of a circle made by two radii touching the centre

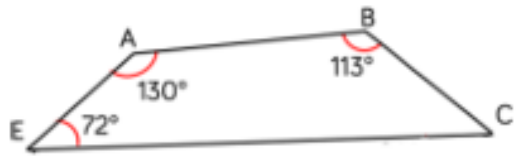
Rotation: turn in a given direction

Protractor: equipment used to measure angles

Compass: equipment used to draw arcs and circles.

Letter and labelling convention

The letter in the middle is the angle
The arc represents the angle

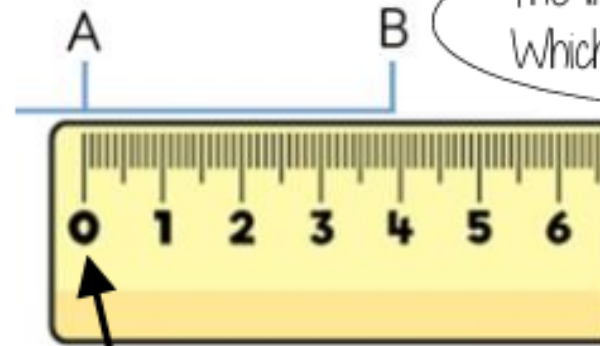


Angle Notation: three letters ABC
This is the angle at B = 113°

Line Notation: two letters EC
The line that joins E to C.

Draw and measure line segments

Conversions $1\text{cm} = 10\text{mm}$, $1\text{m} = 100\text{cm}$



The line segment is 3.9cm
Which is 39mm

AB is a line segment
(part of the line)

Make sure the start of the line is at 0;

Angles as measures of turn

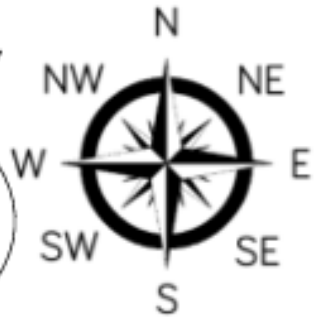


Clockwise



Anti-Clockwise

East to South is a
quarter turn
clockwise



Quarter Turn
 90°
Clockwise



Half Turn
 180°



Three-quarter Turn
 270°
Anti-Clockwise



Full Turn
 360°

Classify angles



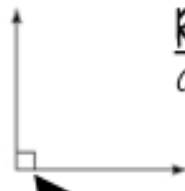
Acute Angles
 $0^\circ < \text{angle} < 90^\circ$



Obtuse
 $90^\circ < \text{angle} < 180^\circ$

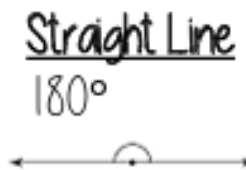


Reflex
 $180^\circ < \text{angle} < 360^\circ$



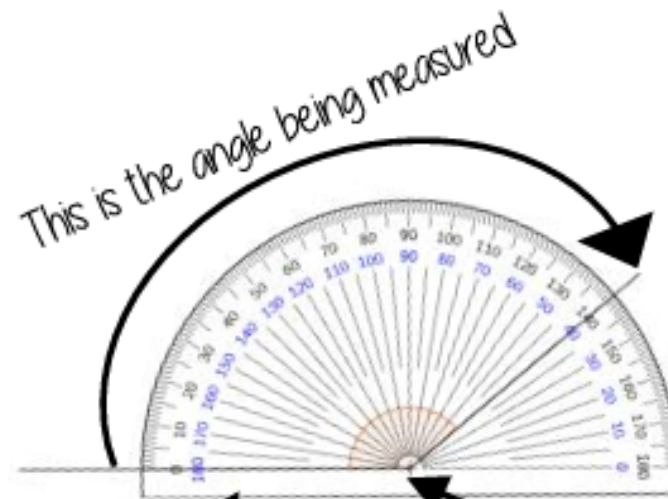
Right Angles
 90°

Right angle
notation



Straight Line
 180°

Measure angles to 180°



The base line follows
the line segment

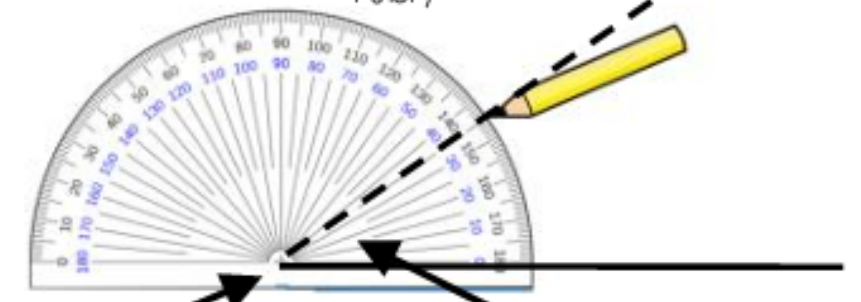
Make sure the cross
is at the point the
two lines meet

