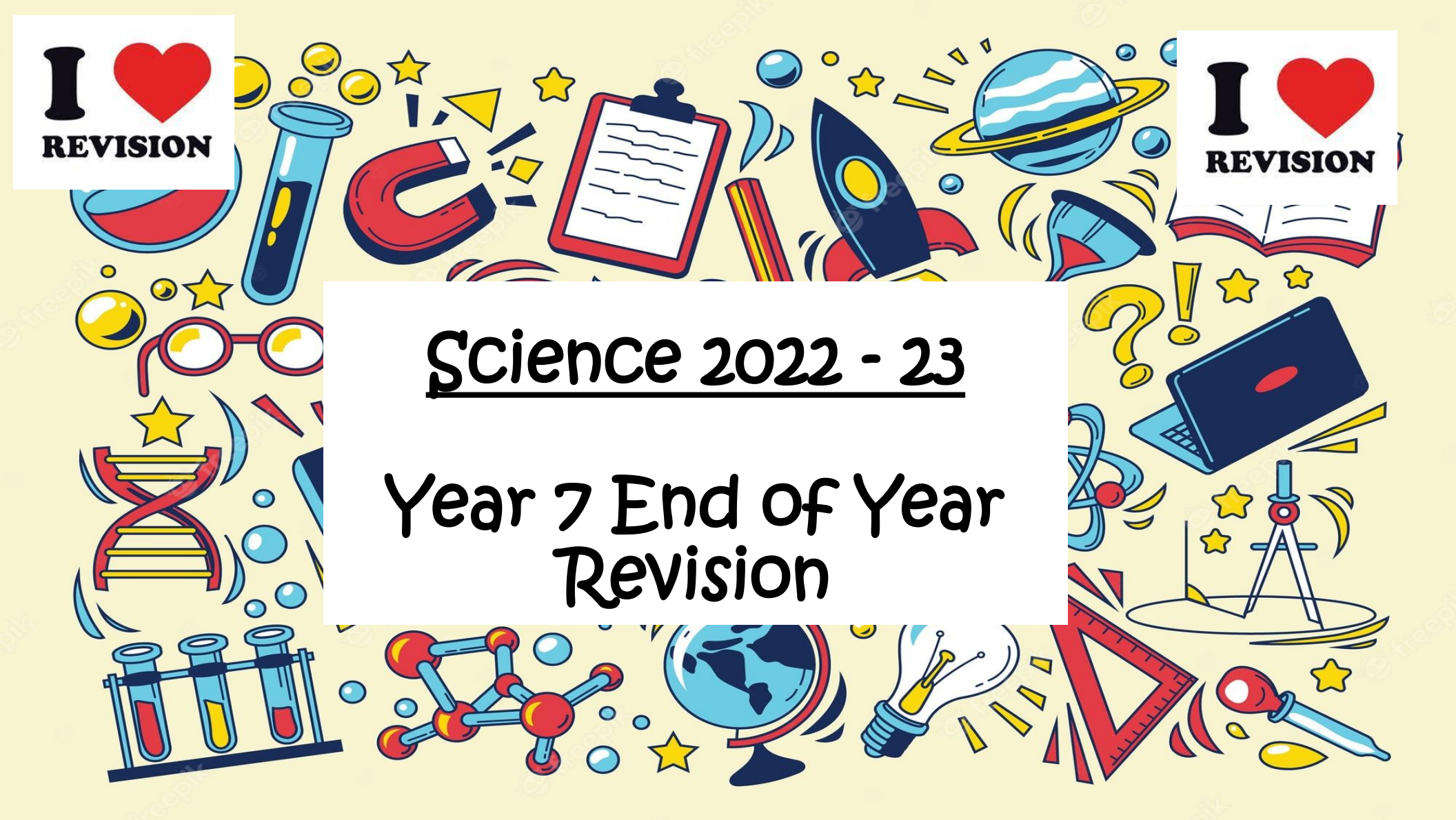


Science 2022 - 23

Year 7 End of Year Revision

Working Scientifically

- Name safety equipment
- Draw a line of best fit
- Use a bar chart
- Identify variables – independent, dependent, control
- Describe a valid test – control variables, why we repeat experiments

Safety

You should ALWAYS:

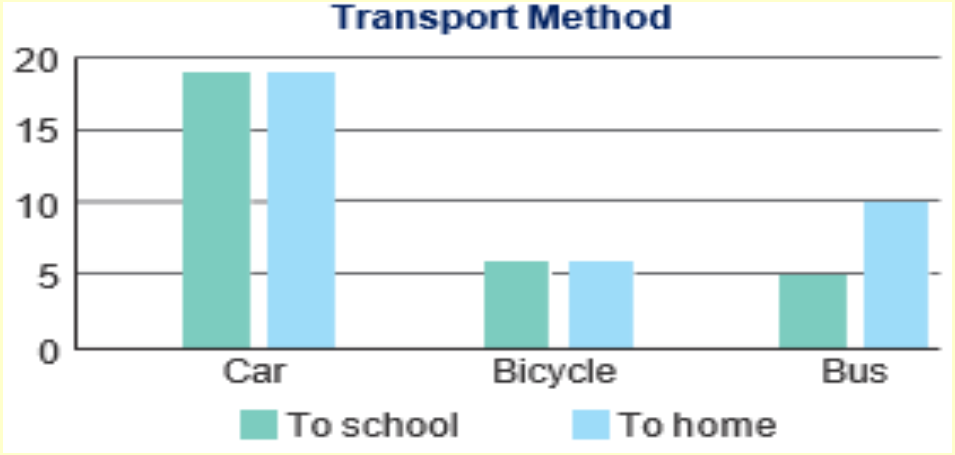
- Wear safety glasses
- Stand up
- Tie hair back
- Tell teacher

categoric

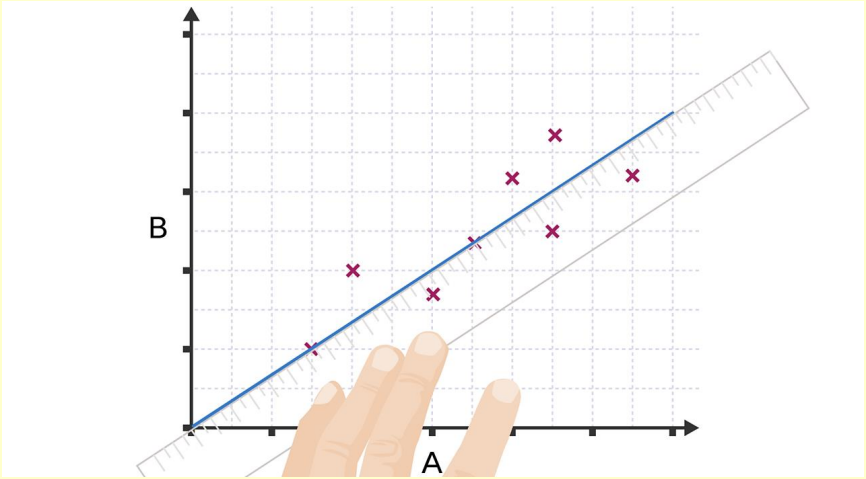
Graphs

continuous

Bar – categoric data



Line – continuous (any number) data



Conclusion e.g

Most use a car at 18 people to school and home. More people go home on the bus than to school.

