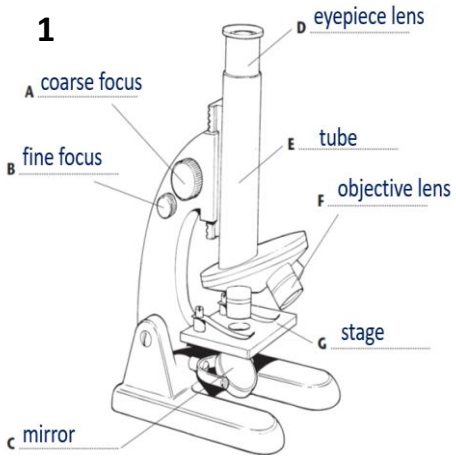
7BC Cells

1



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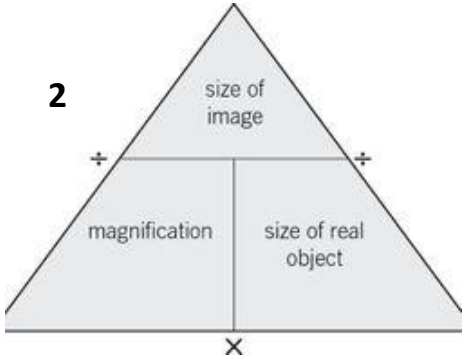
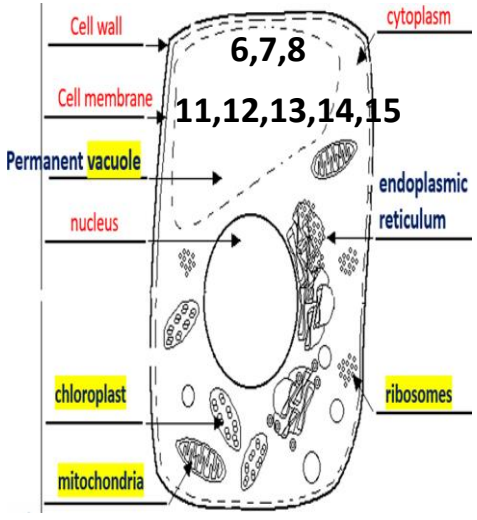




Section 1: Microscopes

1 Microscope	To look at objects in greater detail/ see objects to small to see with the human eye.
2 Overall magnification	= eyepiece lens x objective lens
3 Calculations	Real size = image size ÷ magnification

Section 2: Unicellular Organisms

3 Unicellular organisms	These are single celled organisms i.e. they exist as single cells. E.g. bacteria and yeast.
4 Uses	Break down chemicals in sewage. Ripen cheese. Make yogurt. Make bread rise. Make alcohol.
5 Dangers	Can infect parts of the body and release toxins making us ill. Can also cause tooth decay. Can infect parts of the skin and cause athletes foot.

Section 3: Plant Cells Only

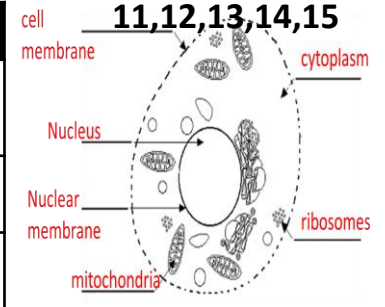
6 Permanent vacuole	Where the cell sap is stored.
7 Chloroplast	Contain chlorophyll, which absorbs light for photosynthesis.
8 Cell wall	Made of a tough substance called cellulose, which supports the cell.

Section 4: Plants as Organisms

9 Xylem	Transport water
10 Phloem	Transport dissolved sugars

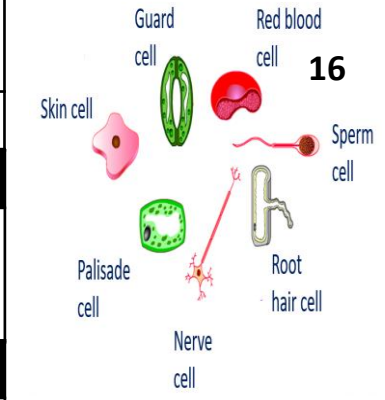
Section 5: Animal & Plant Cells

11 Cell membrane	Controls the movement of substances into and out of the cell.
12 Cytoplasm	Where chemical reactions happen.
13 Nucleus	Carries genetic information and controls what happens inside the cell.
14 Mitochondria	Where energy is released during respiration.
15 Ribosome	Where proteins are made in a cell.