Read from 0°
on the base
line.
Remember to
use estimation.
This is an
obtuse angle so
between 90°
and 180°

Draw angles up to 180°

Draw a 35° angle

Make a mark at 35° with a pencil
And join to the angle point (use a
ruler)



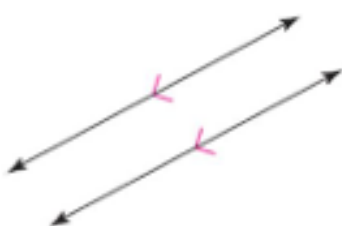
Make sure the cross is at the end
of the line (where you want the
angle)

The angle

Parallel and Perpendicular lines

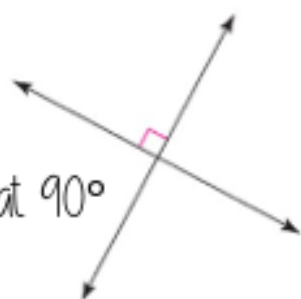
Parallel lines

Straight lines that never meet
(Have the same gradient)



Perpendicular lines

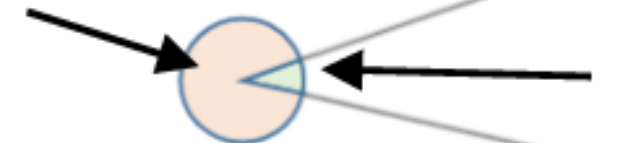
Straight lines that meet at 90°



Angles over 180°

Use your knowledge of straight lines
 180° and angles around a point
 360°

360° - smaller angle = reflex angle



Measure the smaller
angle first (less than
 180°)

Properties of Quadrilaterals



Square

All sides equal size
All angles 90°
Opposite sides are parallel



Parallelogram

Opposite sides are parallel
Opposite angles are equal
Co-interior angles



Rectangle

All angles 90°
Opposite sides are parallel



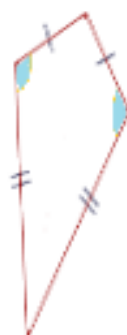
Trapezium

One pair of parallel lines



Rhombus

All sides equal size
Opposite angles are equal



Kite

No parallel lines
Equal lengths on top sides
Equal lengths on bottom
sides
One pair of equal angles

Draw Pie Charts

Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

$$\frac{32}{60}$$

"32 out of 60 people had a dog"



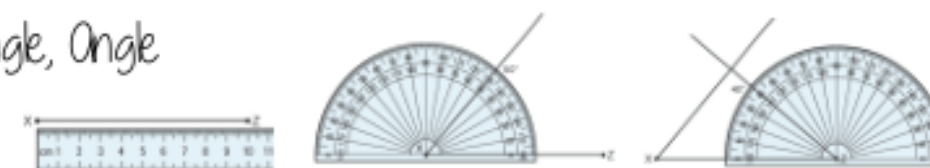
This fraction of the 360 degrees
represents dogs

$$\frac{32}{60} \times 360 = 192^\circ$$

Use a protractor to draw
This is 192°

SAS, SSS, ASA constructions

Side, Angle, Angle



Side, Angle, Side



Side, Side, Side



Polygons

3	- Triangle	5	- Pentagon	8	- Octagon
4	- Quadrilateral	6	- Hexagon	9	- Nonagon
		7	- Heptagon	10	- Decagon

If all the sides and angles
are the same, it is a **regular**
polygon

YEAR 7 — LINES AND ANGLES

@whisto_maths

Geometric reasoning

What do I need to be able to do?

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

- Understand/use the sum of angles at a point
- Understand/use the sum of angles on a straight line
- Understand/use equality of vertically opposite angles
- Know and apply the sum of angles in a triangle
- Know and apply the sum of angles in a quadrilateral

Keywords

Vertically Opposite: angles formed when two or more straight lines cross at a point

Interior Angles: angles inside the shape

Sum: total, add all the interior angles together

Convex Quadrilateral: a four-sided polygon where every interior angle is less than 180°

Concave Quadrilateral: a four-sided polygon where one interior angle exceeds 180°

Polygon: A 2D shape made with straight lines

Scalene triangle: a triangle with all different sides and angles

Isosceles triangle: a triangle with two angles the same size and two angles the same size