Line of best fit

- Doesn't have to go through origin.
- Shows the trend, so one straight line going 'close' to the plots

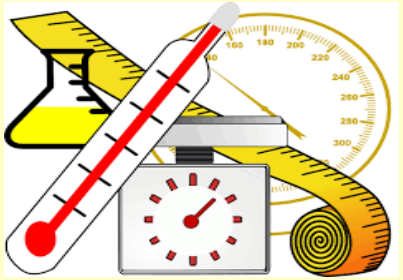
Variables

change

Independent: what you **change.**

simple numbers on left of results table

x-axis of graph



measure

Dependent: what you **measure.**

any number on right of results table

y-axis of graph

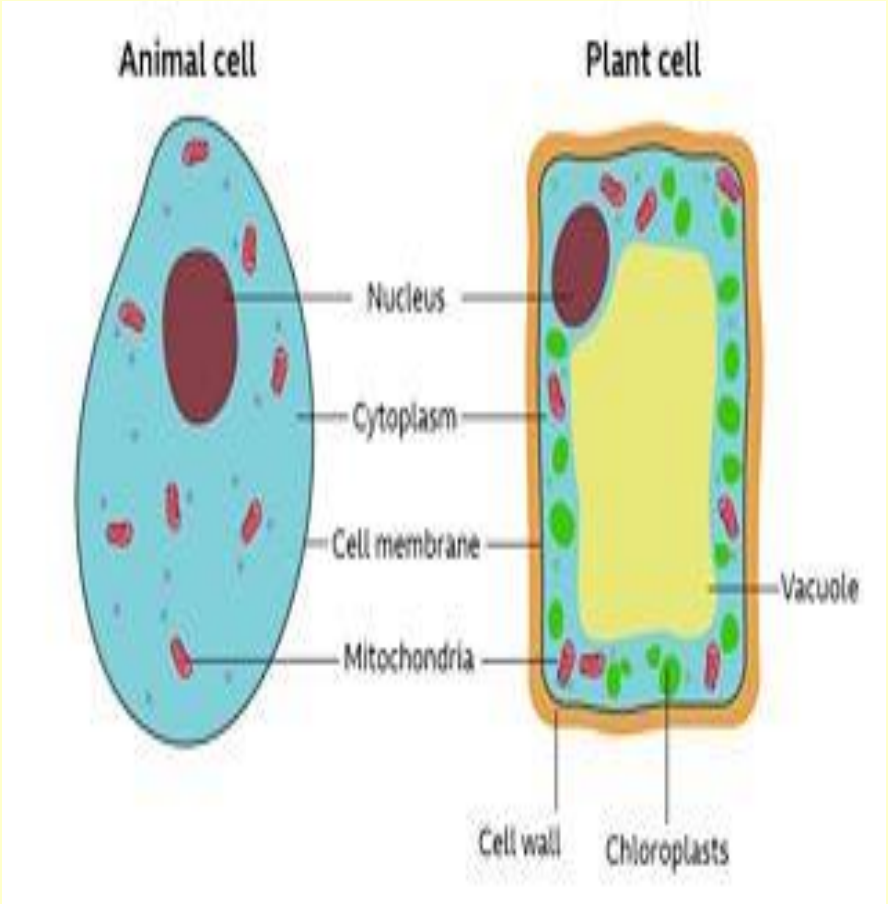
keep the same

valid results

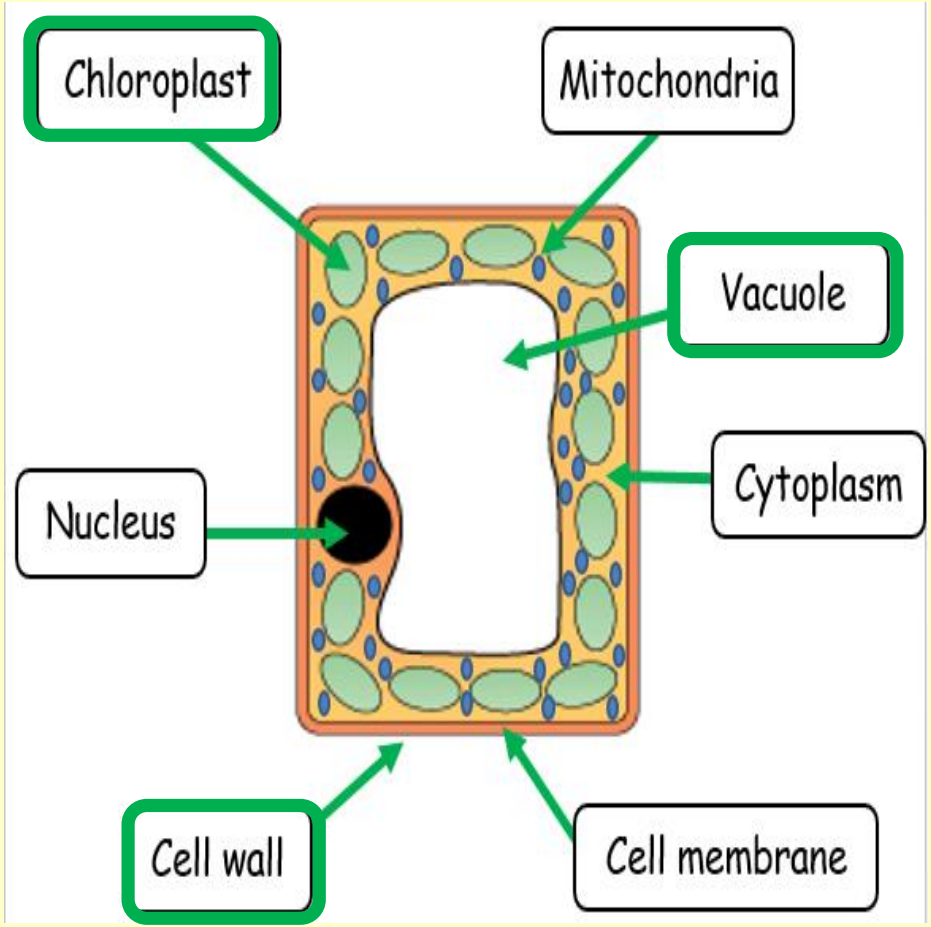
Control: what you **keep the same** to get **valid results.**

Cells

- State the differences between animal and plant cells
- Identify and state the functions of the specialised sperm and egg cell



Plant cell



These are NOT in animal cells, ONLY PLANT cells :-

Chloroplast

filled with green **chlorophyll** for **photosynthesis** to give the cell **energy** from the sun.

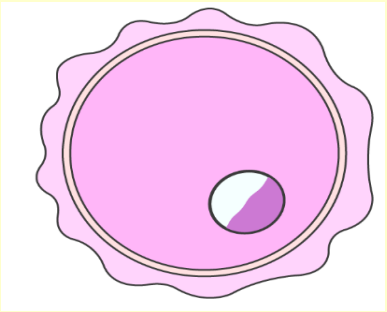
Cell Wall

made of **cellulose** to make the cell **strong**.

Vacuole

filled with **sap** to keep the cell **firm**.

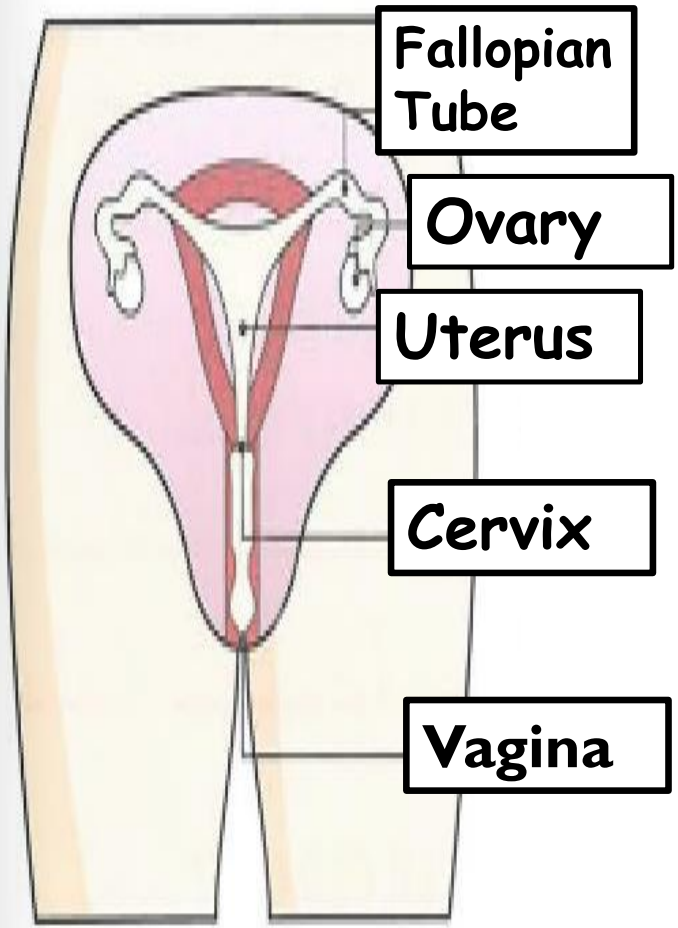
Specialised Cells

Sperm 	**Function - fertilise an egg** • Long **tail** to swim to the egg • Streamlined **head** to swim • Lots **mitochondria** for energy to move • 50% of DNA for a fertile offspring in nucleus
Egg 	**Function – connect with sperm cell for fertilisation** • **Big as cytoplasm has nutrients for embryo to grow** • **Cell membrane changes after fertilisation so only one sperm can enter** • 50% of DNA for a fertile offspring in nucleus