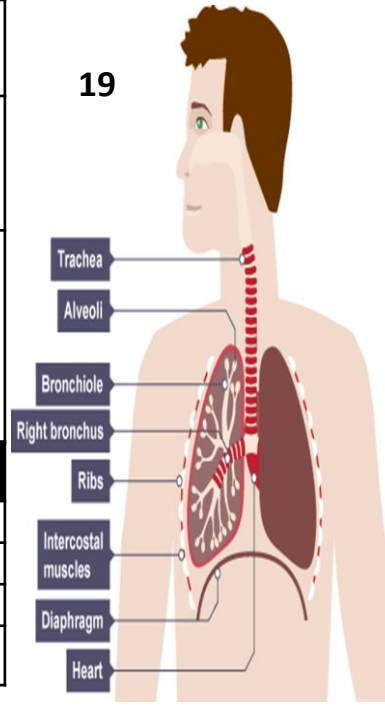
Section 6: Specialised Cells

16 Specialised cells	Have a specific role to perform. They have special features that allow them to do these jobs.



Section 7: Systems

17 Organisation	Cells → Tissue → Organ → Organ System
18 Digestive system	Breaks food molecules down into smaller molecules so that they can diffuse into the bloodstream.
19 Respiratory system	Takes in the oxygen needed for respiration Removes carbon dioxide produced in Respiration. The chemical reaction that happens in all cells to release energy from glucose.

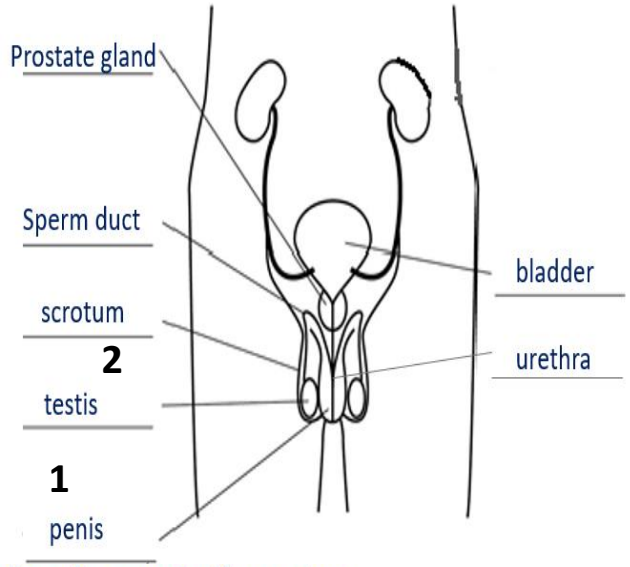


Section 8: Inhaled & Exhaled Air

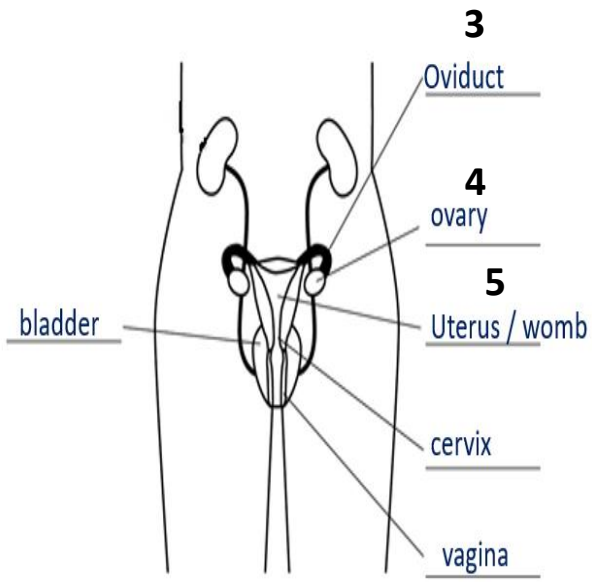
20 Gas	21 Inhaled Air (%)	22 Exhaled Air (%)
Oxygen	21	17
Carbon Dioxide	0.04	4
Nitrogen	78	78

