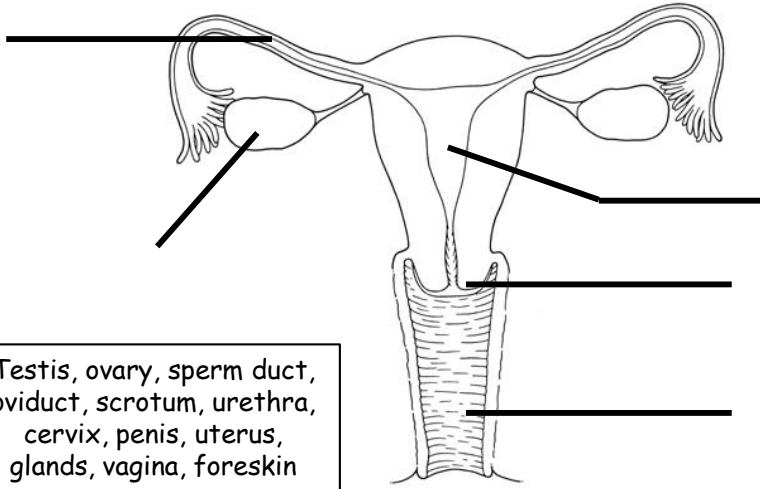
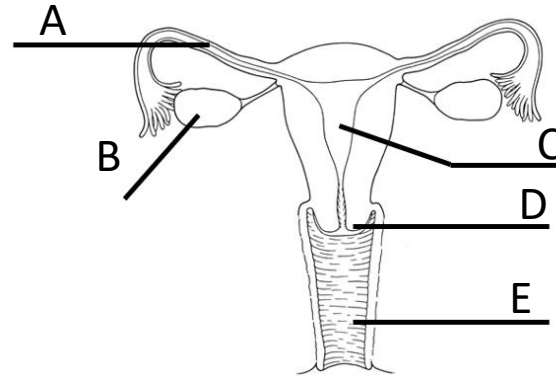


## Label the female reproductive system



Testis, ovary, sperm duct, oviduct, scrotum, urethra, cervix, penis, uterus, glands, vagina, foreskin

Card 1



Card 2

Which part are sperm cells released

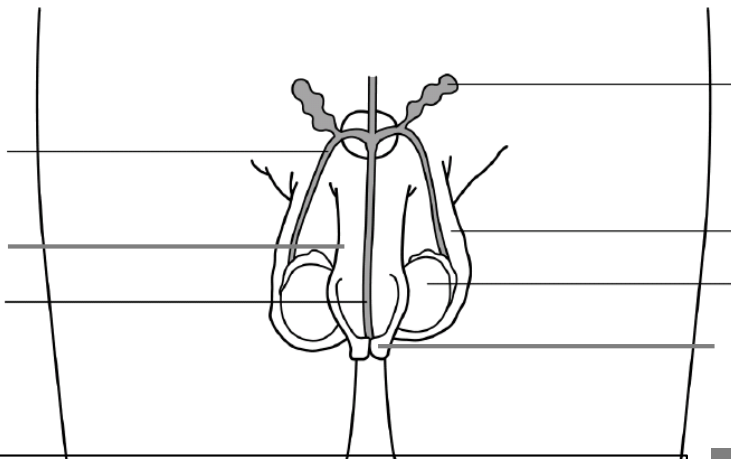
Which part dilates during child birth

Which part does ovulation occurs

Which part does fertilisation occurs

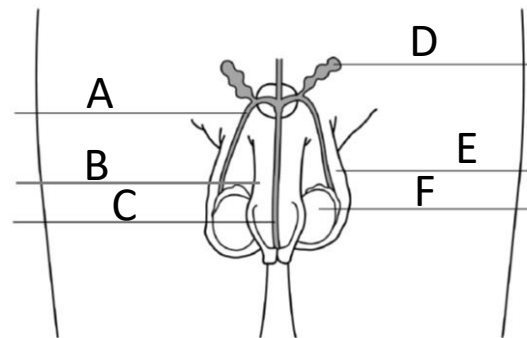
Where does implantation occurs

## Label the male reproductive system



Testis, ovary, sperm duct, oviduct, scrotum, urethra, cervix, penis, uterus, glands, vagina, foreskin

Card 3



Card 4

Where are sperm cells made

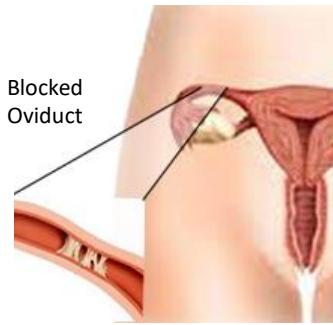
Which part provides a fluid with nutrients for sperm cells

Which part protects the testes

A tube which sperm cells travel

A tube which sperm cells and urine travels

Which part enters the vagina to deposit sperm cells



What will happen if the oviducts were blocked?