Right-angled triangle: a triangle with a right angle

Sum of angles at a point

The sum of angles around a point is 360°

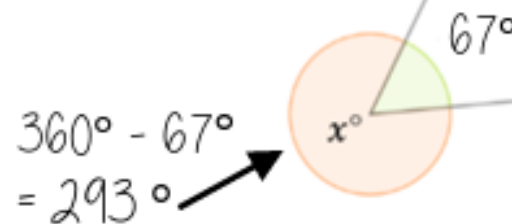


Find angle BOE

$$90^\circ + 33^\circ + 92^\circ = 205^\circ$$

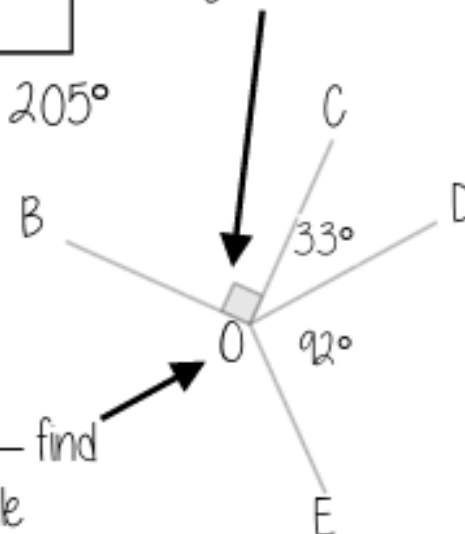
$$360^\circ - 205^\circ$$

$$\text{BOE} = 155^\circ$$



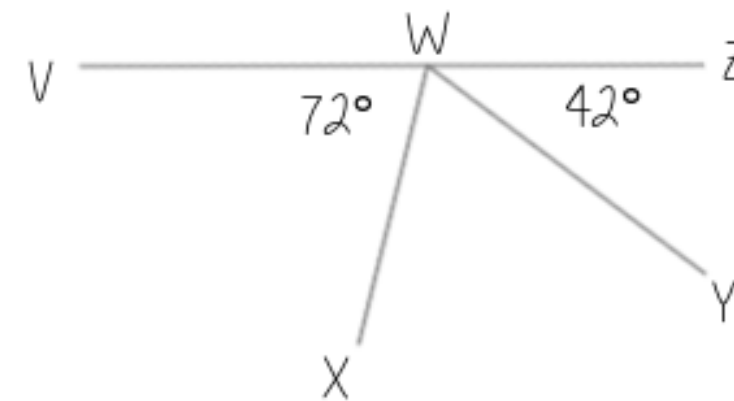
Angle notation — find this missing angle

Angle notation — 90°



Sum of angles on a straight line

Adjacent angles that share a common point on a line add up to 180°

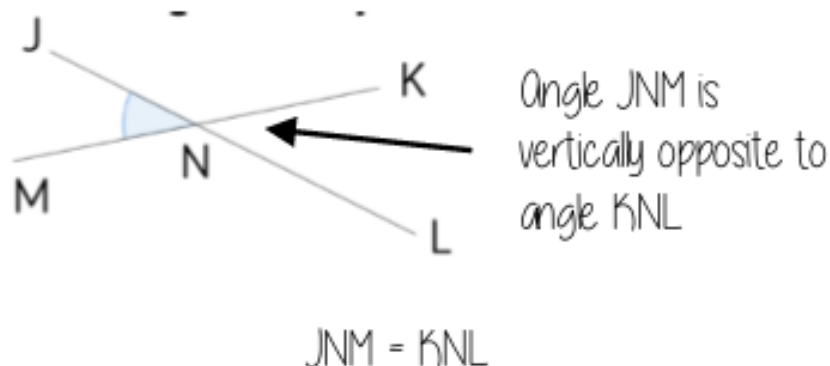


Find angle XWY

$$72^\circ + 42^\circ = 114^\circ$$

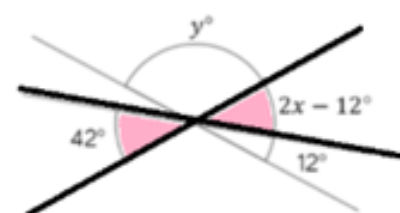
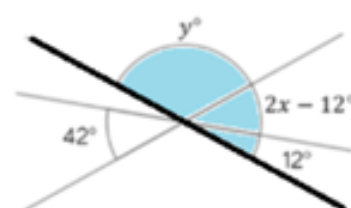
$$180^\circ - 114^\circ = 66^\circ$$

Vertically opposite angles



Vertically opposite angles are the same

Other angle rules still apply.
Look for straight line sums and angles around a point.