7BR Variation & Reproduction

Male reproductive system



Female reproductive system



Section 1: Male & Female Reproductive System

Structure	Function
1 Penis	Passes urine and semen out of body.
2 Testis	Produce sperm & hormones that affect development of man's body.
3 Oviduct	Tube that connects the ovaries to the uterus. Ovum/ egg cells travel through here
4 Ovary	Contains egg cells from birth, one is released each month.
5 Uterus / Womb	Where the baby develops

Section 2: Birth & Development

6 Umbilical cord	Joins the foetus to the placenta.
7 Placenta	Food and oxygen diffuse from the mother's blood into the blood of the foetus. Carbon dioxide and waste products diffuse from the blood of the foetus to the mother's blood.
8 Amniotic fluid	Protects foetus against knocks and bumps, support baby, allows baby to move.

Section 3: Fertilisation

9 Ovulation	In the female, an egg is released every 28 days. This is called ovulation. The egg travels along the oviduct, towards the uterus.
10 Fertilisation	The fusing of nuclei between sperm and egg.

Section 4: Growth & Puberty

11 Puberty	The reproductive system of a child is not mature. It needs to change as a boy or girl develops into an adult so that the system is fully working.

Section 5: Seed Dispersal

Method	Process
12 Wind	The seed is light and feathery like bristles that will float through the air.
13 Animals	Brightly coloured seed to encourage it to be eaten or the seed will catch onto hair/fur as animals pass.
14 Water	The seed is round to enable it to roll towards water. Buoyant/floats.
15 Explosion	Seeds are contained inside a sealed pod.

Section 6: Variation

16 Species	Animals that are similar enough to be able to breed together to produce fertile offspring.
17 Variation	The differences between organisms of the same species
18 Discrete variation	The values are categories. E.g. Eye colour.
19 Continuous variation	A whole range of values are possible. E.g. Height.

12

14

15

7CC Chemical Reactions

REACTANTS → PRODUCTS

A + B → C + D

(Always on Left) **5,6** (Always on Right)

7 iron + oxygen → iron oxide

9 	flammable
	harmful
	oxidising
	Toxic
	Corrosive
	Dangerous for the environment

Section 1: Chemical and Physical Changes

1 Physical changes	Are easily reversed.
2 Chemical changes	Where new materials are made and cannot be easily reversed.
3 Conservation of mass	No mass is ever lost or gained. The mass of the chemicals put into the reaction is equal to the mass of the chemicals produced.
4 Decomposition	Compounds are broken down into more simpler compounds

Section 2: Oxidation

5 Reactants	During a chemical reaction the substances that react together.
6 Products	Formed from the reactants.
7 Oxidation	Many materials will react with oxygen from the air. The product is an oxide.
8 Combustion	Where a substance reacts rapidly with oxygen and gives off heat.

Section 3: Acids & Alkalis

9 Hazard symbols	Chemicals often have hazard signs on them to warn of dangers to be aware of when using them.
10 Acids & Alkalis	They are chemical opposites, but they can be equally hazardous.
11 Indicator	Aa chemical that will change colour in an acid or an alkali.
12 Neutralisation	The reaction between an acid and an alkali.

Section 4: pH

13 Simple indicators	Tell you whether a solution is acid or alkali; it won't tell you is how strong the acid or alkali is.
14 Universal indicator	Has a whole range of colours that tell us how strong an acid or alkali is. This is also known as the pH scale.