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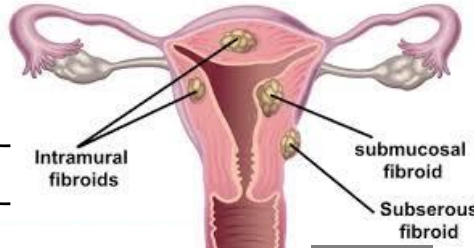


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A woman has fibroids growing on the uterus lining, Explain why she can not have a baby.



Card 5

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Card 6

Match the term with its definition

A	menstruation		Release of an egg during the menstrual cycle.
B	fertilisation		Where differences in characteristics between living things can only be grouped into categories.
C	Gestation		The process where an embryo attaches to the lining of the uterus.
D	Implantation		Joining of a nucleus from a male and female sex cell.
E	Ovulation		Where differences in characteristics between living things can have any numerical value.
F	Discontinuous variation		Loss of the lining of the uterus during the menstrual cycle.
G	Continuous variation	C	Process where the baby develops during pregnancy.

Card 7

1 State how long pregnancy lasts in humans.

---

2 Name the structure that connects the baby to the placenta.

---

3 Describe how the developing baby obtains food and oxygen during pregnancy.

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4 Describe what contractions during labour are.

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**Cacti are able to survive in the desert because they are well adapted. Link the adaptation to the way it helps a cactus survive in the desert.**

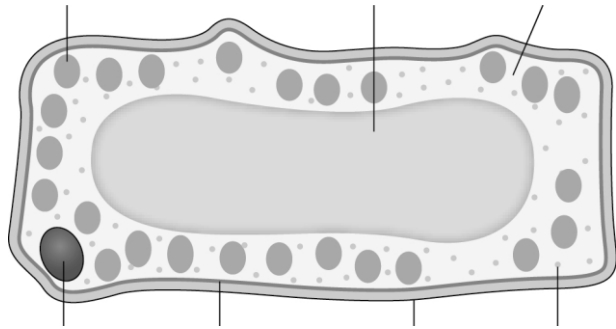
- |                          |   |                                      |
|--------------------------|---|--------------------------------------|
| waxy surface on plant    | ● | ● can collect water from a wide area |
| widespread roots         | ● | ● can store water                    |
| fat stems                | ● | ● reduces water leaving plant        |
| leaves reduced to spines | ● | ● reduces surface area               |

**Hibiscus plants produce new flowers throughout the year. Many gardeners are puzzled because the flowers are different colours in different seasons. Select the most likely cause of this change in colour.**

- temperature
- amount of oxygen
- pH of soil
- inheritance

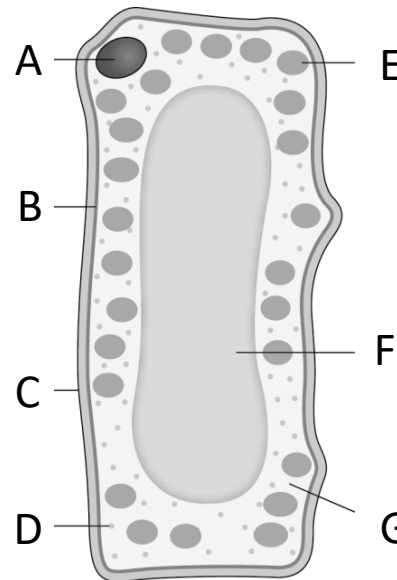
Card 8

Label the diagram of the plant cell.



Cytoplasm, chloroplast, mitochondria, cell wall, cell membrane, vacuole, nucleus

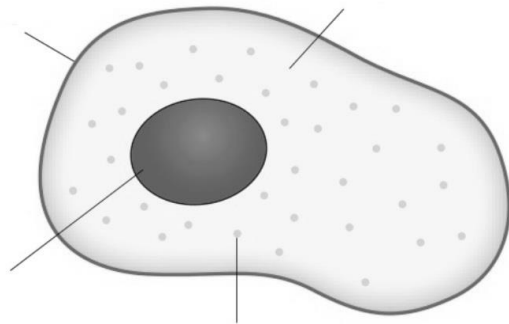
Card 9



- The site of respiration
- Contains cell Sap
- Strengthen and supports the cell. Made of cellulose
- Controls the activities of the cell. Contains the cell genetic material.
- The site of photosynthesis. Contains Chlorophyll to trap light energy
- Site of chemical reactions
- Control the substances entering and leaving the cell

Card 10

Label the diagram of the animal cell



Cytoplasm, chloroplast, mitochondria, cell wall, cell membrane, vacuole, nucleus

Card 11

Match the cell with its features.