Genes

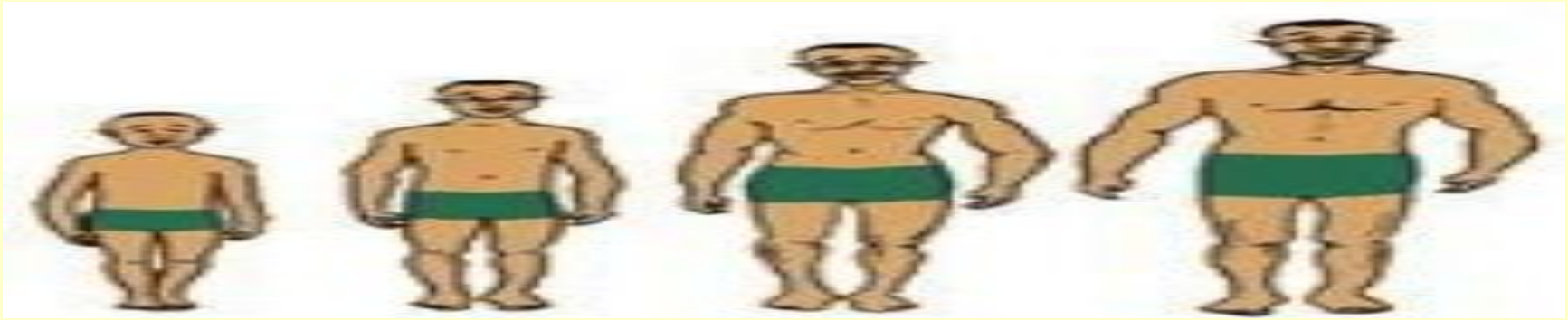
- Female reproductive system
- Puberty
- Fertilisation
- Pregnancy and birth
- Menstruation
- Variation

Female Reproductive Organs



	Function
Fallopian Tube (oviduct)	Fertilisation occurs here, the tube allows the egg to reach the uterus.
Ovary	Produces an egg every month.
Uterus	Where a baby would develop.
Cervix	A muscle that holds the baby in place.
Vagina	Receives semen from the males penis.

Puberty in Males



1. Pubic (body) hair grows
2. Voice breaks
3. Body odour
4. Shoulders widen
5. Penis grows
6. Sperm production

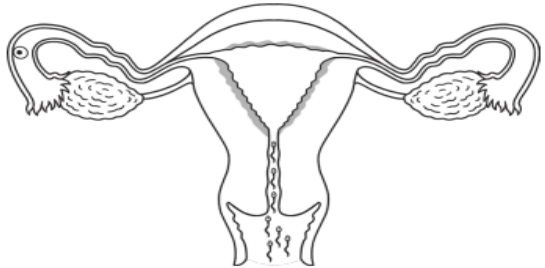
Fertilisation

- the **fusion** of male sperm and female egg **cell in the females oviduct** (fallopian tube).

1

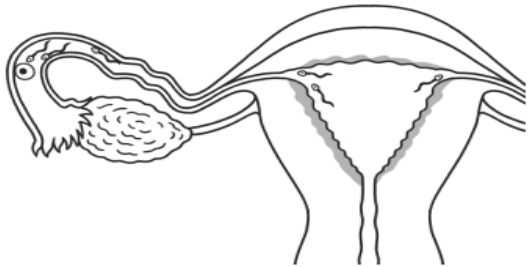
Sperm enters vagina

2



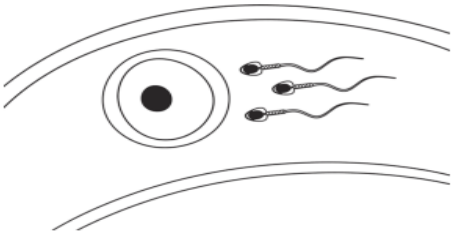
Sperm swim into cervix

3



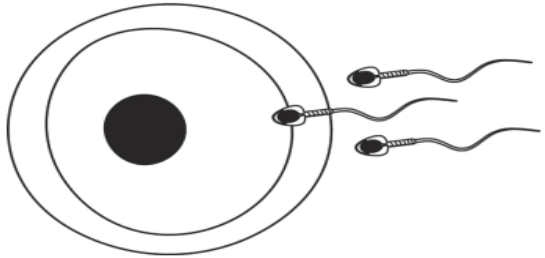
Into uterus, then oviduct

4



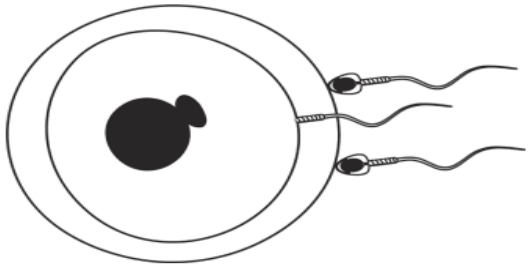
Find egg cell in oviduct

5



One enters through cell membrane

6



Sperm nucleus fuses with egg nucleus to form an embryo

Pregnancy

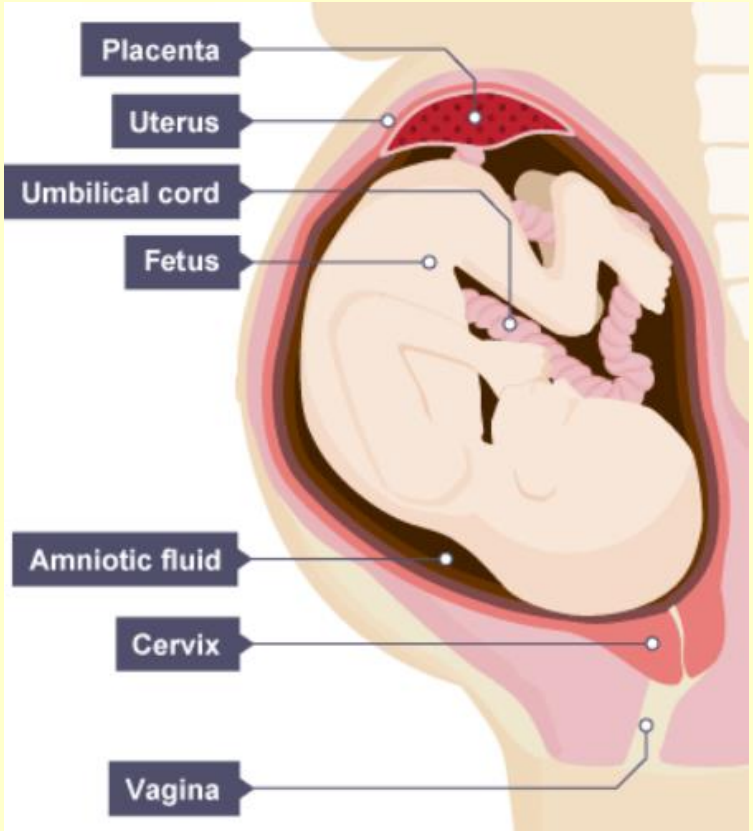
- Gestation in humans is 9 months (40 weeks)

Week 1 - Implantation
- embryo attaches to uterus lining.