Section 5: Metals and Acids

15 Equations	Tell us what has happened during a reaction.
16 →	To show there has been a reaction.
17 General reaction	metal + acid → salt + hydrogen
18 Naming the salt	The first name comes from the metal that reacts with the acid. The surname comes from the acid

Section 6: Investigating

19 Titration	A of finding exactly how much of a substance there is in a solution by gradually adding measured amounts of another substance that reacts to it in a known way, for example by causing a colour change.
20 Burette	Equipment used to add acid drop by drop.
21 Independent	Variable that is deliberately changed.
22 Dependent	Variable that is measured.
23 Control	Variable that is kept the same.

•pH7 is neutral **14**

•pH 1 is strongly acid

•pH14 is strongly alkali

14

Strong acid Neutral Strong alkali

Weak acid Weak alkali

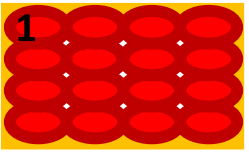
17,18

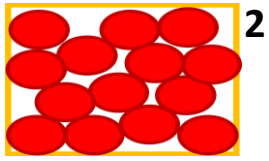
Hydrochloric acid gives a chloride surname

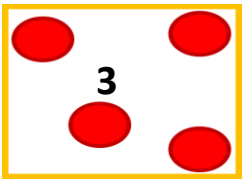
Sulphuric acid gives a sulphate surname

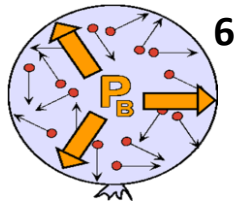
Nitric acid gives a nitrate surname

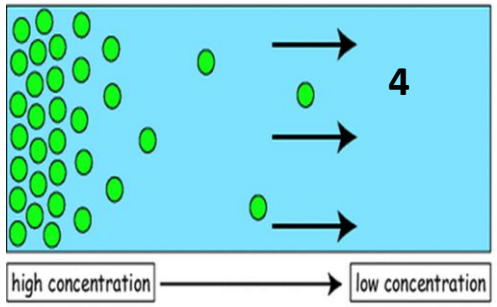
7 CP Particles

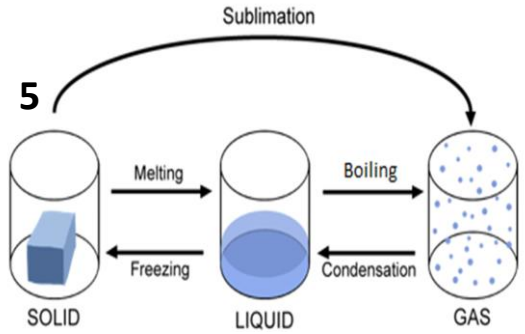


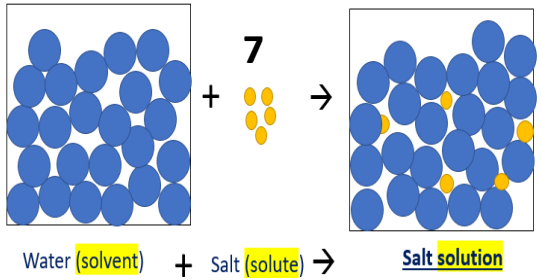












Section 1: Particle Model

1 Solids	The particles have an ordered arrangement and are all touching. There are strong forces of attraction between the particles. They vibrate around a fixed position.
2 Liquids	The particles have a random arrangement but are still touching. There are weaker forces of attraction between the particles. The particles are moving around.
3 Gases	The particles have a random arrangement and are not touching. There are very weak forces of attraction between the particles. The particles are moving around quickly – they have a lot of energy.

Section 2: Diffusion

4 Diffusion	The spreading out of particles from an area where there are a lot of particles, to an area where there are fewer particles. Areas with a lot of particles are called 'high concentration' Areas with fewer particles are called 'low concentration'.

Section 3: Change of State

5 Change of state	These occur when the energy lost or gained by the particles is enough to cause a change from one state to another.

Section 4: Gas Pressure

6 Gas pressure	Gas pressure is caused by the gas particles in a container colliding with the walls of the container. Also, gas pressure increases when the temperature increases.