Form equations with information from diagrams:

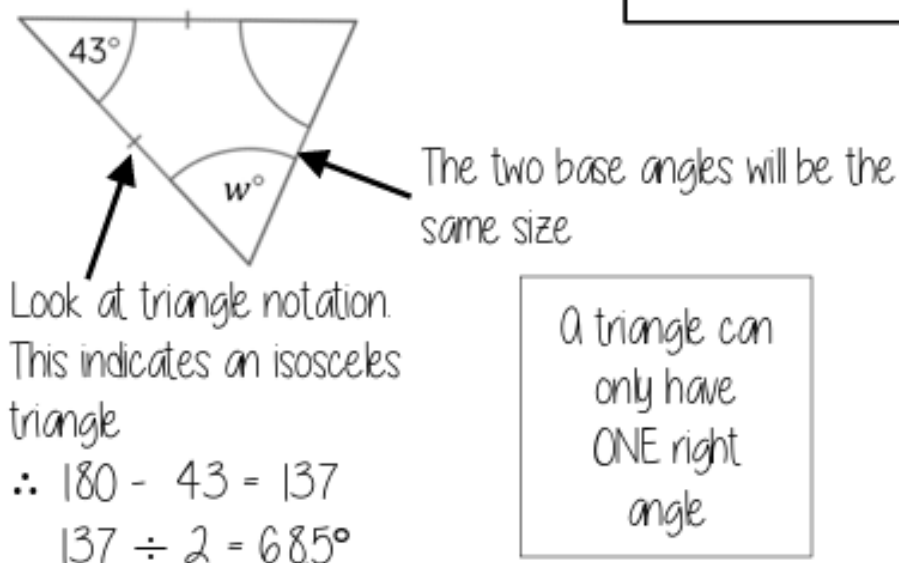
$$2x - 12 = 42$$

$$2x = 54$$

$$x = 27^\circ$$

Sum of angles in triangles

Sum of interior angles in a triangle = 180°



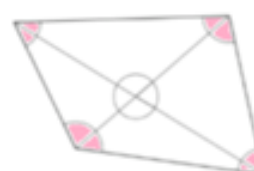
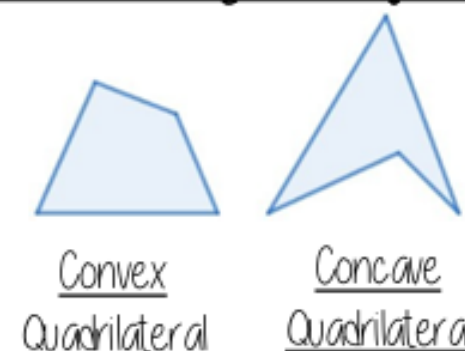
A triangle can only have ONE right angle



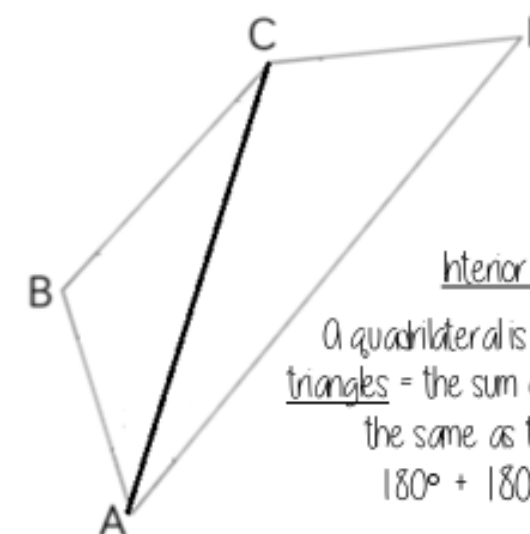
Have a go!
Tearing the corners from triangles forms a straight line which is therefore 180°

Sum of angles in quadrilaterals

Sum of interior angles in a quadrilateral = 360°



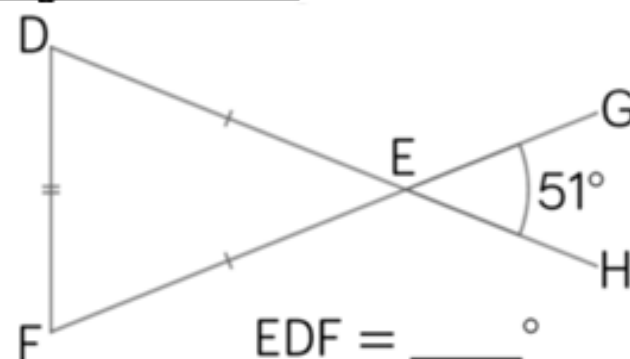
Interior angles are those that make up the perimeter (outline) of the shape



Interior Angles
A quadrilateral is made up of two triangles = the sum of interior angles is the same as two triangles:
 $180^\circ + 180^\circ = 360^\circ$

Angle Problems

Split up the problem into chunks and explain your reasoning at each point using angle notation



1. Angle DEF = 51° because it is a vertically opposite angle DEF = GEH
2. Triangle DEF is isosceles (triangle notation) $\therefore EDF = EFD$ and the sum of interior angles is 180°
 $180^\circ - 51^\circ = 129^\circ$ $129^\circ \div 2 = 64.5^\circ$
3. Angle EDF = 64.5°

Keep working out clear and notes together

YEAR 7 — REASONING WITH NUMBER

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Developing number sense

What do I need to be able to do?