Card 12

- |                         |   |  |
|-------------------------|---|--|
| <b>A</b> Nerve Cell     | <input type="checkbox"/> Many Chloroplasts    | <input type="checkbox"/> For Swimming                |
| <b>B</b> Leaf Cell      | <input type="checkbox"/> Contains haemoglobin | <input type="checkbox"/> To carry out photosynthesis |
| <b>C</b> Red blood cell | <input type="checkbox"/> Long tail            | <input type="checkbox"/> To transport oxygen         |
| <b>D</b> Sperm Cell     | <b>A</b> Connections at both ends of the cell | <input type="checkbox"/> To absorb water             |
| <b>E</b> Root hair cell | <input type="checkbox"/> Long extension       | <b>A</b> To connect to other cells                   |

Describe the similarities and differences of plant and animal cells.

(Similarities) Both plant and animal cells have \_\_\_\_\_

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(Differences) Plant cells are different to animal cells. They also contain \_\_\_\_\_

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Card  
13

What is a tissue? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

State the name of a group of tissues working together.

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What is an organ system? \_\_\_\_\_

---

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Card  
14

Scientists use microscopes to observe objects close up, such as a leaf.

Match the part of the microscope to its use.

eye piece
objective lens
stage
course focus knob

Magnifies the leaf, through three lenses.
Where the scientist looks to observe the leaf.
The scientist turns this to make the leaf look clear.
The leaf is placed here for it to be magnified.

Card  
15

Savannah is looking at an amoeba using a microscope.

The eyepiece lens has a magnification of 10.

The objective lens magnification is 20

total magnification = eyepiece magnification  $\times$  objective lens magnification

Calculate the total magnification, show your workings.

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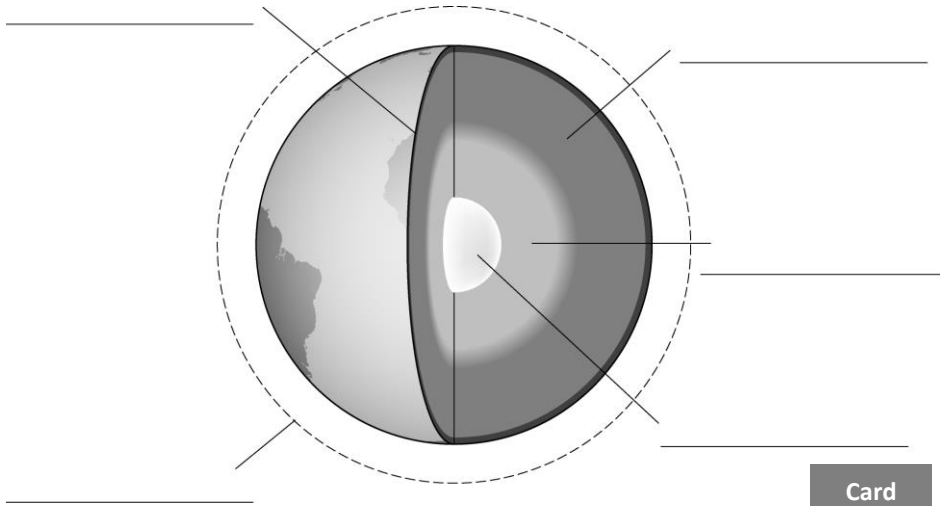
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Card  
16



Label the diagram below which shows the structure of the Earth.



Card  
21

Card  
22

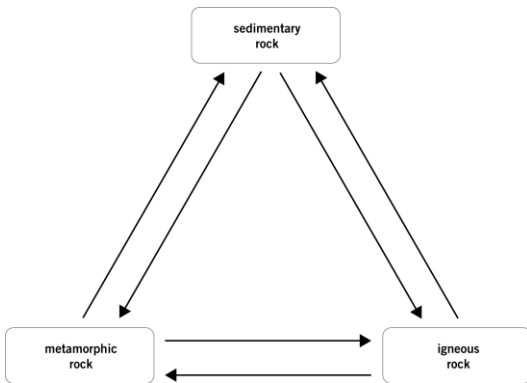
Complete the following sentences to describe the properties of the different layers of the Earth's structure. Use the words given below..