Week 8 - embryo becomes a foetus
- protected by the amniotic fluid

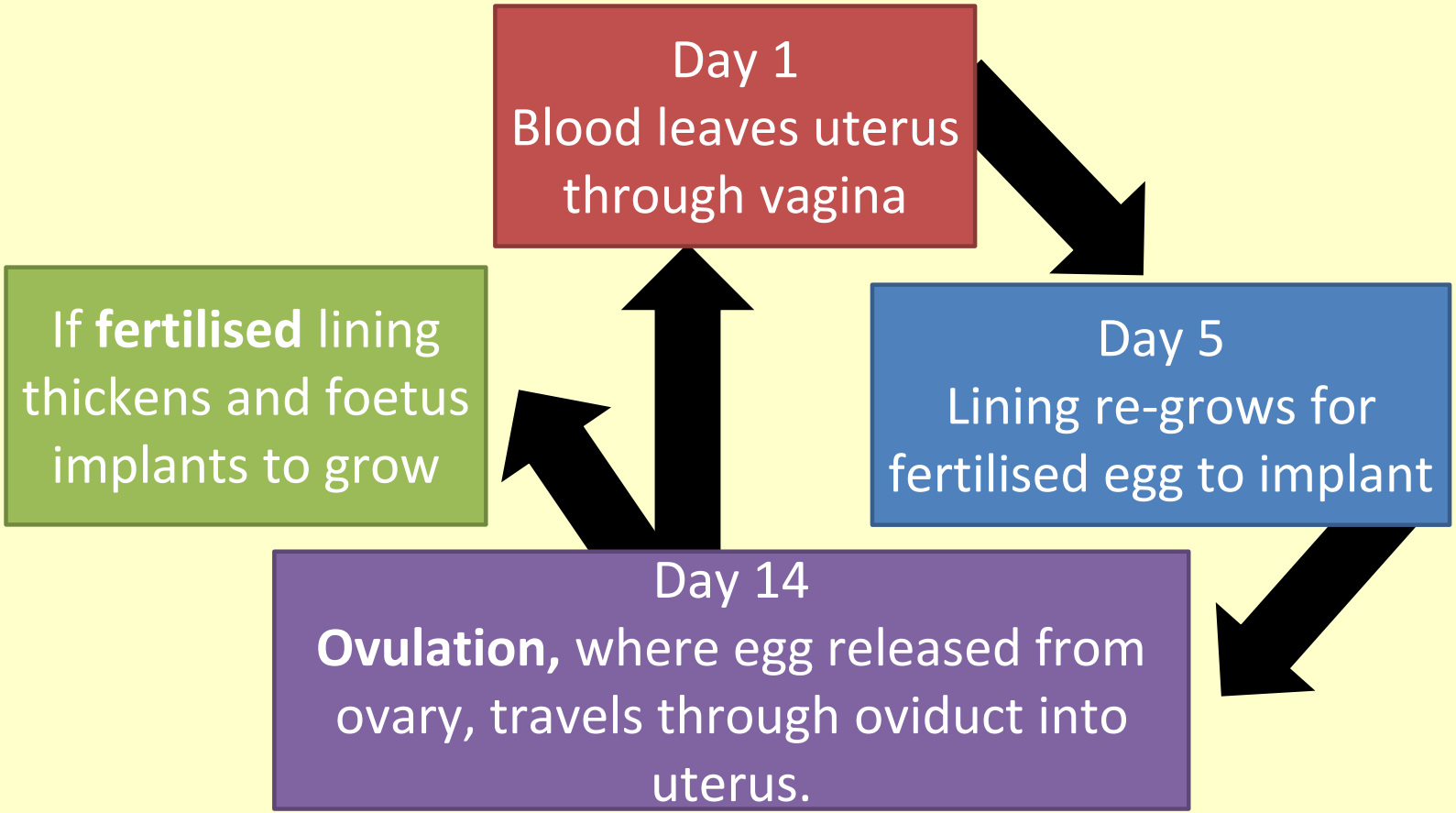
Week 12 – umbilical cord attaches to mother's placenta to get oxygen and nutrients, and remove carbon dioxide and urine

Week 40 – Birth
- cervix keeping foetus in place relaxes and uterus contracts to push baby out through the vagina



Menstruation - (period) 28 day cycle

Hormones control the cycle:



Variation

- differences in a population of same species

Genetic

Inherited from parents from the DNA in the nucleus of the sperm and egg

Colour of hair, skin, eyes

Environmental

Caused by the surroundings lived in

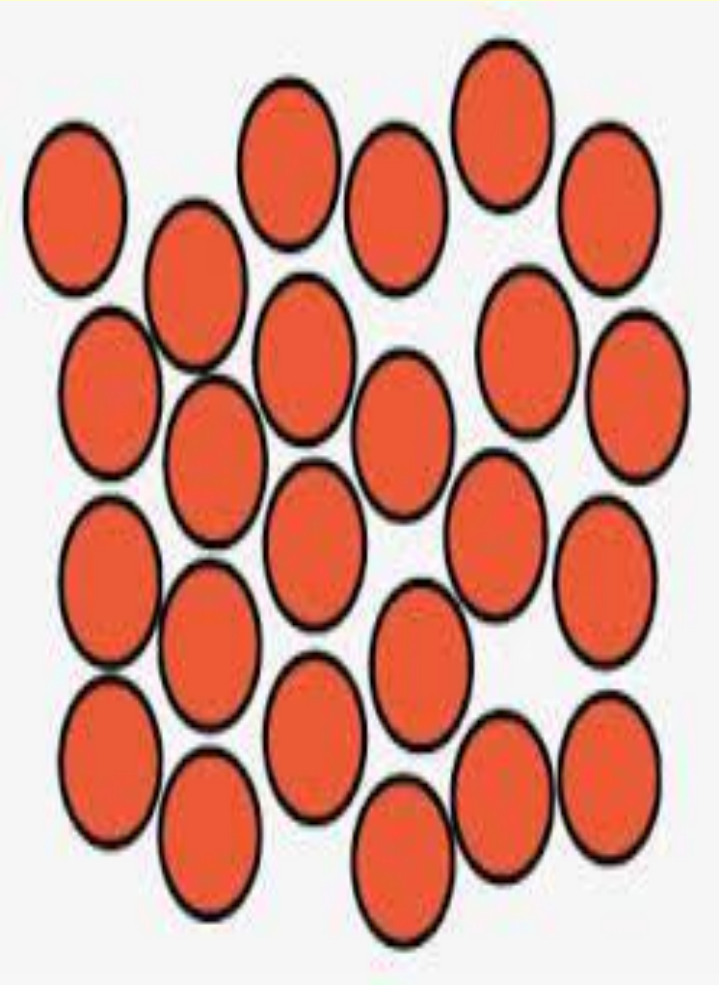
Scars, tattoos, piercings

Both

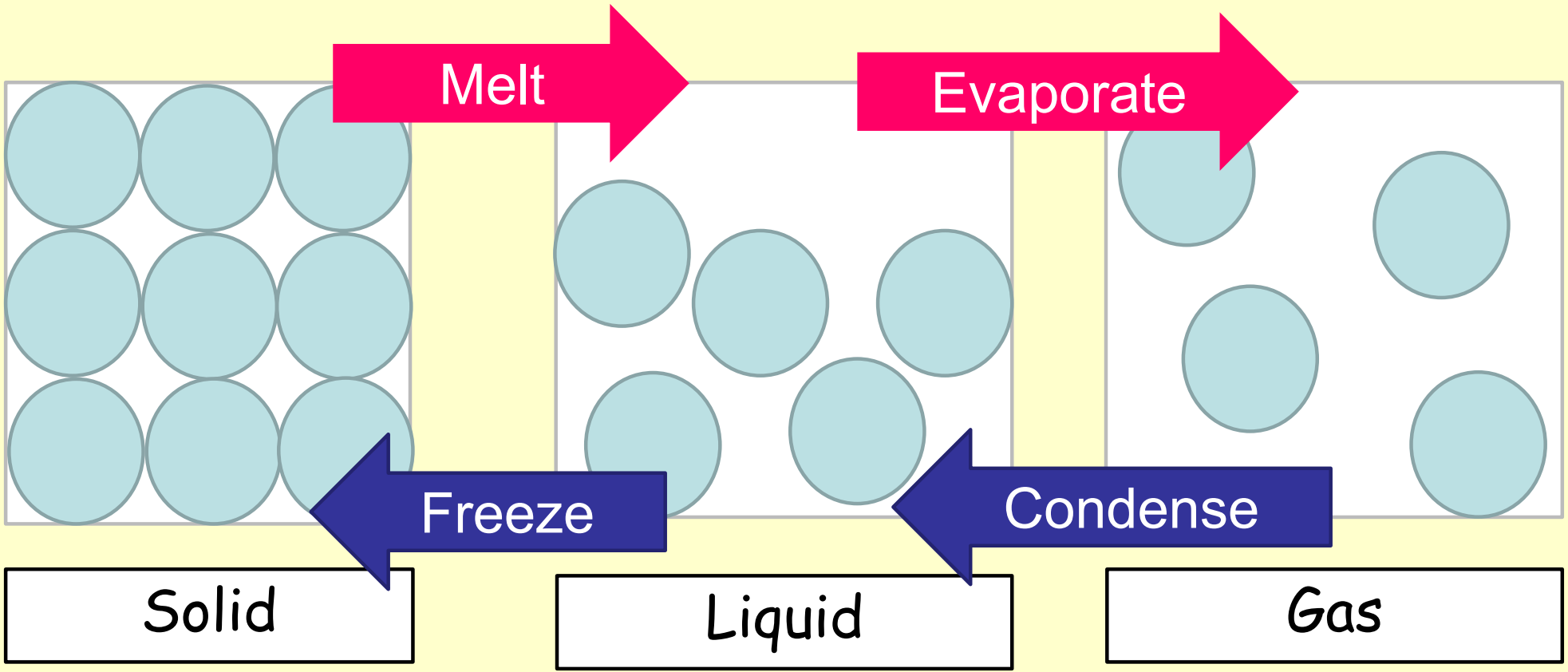
Height
Weight
Suntan

Matter

- Particle model for solids, liquids and gases
- Melting and boiling points
- Separating mixtures techniques
- Chromatogram



Particle Model



Melting / Boiling Points

M.p

– temp when **solid → liquid**

- temp's **above = liquid**, **below = solid**

B.p

– temp when **liquid → gas**

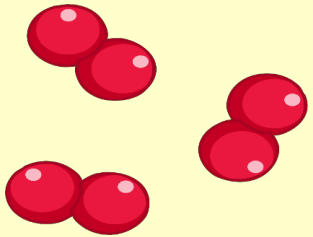
- temp's **above = gas**, **below = liquid**

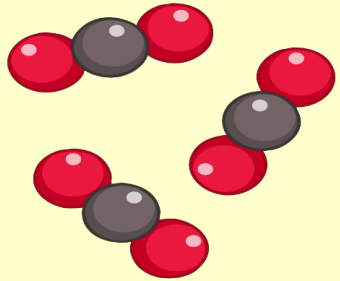
Pure

One substance (not a mixture!).

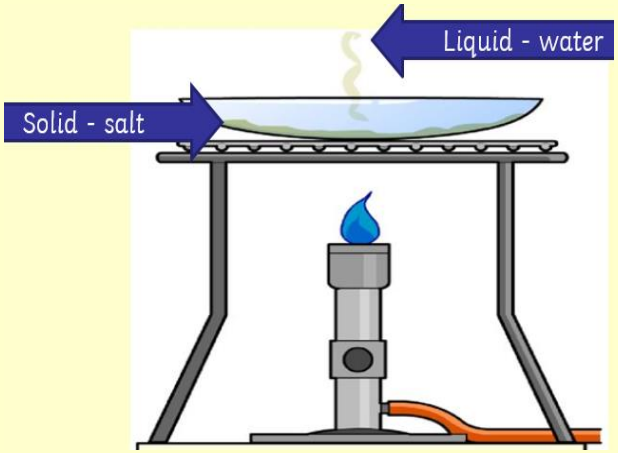
So has a **fixed** (same) **boiling/melting point.**

Can't be separated **without** a chemical reaction.





Separating Mixtures

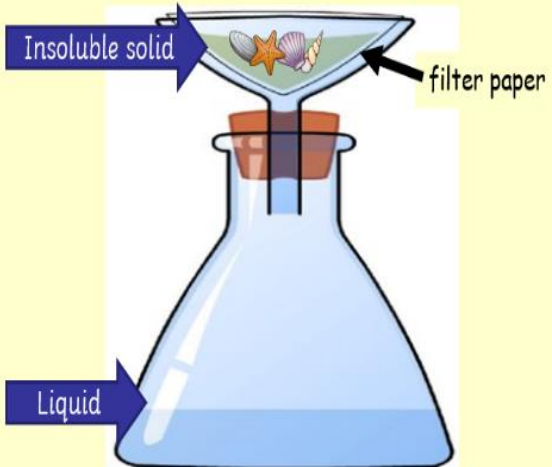


Evaporation

- remove solvent (liquids) leaving solute (solid)
- by different boiling points

Filtration

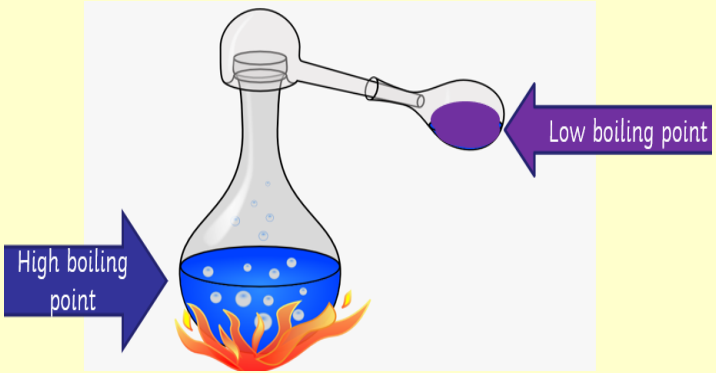
- remove insoluble solids from liquids
- by different sized particles



Separating Mixtures

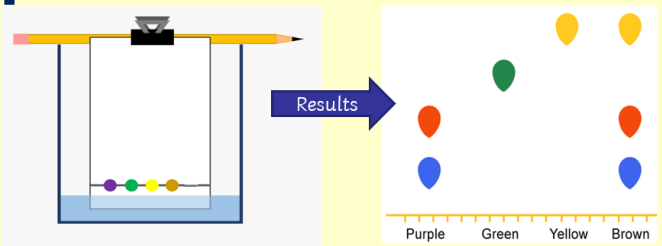
Distillation

- remove a liquid from a solution (another liquid)
- evaporate then condense
- by different boiling points