Section 5: Particle Model of Solutions

7 Particle model of a solution	The solute particles fit in the gaps between the solvent particles to make a solution.

Section 6: Pure and Impure

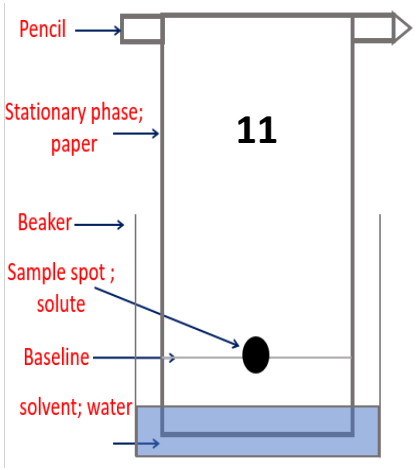
8 Pure	Only one type of substance
9 Impure	More than one type of substance.

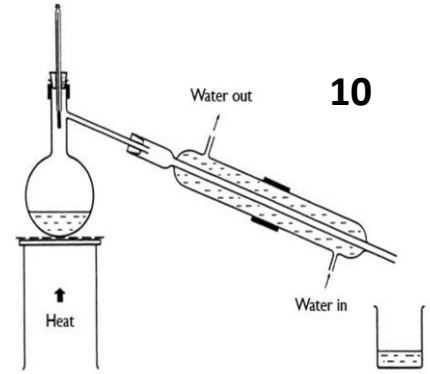
Section 7: Separation Techniques

10 Distillation	Distillation is how two or more liquids are separated. It relies on the liquids having different boiling points. One liquid boils first and is cooled, condensed and collected.
11 Chromatography	Paper chromatography is a method for separating dissolved substances from one another.

Section 8: Solubility and Saturation

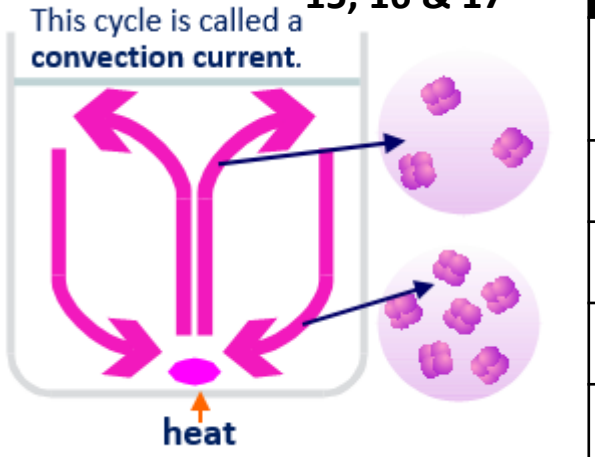
12 Saturation	When all the spaces between the solvent particles are taken, no more solute will dissolve.
13 Solubility	The mass of the solid that will dissolve in 100cm³ of water is known as the solubility.
14 Temperature	Increasing the temperature allows more / excess solute to dissolve.