**oxygen inner live solid crust outer mantle four atmosphere  
core gas solid flow iron troposphere liquid carbon**

The Earth is split into \_\_\_\_\_ layers. The top layer is called the \_\_\_\_\_. This is made from \_\_\_\_\_ rock. The next layer is called the \_\_\_\_\_. This is mostly made from \_\_\_\_\_ rock that can \_\_\_\_\_. The centre of the Earth is called the \_\_\_\_\_, and this has two parts. The \_\_\_\_\_ core, which is solid and contains mainly \_\_\_\_\_ and nickel, and the \_\_\_\_\_ core which is \_\_\_\_\_.

Complete the simplified rock cycle below to explain how material in rocks is recycled. Use the words provided to annotate the arrows in the diagram. Words can be used more than once.

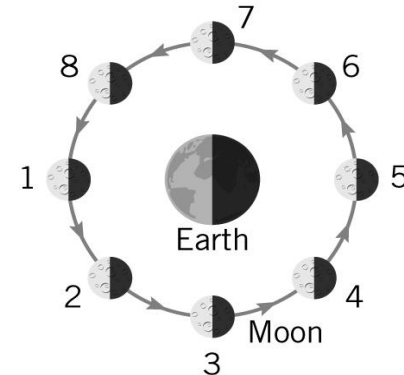
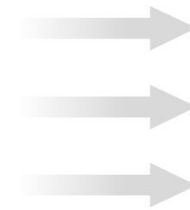
**uplift compaction deposition erosion cementation weathering  
melting pressure cooling heat transportation**



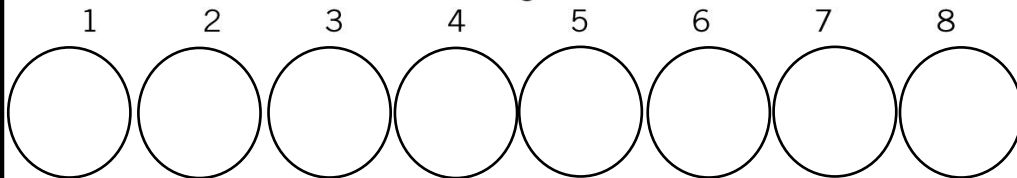
Card  
24

Card  
23

light from Sun



What we see:



Complete the diagram above to show the phases of the Moon we see when the Moon is at different positions around the Earth. Use the circles above to draw the phases of the moon at the correct position.

Use the following words to complete the sentences about the properties of the different types of rock.

cool      crystals      gaps      grains      hard      layers  
 pressure      porous      scratched

Card  
25

Sedimentary rocks are made up of separate \_\_\_\_\_.

Sedimentary rocks are \_\_\_\_\_, they allow air and water in

between gaps between the grains. Sedimentary rocks can be

\_\_\_\_\_ easily because they are soft. Igneous rocks are

\_\_\_\_\_ and durable. Almost all types of igneous rocks are

made from \_\_\_\_\_; there are no \_\_\_\_\_

between the crystals so they are not porous. The size of the crystals

depends on how long the igneous rock took to \_\_\_\_\_.

Use the following words to complete the sentences about the properties of the different types of rock.

cool      crystals      gaps      grains      hard      layers  
 pressure      porous      scratched

Metamorphic rocks are also made from crystals and are not porous.

Metamorphic rock is formed when other types of rock are put under high

\_\_\_\_\_ and temperature, and for this reason often contain

\_\_\_\_\_ of crystals.

Card  
26

The following table shows properties of rocks and information about how they form. Circle or shade the type of rock each statement is describing in the right hand column.

I = Igneous

S = Sedimentary

M = Metamorphic

Be careful: Some statements may describe more than one rock type.

Card  
27

Description	Rock type(s)		
	I	S	M
an example is granite			
soft and easily scratched			
contains layers			
sometimes contains layers			
non-porous			
hard and durable			
made up of separate grains			
made when existing rocks are placed under heat and pressure			
an example is marble			
porous			
made when liquid rock cools and freezes			
contains crystals			
an example is sandstone			
reacts with acids			
formed when sediments settle on top of each other			

Card  
28

Match each term to the correct definition.

weathering

Weathering that happens when plants and animals break up rock.

A erosion

When water gets into a crack in a rock, repeated freezing and thawing of the water breaks the rock.