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

- Know and use mental addition/ subtraction
- Know and use mental multiplication/ division
- Know and use mental arithmetic for decimals
- Know and use mental arithmetic for fractions
- Use factors to simplify calculations
- Use estimation to check mental calculations
- Use number facts
- Use algebraic facts

Keywords

Commutative: changing the order of the operations does not change the result

Associative: when you add or multiply you can do so regardless of how the numbers are grouped

Dividend: the number being divided

Divisor: the number we divide by

Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

Equation: a mathematical statement that two things are equal

Quotient: the result of a division

Mental methods for addition/ subtraction

Addition is commutative



$$6 + 3 = 3 + 6$$

The order of addition does not change the result

Subtraction the order has to stay the same

$$360 - 147 = 360 - 100 - 40 - 7$$

- Number lines help for addition and subtraction
- Working in 10's first aids mental addition/ subtraction

Mental methods for multiplication/ division

Multiplication is commutative



$$2 \times 4 = 4 \times 2$$

The order of multiplication does not change the result

Partitioning can help multiplication

$$\begin{aligned} 24 \times 6 &= 20 \times 6 + 4 \times 6 \\ &= 120 + 24 \\ &= 144 \end{aligned}$$

Division is not associative

Chunking the division can help $4000 \div 25$
"How many 25's in 100" then how many chunks of that in 4000.

Mental methods for decimals

Multiplying by a decimal < 1 will make the original value smaller e.g $\times 0.1 = \div 10$

Methods for multiplication 1.2×0.03

$$\begin{aligned} 12 \times 3 &= 36 \\ 1.2 \times 3 &= 3.6 \\ 1.2 \times 0.3 &= 0.36 \\ 1.2 \times 0.03 &= 0.036 \end{aligned}$$

$$\begin{aligned} 12 \times 3 &= 36 \\ \div 10 \downarrow \div 100 \downarrow \div 1000 \downarrow \\ 1.2 \times 0.03 &= 0.036 \end{aligned}$$

Methods for addition $2.3 + 2.4$

$$\begin{aligned} 2 + 2 &= 4 \\ 0.3 + 0.4 &= 0.7 \\ 4 + 0.7 &= 4.7 \end{aligned}$$

Methods for division $1.5 \div 0.05$

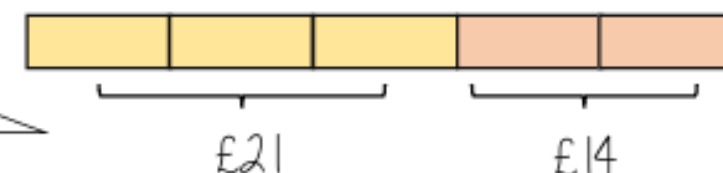
Multiply by powers of 10 until the divisor becomes an integer

$$\begin{aligned} 1.5 \div 0.05 \\ \times 100 \downarrow \times 100 \downarrow \\ 150 \div 5 &= 30 \end{aligned}$$

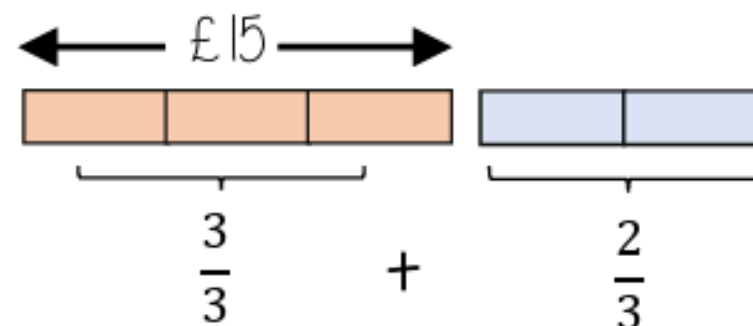
Mental methods for fractions

Use bar models where possible

I've spent $\frac{2}{5}$ of my money I have £21 left



How much did they have to begin with?



What is $\frac{5}{3}$ of £15?

Using factors to simplify calculations

$$30 \times 16$$

$$10 \times 3 \times 4 \times 4$$

$$10 \times 3 \times 2 \times 8$$

$$2 \times 5 \times 3 \times 2 \times 2 \times 2 \times 2$$

$$16 \times 10 \times 3$$

Multiplication is commutative
Factors can be multiplied in any order

Estimation

Estimations are useful — especially when using fractions and decimals to check if your solution is possible.