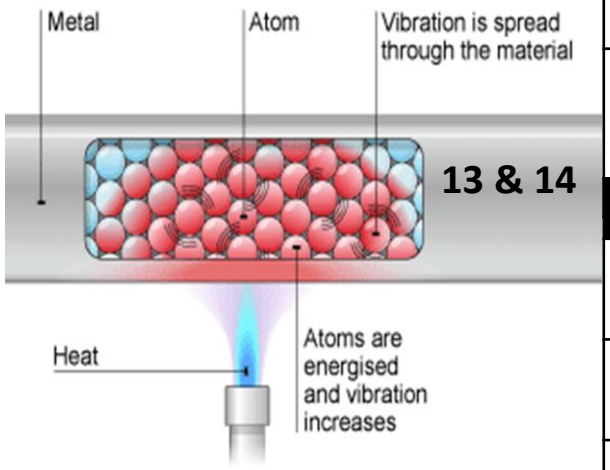




7PE Energy I

15, 16 & 17





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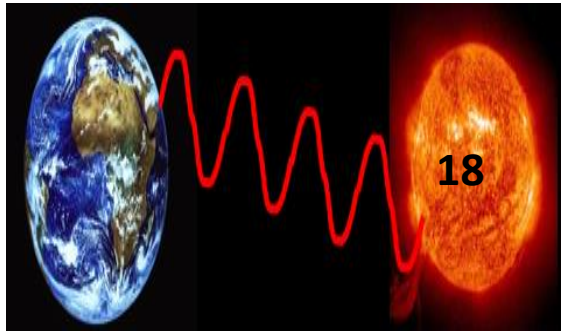


18

Section 1: Energy stores

Store	Description
1 Chemical	Associated with the arrangements of atoms and molecules. Typical examples include batteries, fuels and foods.
2 Gravity	Associated with an object in a gravitational field (e.g. 'off the ground')
3 Kinetic	Associated with a moving object and may also be used in the description of individual gas molecules or atoms.
4 Thermal	Associated with changes in temperature and/or changes of state of objects.
5 Elastic	Associated with objects which are compressed (squashed) or extended (stretched).
6 Nuclear	Associated with changes in the nuclei of atoms.
7 Energy conservation	Energy is never created or destroyed. Total energy before transfer = Total energy after transfer

Section 2: Efficiency

8 Energy efficiency	The percentage of energy supplied that is usefully transferred.
9 Equation	**Efficiency (%) = $\frac{\text{Useful Energy Transferred}}{\text{Total Energy Supplied}}$ x 100 (%)**
10 Sankey Diagrams	The height of the box represents the amount of energy that is put in.
11 Sankey Diagrams	The width of the next box represents the amount of energy usefully transferred.
12 Sankey Diagrams	The width of the final box represents the amount of wasted energy.

Section 3: Conduction

13 Conduction	Method of heat transfer in solids but not liquids and gases.
14 Conduction	Thermal energy is passed through solids as the particles bump into each other. Solids are the best heat conductors. This is because the particles are all touching and in neat rows.

Section 4: Convection

15 Fluids	All liquids and gases are fluids.
16 Convection	Convection is heat transfer in a fluid.
17 Convection current	Caused by density changes when liquids and gases heat up. Hot regions of liquids and gases have a lower density and rise. The cooler part of the liquids and gases have a higher density and sink.

Section 5: Radiation

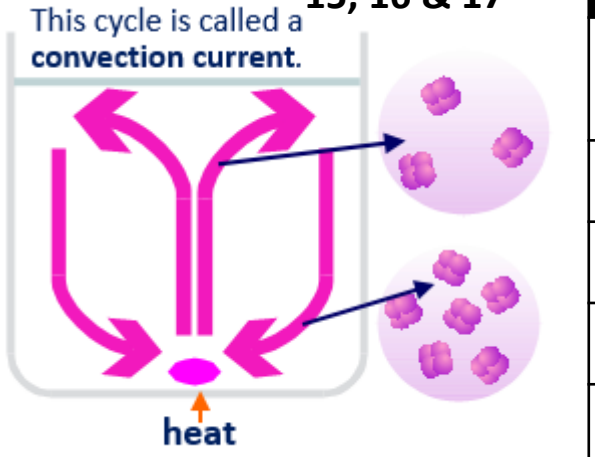
18 Thermal radiation	The direct transfer of energy using waves not particles.