B chemical weathering

Occurs when acid rain breaks up rock.

C biological weathering

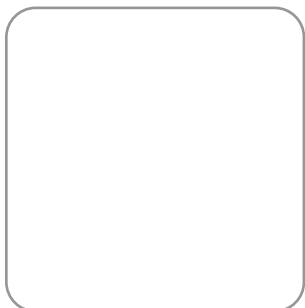
A general term used to describe when rock is broken up into smaller pieces.

D freeze-thaw

The breaking of rocks into small pieces and the movement of them away.

Draw particle diagrams in the boxes below to represent an element, a compound and a mixture.

Card 29



**Element**

An example of an element is

\_\_\_\_\_

\_\_\_\_\_



**Compound**

An example of a compound is

\_\_\_\_\_

\_\_\_\_\_



**Mixture**

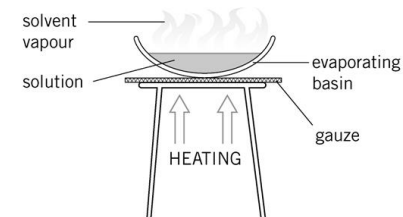
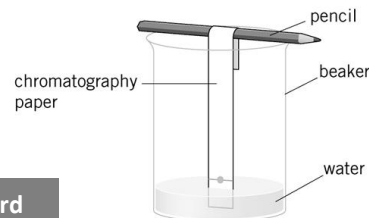
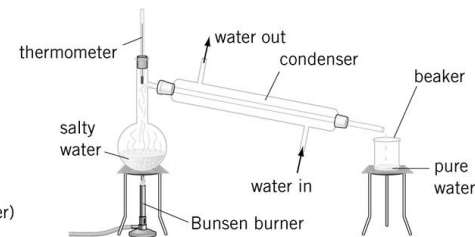
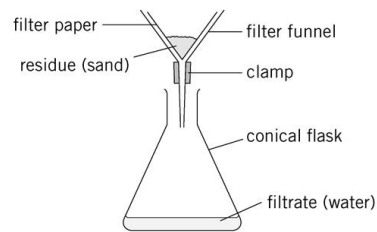
An example of a mixture is

\_\_\_\_\_

\_\_\_\_\_

Match the name of the separation technique to the correct experimental set up below.

**chromatography      filtration      evaporation      distillation**



Card 30

Rearrange the sentences below to describe and explain how filtration can be used to separate sand from a mixture of sand and sugar.

Card 31

	Order
Sugar dissolves in water. Sand does not.	
Sand is left as the residue in the filter funnel.	
Add water to the mixture. Stir.	
Sugar solution passes through the filter paper as filtrate.	
Fold the filter paper, place in funnel, and pour the mixture into the filter funnel.	

Match the halves of the following sentences together to explain how chromatography works.

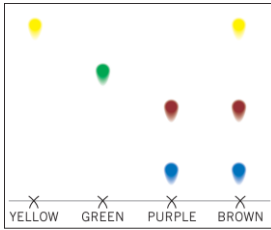
Card 32

Place a sample of each ink you would like testing on	so the mixture separates.
Place the chromatography paper in a beaker of solvent,	for example, water.
The level of solvent in the beaker must	dissolve in the solvent.
The solvent moves	the pencil line of the chromatography paper.
The ink samples	with the solvent up the chromatography paper.
The solvent carries the samples	up the chromatography paper.
Some dyes move faster than others, and some dissolve better than others,	not be above the pencil line.



The chromatogram below show the separation of ink from four different felt-tip pens.

Card 33



a State the only coloured pen whose ink does not appear in the brown felt-tip pen.

\_\_\_\_\_

b Suggest whether a brown pen made by a different company would produce the same result on a similar chromatogram. Explain your answer.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Fill in the table to say when you would use each separation method. Try to give an example for each method.

Card 34

Separation method	Used for...
chromatography	
filtration	
evaporation	
distillation	

Completing the table will help you describe arrangements of particles. You will need to draw a diagram for each state using circles for each particle. The first particle has been drawn in to help you. The missing words are given beneath.

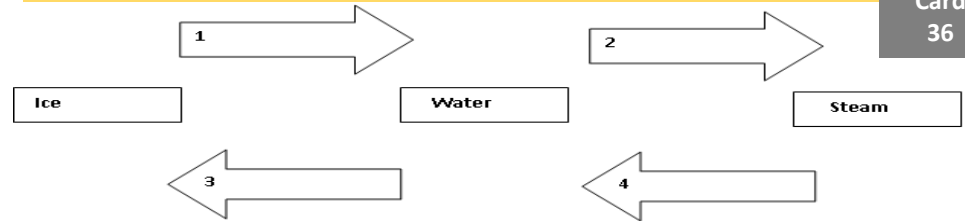
Card 35

fast volumes fixed far escape poured touch  
 compressed past fill.