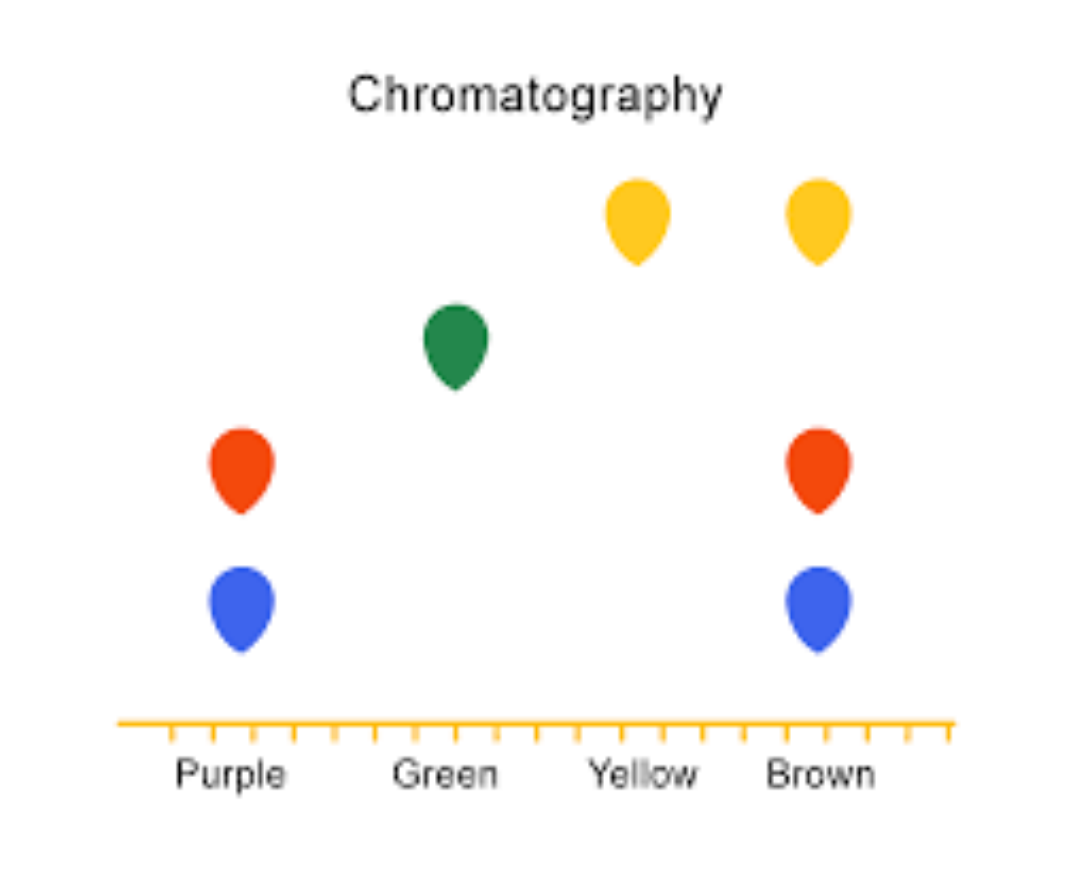


Chromatography

- separates mixtures of soluble solids or liquids
- Soluble in same solvent
- by size & attraction



Chromatogram



Green & yellow are pure substances as only one dot.

Brown has yellow in it.

Also has two the same as purple.

Forces

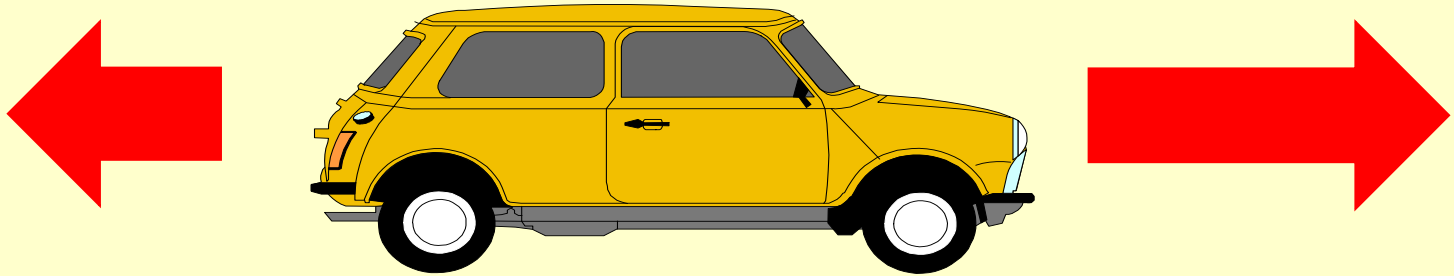
- Force diagrams
- Balanced and unbalanced forces
- Distance – time graph

Force diagrams

Arrows show **size and direction**

…. **bigger the arrow bigger the force!**

5N back

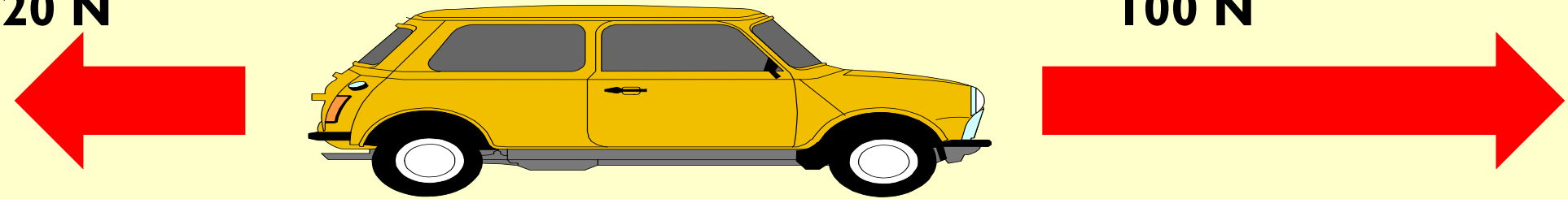


10N forward

Resultant forces

The difference between the 2 forces.

Air Resistance
20 N



Driving force
100 N

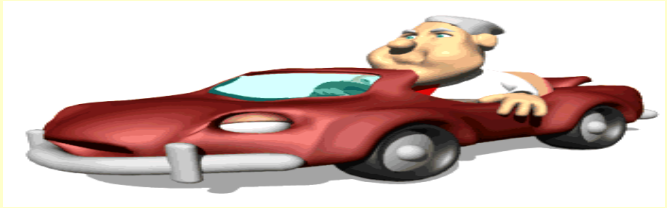
The car is travelling...

Forwards with a force of **80 Newton's**

Balanced & Unbalanced

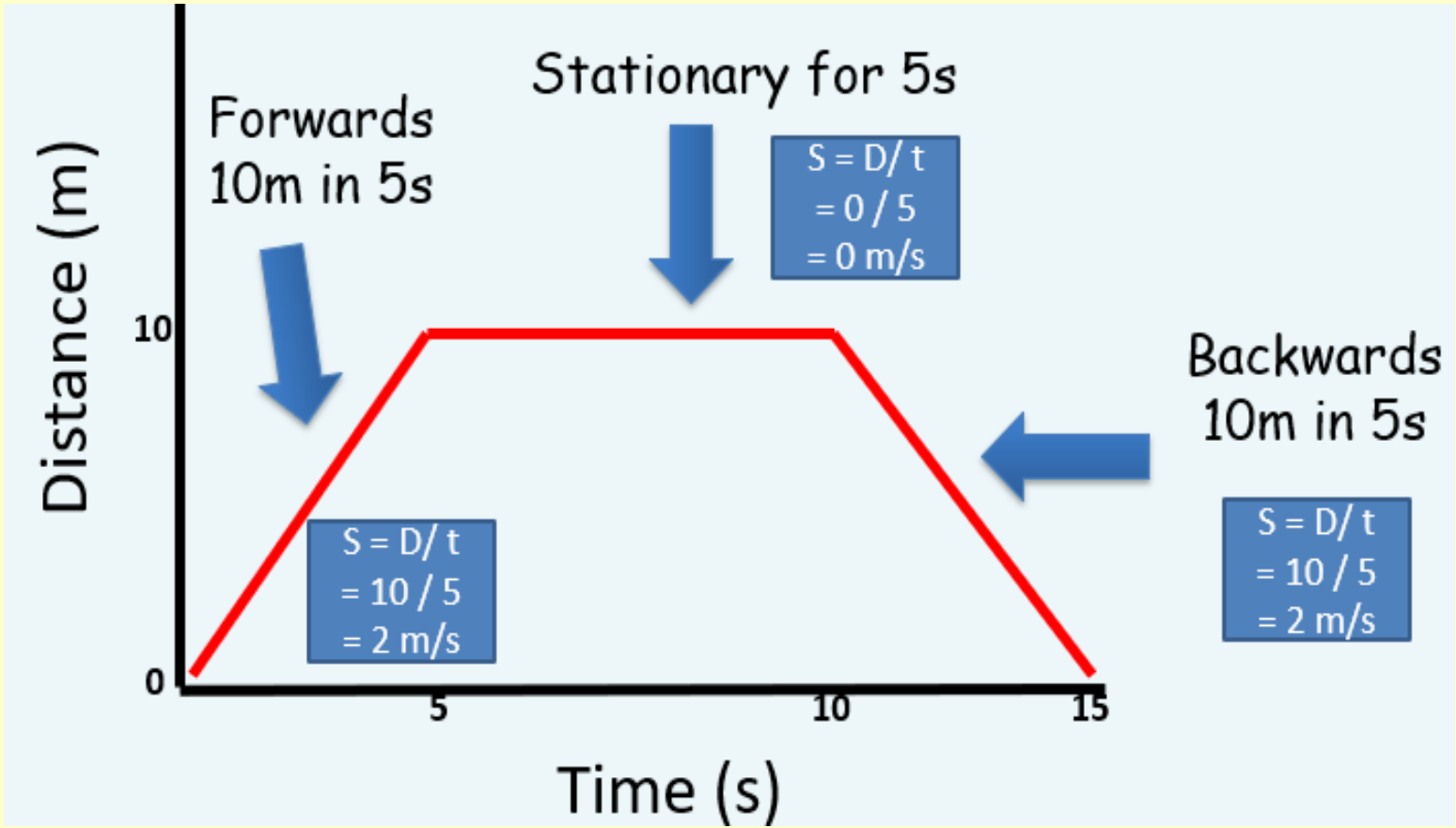
50 N **200 N**

Resultant force = 150N moving forwards, so **unbalanced**.