Most estimations round to 1 significant figure

Estimations are useful — especially when using fractions and decimals to check if your solution is possible.

$$210 + 899 < 1200$$

This is true because even if both numbers were rounded up, they would reach
 $300 + 900$.

The correct estimation would be
 $200 + 900 = 1100$.

Number facts

Use

$$124 \times 5 = 620$$

For multiplication, each value that is multiplied or divided by powers of 10 needs to happen to the result

$$620 \div 124 = 50$$

For division you must consider the impact of the divisor becoming smaller or bigger.
Smaller — the answer will be bigger
(It is being shared into less parts)
Bigger — the answer will be smaller
(It is being shared into more parts)

Algebraic facts

$$2a + 2b = 10$$

Everything $\times 2$

$$0.1a + 0.1b = 0.5$$

Everything $\div 10$

$$a + b = 5$$

Add 2 to the total

$$a + b + 2 = 7$$

The unknown quantity isn't changing but the variables change what is done to give the result.

YEAR 7 — LINES AND ANGLES

@whisto_maths

Geometric reasoning

What do I need to be able to do?

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

- Understand/use the sum of angles at a point
- Understand/use the sum of angles on a straight line
- Understand/use equality of vertically opposite angles
- Know and apply the sum of angles in a triangle
- Know and apply the sum of angles in a quadrilateral

Keywords

Vertically Opposite: angles formed when two or more straight lines cross at a point

Interior Angles: angles inside the shape

Sum: total, add all the interior angles together

Convex Quadrilateral: a four-sided polygon where every interior angle is less than 180°

Concave Quadrilateral: a four-sided polygon where one interior angle exceeds 180°

Polygon: A 2D shape made with straight lines

Scalene triangle: a triangle with all different sides and angles

Isosceles triangle: a triangle with two angles the same size and two angles the same size

Right-angled triangle: a triangle with a right angle

Sum of angles at a point

The sum of angles around a point is 360°

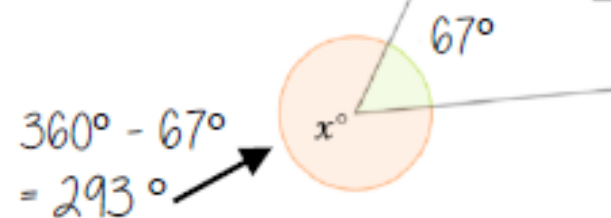


Find angle BOE

$$90^\circ + 33^\circ + 92^\circ = 205^\circ$$

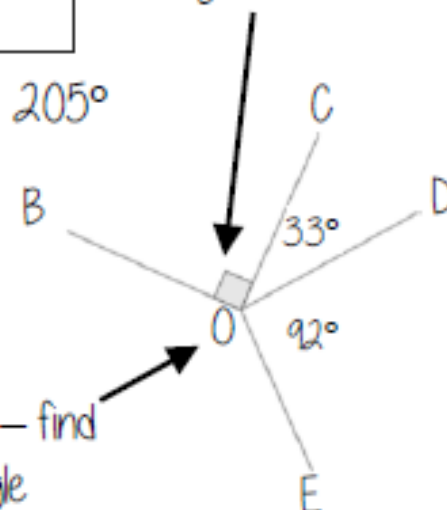
$$360^\circ - 205^\circ$$

$$\text{BOE} = 155^\circ$$



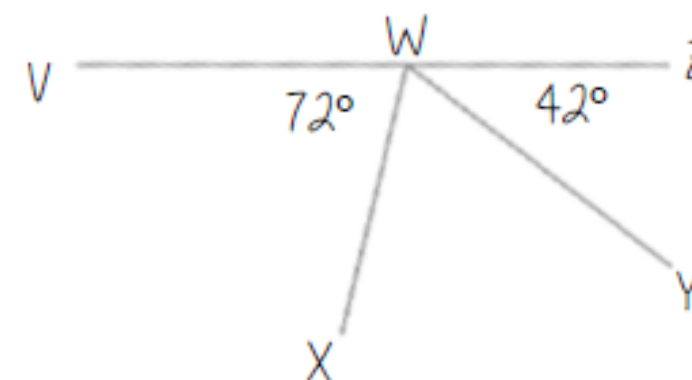
Angle notation — find this missing angle