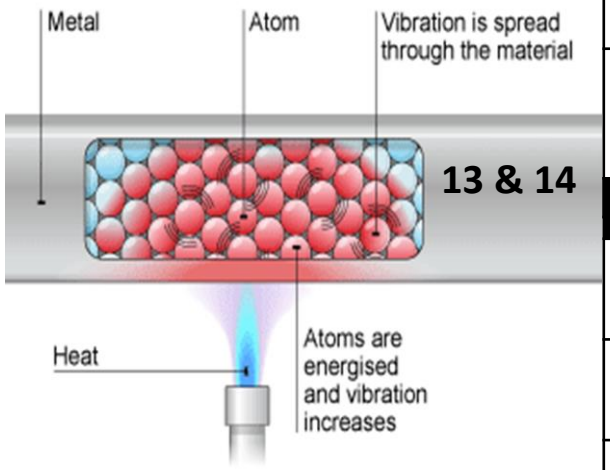
Section 6: Insulation

19 Insulator	A substance that reduces energy transfers from an object is an insulator.

7PE Energy I

15, 16 & 17





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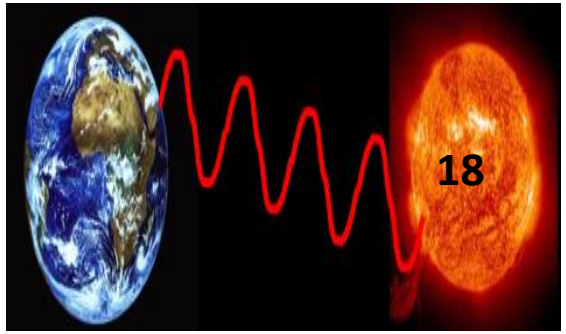

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Section 6: Insulation

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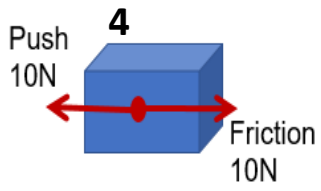
7PF Forces

4



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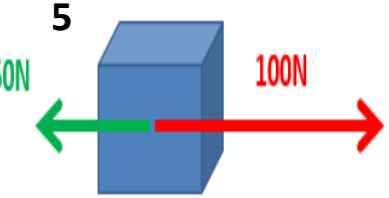

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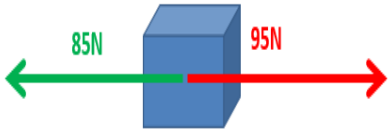
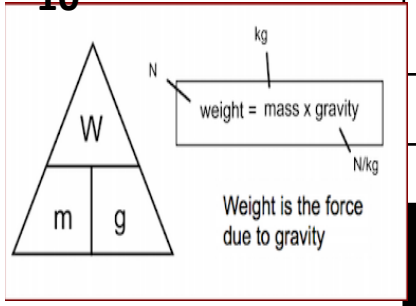


95N – 85N = 10N →

10



Section 1: Forces

1 Newton meter	Used to measure the size of a force.
2 Newtons	The units used to measure a force.
3 Resolution	The smallest possible measurement a piece of measuring equipment can measure.

Section 2: Balanced & Unbalanced Forces

4 Balanced forces	Balanced forces means the opposing forces are equal.
5 Unbalanced forces	This is where the forces acting in one direction are bigger than those acting in the opposite direction.
6 Resultant force	The difference between the two opposing forces .

Section 3: Gravity as a Force

7 Gravity	The force of attraction between pairs of objects.
8 Mass	How much matter an object is made from.
9 Weight	Force of gravity pulling on every kg of mass.

Section 4: Calculating Weight

10 Weight	Weight (N) = mass (kg) x gravity (N/kg)

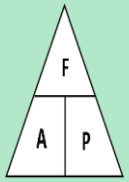
Section 5: Pressure

11 Pressure	How spread out a force is over an area.
12 Pressure	Pressure = Force ÷ Area

Section 6: speed

13 Speed	How fast something travels.
14 Average speed	How fast an object moves, on average, over an entire journey.
15 Equation	Speed = distance / time
16 Relative motion	Speeds can cancel or add together. If objects travel in the same direction towards, or away from, each other, you subtract the slowest speed from the fastest speed If objects travel in opposite directions towards, or away from, each other, you add the speeds.
17 Picturing motion	Describe a journey represented by a distance-time graph. Or, calculate the average speed of a journey from a distance-time graph.

12



Force Area Pressure

Pressure = Force / Area

Area = Force / Pressure

Force = Area x Pressure

15

Distance = Speed x Time

Time = Distance / Speed

Speed = Distance / Time

17