900 N  **900 N**

Resultant force = 0N, so **balanced**
so either moving at same speed or stationary

Distance – Time Graph



Up = forwards

Down = backwards

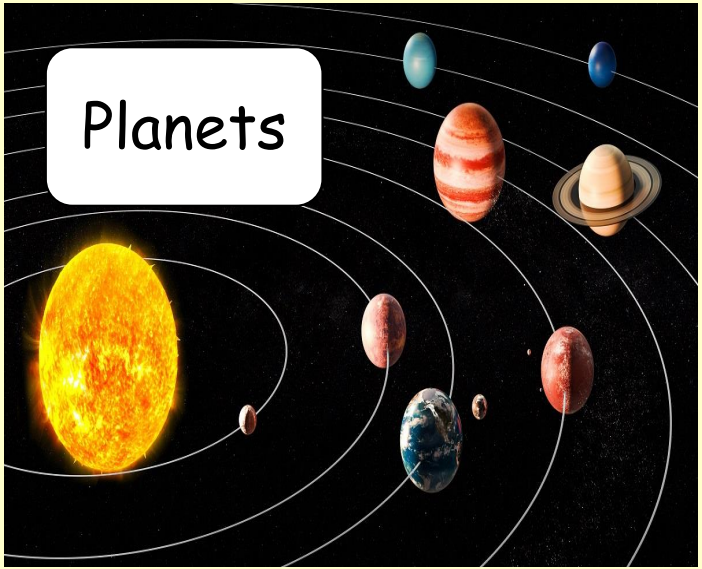
Flat = stationary

Space

- Orbiting
- Seasons

Orbits

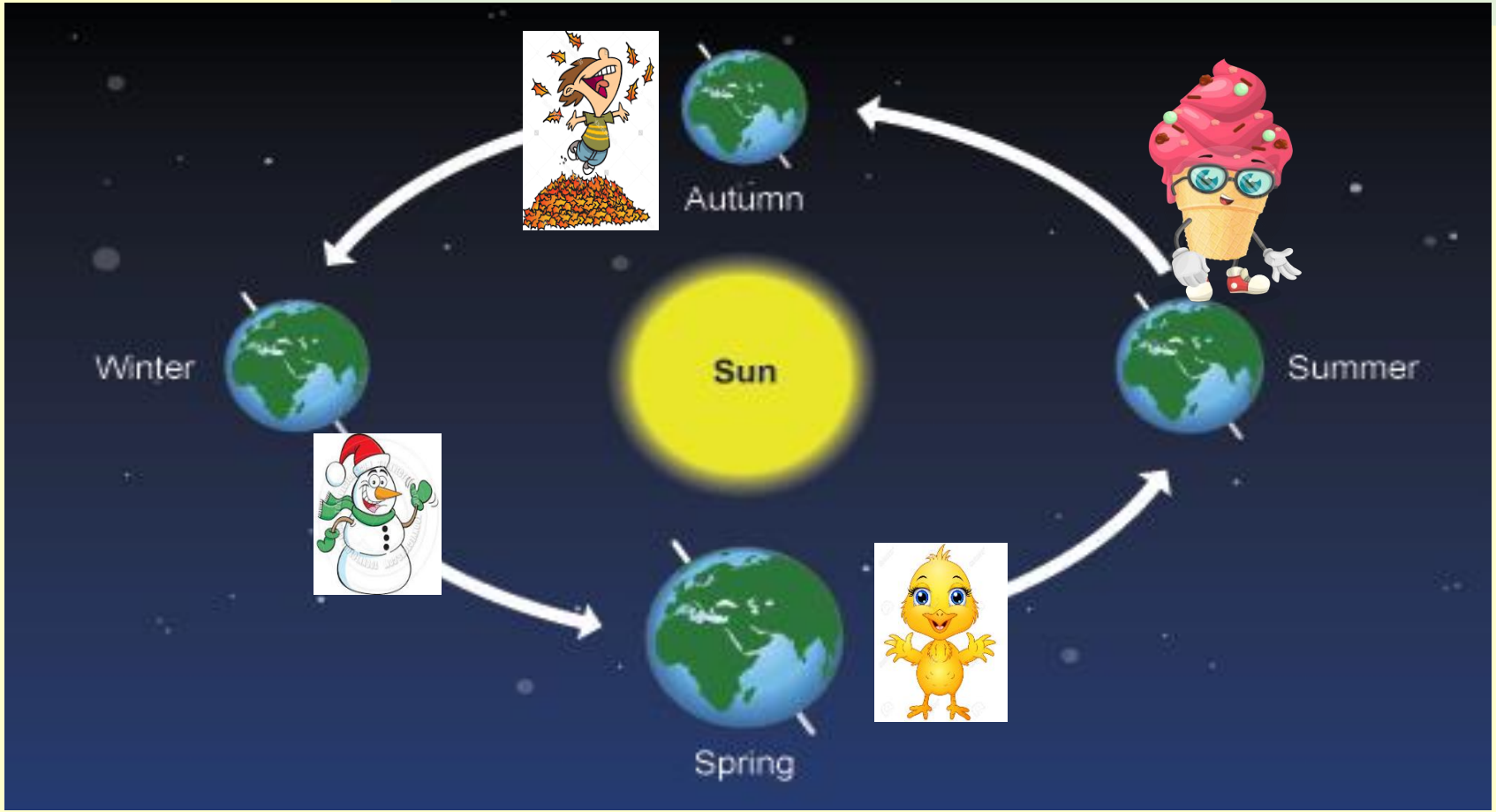
- Gravity keeps objects in orbit



Artificial – communication, GPS, observation

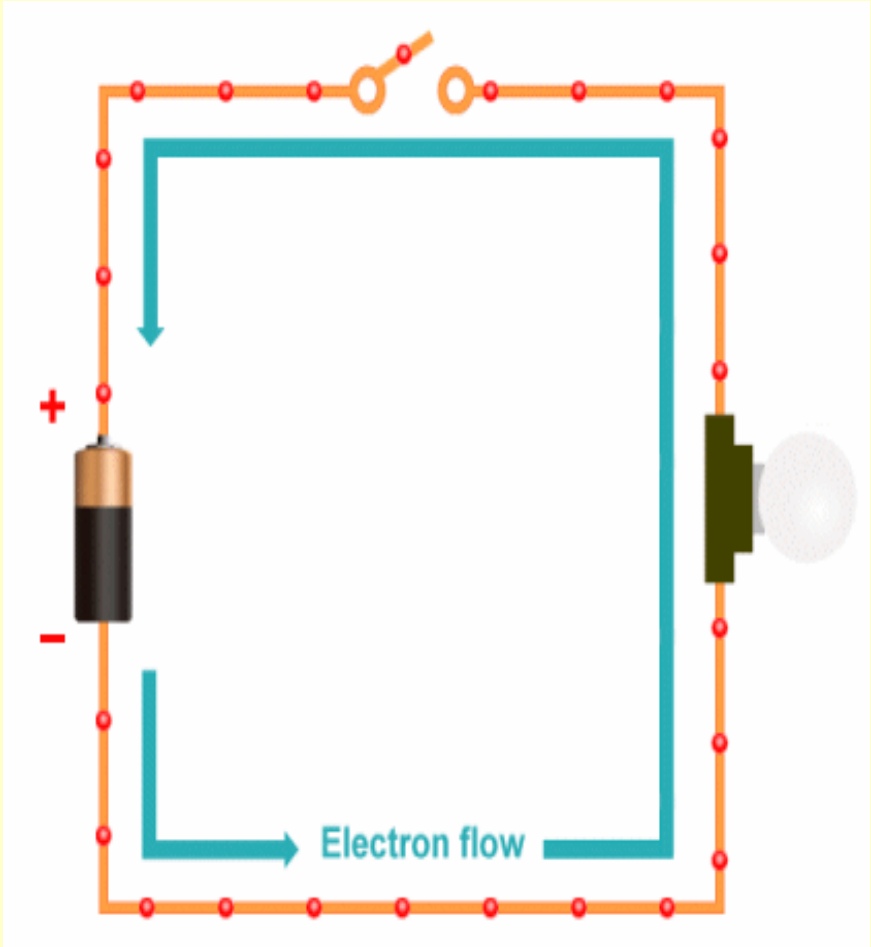
Seasons

- Due to **Earth orbiting Sun**
- **Hotter, longer** days in Summer because Earth is **tilted** on axis so the Sun is **higher** shining light **directly** on Earth