Angle notation — 90°



Sum of angles on a straight line

Adjacent angles that share a common point on a line add up to 180°

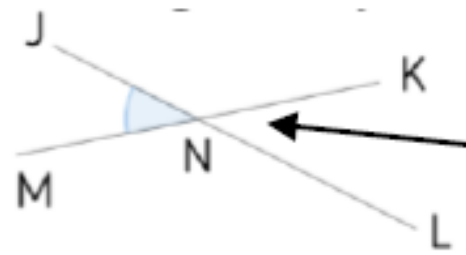


Find angle XWY

$$72^\circ + 42^\circ = 114^\circ$$

$$180^\circ - 114^\circ = 66^\circ$$

Vertically opposite angles

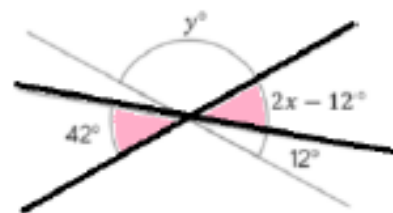
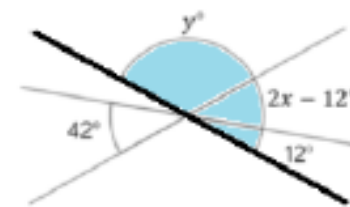


Angle JNM is vertically opposite to angle KNL

$$JNM = KNL$$

Vertically opposite angles are the same

Other angle rules still apply
Look for straight line sums and angles around a point.



Form equations with information from diagrams:

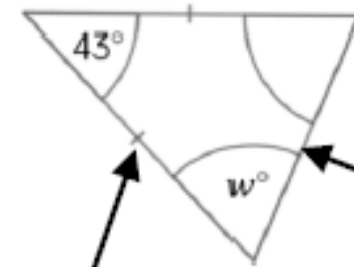
$$2x - 12 = 42$$

$$2x = 54$$

$$x = 27^\circ$$

Sum of angles in triangles

Sum of interior angles in a triangle = 180°



The two base angles will be the same size

Look at triangle notation
This indicates an isosceles triangle

$$\therefore 180 - 43 = 137$$

$$137 \div 2 = 68.5^\circ$$

A triangle can only have ONE right angle



Have a go!

Tearing the corners from triangles forms a straight line which is therefore 180°

Sum of angles in quadrilaterals

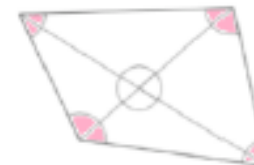
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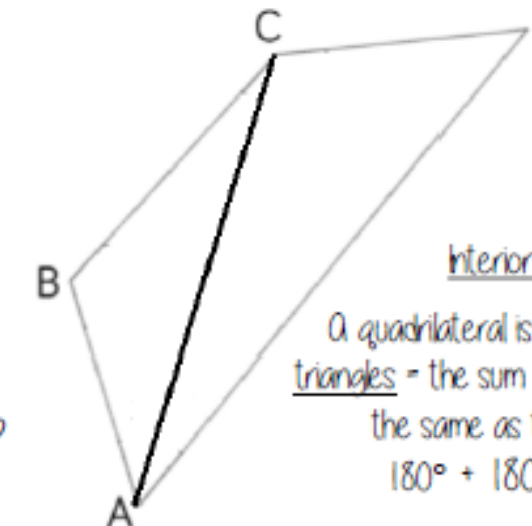
Convex Quadrilateral



Concave Quadrilateral



Interior angles are those that make up the perimeter (outline) of the shape

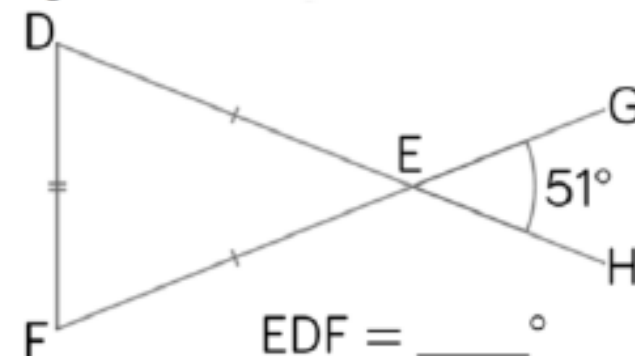


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MUSIC

A. Key Words, Terms and Facts about the Orchestra

Orchestra: An ensemble (group of musicians) of performers on various musical instruments. (no set number of musicians)

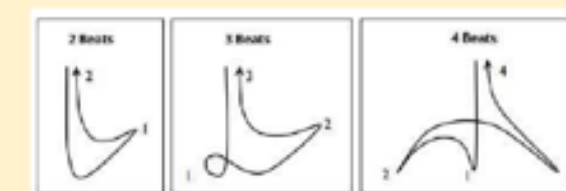
Symphony Orchestra. A large orchestra – between 80 and 100+ performers

Conductor. Someone who leads the orchestra with baton (white 'stick') and hand signals. Sets the tempo and beats time. Brings different instruments 'in and out' when it is their turn to play. Takes charge in rehearsals and is in ultimate control of the Performance, adjusting tempo, dynamics and mood.

Families/Sections – Instruments of the orchestra can be divided into 4 families or sections: Strings, Woodwind, Brass and Percussion

Tuning Up: Before the orchestra rehearse of plays, all instruments need to tune with each other.