Electricity

- Static
- Circuit symbols
- Complete circuit



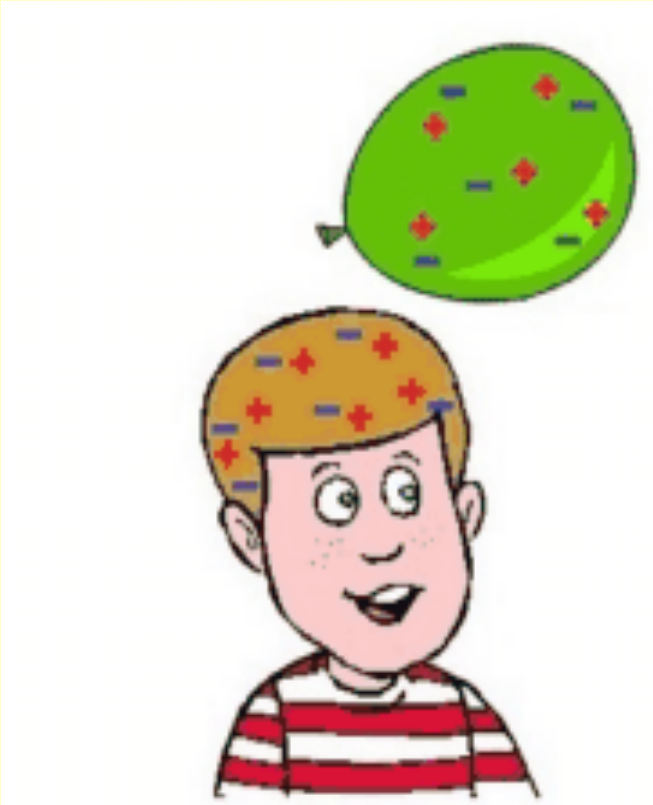
Static

Two **insulators** rub together **electrons transfer**

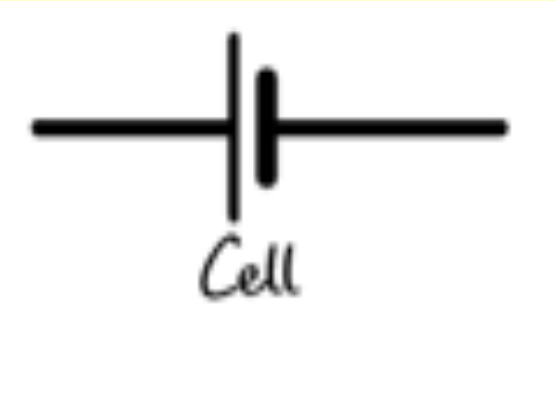
One **loses** electrons so becomes **positive**

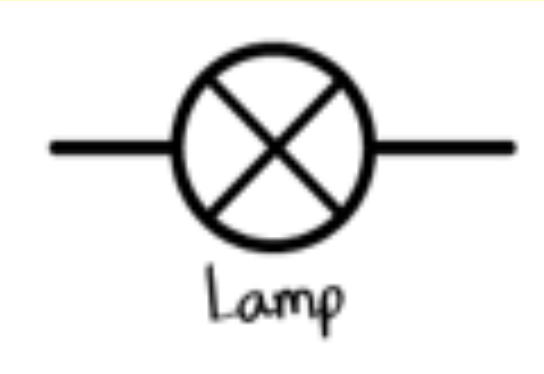
One **gains** electrons so becomes **negative**

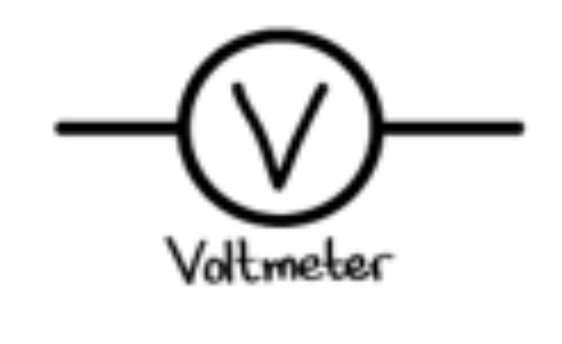
Opposites charges attract…. Like charges repel



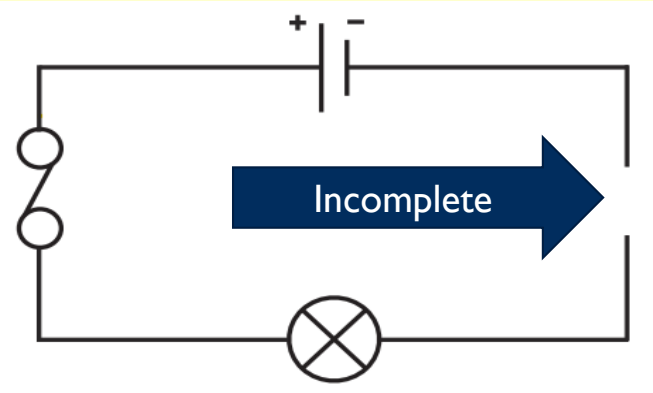
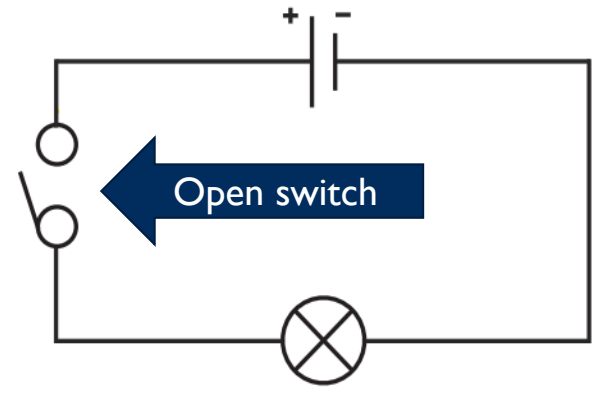
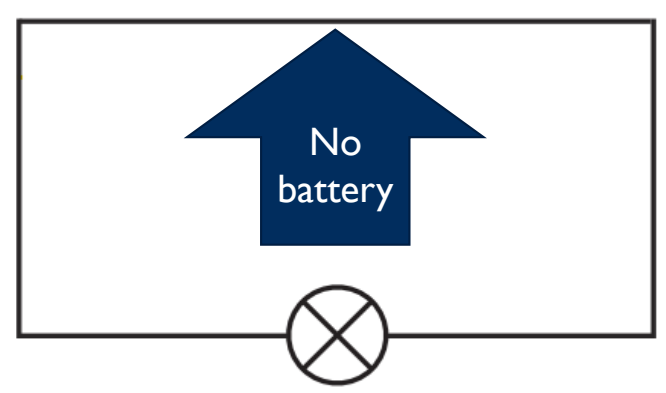
Circuit Symbols







Circuits

Electrical **current (electrons) will flow** if they have a **path to and from** the power supply (battery).

If the circuit has no **power supply**, an open **switch**, or isn't **complete** current won't flow e.g.