B. The Layout of the Orchestra and Conducting Patterns



C. Strings Section/Family

Largest section of the orchestra who sit at the front, directly in front of the conductor. Usually played with a **BOW (ARCO)**, (not the **HARP**) but can be **PLUCKED (PIZZICATO)**.

VIOLINS split into two groups: **1st VIOLINS** (often have the main **MELODY** of the piece of music) and **2nd VIOLINS**.



D. Woodwind Section/Family

Originally (and some still are) made from wood (some now metal and plastic). All are **BLOWN**. **FLUTES**: Flute and Piccolo – air blown over hole.

SINGLE REED (small piece of bamboo in the mouthpiece): Clarinet, Bass Clarinet & Saxophone (not traditionally in the orchestra, but some modern composers have used it) **DOUBLE REED** (two reeds in the mouthpiece): Oboe, Cor Anglais, Bassoon, Double Bassoon.



E. Brass Section/Family

Four types of brass instruments in an orchestra, all made from metal – usually brass and **BLOWN** by the player 'buzzing their lips' into a **MOUTHPIECE** (shown right).

The Trumpet, French Horn and Tuba all have three **VALVES** which, along with altering the players mouth positions, adjust the length of the tubing allowing for different notes to be played. The Trombone has a **SLIDE** which adjusts the length of the tubing. Brass instruments (along with Percussion) have often been used to play **FANFARES**: a short, lively, loud piece of music usually warlike or victorious in character used to mark the arrival of someone important, give a signal e.g., in battles, of the opening of something e.g., a sporting event or ceremony. Fanfares often use notes of the **HARMONIC SERIES** – a limited range of notes played by **BUGLES** (smaller trumpets with no valves) and valveless trumpets.



F. Percussion Section/Family

Tuned Percussion



Untuned Percussion



RELIGION & WORLD VIEWS

Year 7 Sikh Worldview

How and why do Sikhs practice equality and selfless service?



A) What did the Gurus do? 	⇒ There are 10 human Sikh gurus. The first was Nanak who broke away from his Hindu family's beliefs and worshipped just one god—called Waheguru. ⇒ When travelling Nanak was offered two loaves of bread, one loaf poured with milk because it was pure, the other was made by slaves so poured with blood. He used this as a way to demonstrate the importance of honest work. ⇒ When the flowers around his body miraculously remained fresh and his body disappeared after died, this reminded his followers to show equal respect to different beliefs and religions. ⇒ The other 10 Gurus established a Sikh alphabet, healed the sick, built the Golden Temple, started the langar (free kitchen), fought and died for Sikhi.	1. Guru — a teacher of spiritual or religious matters. 2. Gurdwara—Sikh place of worship and community centre 3. Guru Granth Sahib—the eternal, non-human, guru (sacred text)
B) What is sewa? 	⇒ Sewa is considered an act of worship to Waheguru (God) because it makes them less selfish and therefore closer to how God wants them to be. ⇒ There are three types of sewa - Tan (physical - using your body), Man (mental - using your mind/intellect) and Dhan (sacrificing something). ⇒ The langar is a free kitchen/eatery run by Sikhs; everyone is welcome (Sikh or not), everyone sits on the floor (if able), food is vegetarian and everyone helps to maintain it. ⇒ Other ways to perform sewa are: donating money/time/supplies, studying, showing kindness, teaching younger Sikhs.	4. Equality — everyone given equal opportunities and treatment. 5. Sewa — selfless service to humanity. 6. Langar — free kitchen open to all inside a Gurdwara. 7. Khalsa Aid—a global charity run by Sikhs
C) Why join the Khalsa? 	⇒ Gobind Singh founded the Khalsa during a time of great persecution. Joining therefore means you vow to live according to Sikh values and are willing to fight and even die for these values. ⇒ Equality is important in the Khalsa - all Sikh men and women are able to join - all members change their surnames to show their unity - all members of the Khalsa wear the same uniform as each other - the 5Ks. ⇒ The Five Ks are: Kesh (uncut hair), Khanda (comb), Kachera (undergarments), Kara (bracelet) and Kirpan (ceremonial sword). ⇒ All Khalsa Sikhs are expected to perform lots of sewa (service) - Khalsa Aid is a charity they can work/volunteer for and they can help people in need in the UK and abroad.	8. Khalsa — Community of Sikhs who have chosen to join the Sikh brotherhood. 9. Kara—simple bracelet 10. Kangha—small comb 11. Kachera—traditional undergarments 12. Kesh—uncut hair 13. Kirpan—warriors sword 14. Kaur—Sikh female surname meaning 'princess' 15. Singh—Sikh male surname meaning 'lion'