Solid	Liquid	Gas
○	○	○
The particles are in _____ positions. Solids cannot be _____. Solids have fixed _____.	The particles can move _____ one another but cannot _____. Liquids have fixed volume but can be _____.	The particles are very _____ apart and do not _____ one another. The particles move very _____ and can be compressed. Gases _____ any space.

You need to complete the following diagram and table to show what happens to an ice cube when it is heated up in a saucepan.

Card 36



1 Label arrows 1-4 with the name of the process that is happening.  
 2 Decide which of the statements in the table below describes each arrow.

Add the correct arrow number to each statement.

Arrow	Description
	Particles are very far apart and moving very quickly. They begin to get closer together until they are in contact with one another. Particles can still move around but now take up less volume.
	Particles start to vibrate more and more. They can move from their fixed positions and are able to move past one another.
	Particles gain enough energy to escape from each other. They begin to move around on their own, very fast. They spread out into the full space of their container.
	Particles stop moving past each other and have fixed positions. They still have some energy and vibrate but they cannot move about anymore.

Complete the table below to describe what happens to the particles during each change of state.

Card  
37

Change of state	The particles...
melting	
boiling	
condensing	
freezing	
sublimation	

Describe the differences between boiling and evaporation.

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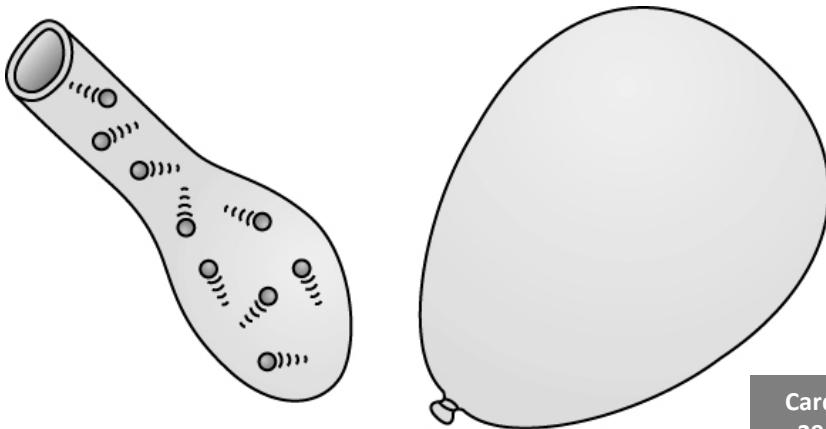
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Card  
38

Gas pressure increases when a balloon is blown up. In the diagram below, the particles are missing from the inflated balloon. Fill in the missing particles on the diagram.



Card  
39

Explain what will happen to a balloon if...

Card  
40

(a) place the balloon in the freezer \_\_\_\_\_

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---

(b) Place the balloon in a hot room \_\_\_\_\_

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Use the following melting points and boiling points to answer some questions about chlorine, water, and lead.

Card  
41

Substance	Melting point (°C)	Boiling point (°C)
chlorine	-101	-34.7
water	0	100
lead	327	1744.0

- 1 Chlorine is usually found as a gas. In 1954 a temperature of  $-66^{\circ}\text{C}$  was recorded in Greenland. Would chlorine still have been a gas? Explain your answer.
- 2 Would a puddle freeze if the temperature was  $-5^{\circ}\text{C}$ ? Explain your answer.
- 3 What state will lead be in if it is placed in an oven that has been heated to  $250^{\circ}\text{C}$ ? Explain your answer.

Write a method to create copper sulphate crystals.

Card  
42

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In the box below write the formula for speed.

Card  
43

Calculate speed in the following scenarios using the speed equation. Show your working and include units.

- a A dog that runs 100 m in 10 s. Give your answer in m/s.

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- b Sound travelling 1 km in 2.94 s. Give your answer in m/s.  
Remember: 1 km = 1000 m

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- c A train that travels 600 km in 5 h. Give your answer in km/h.

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Tick the non-contact forces (the forces that act at a distance) in the list below.

Card  
44

Name of force	Non-contact force
friction	
gravity	
magnetism	
upthrust	

Complete the passage by writing **mass** or **weight** in each of the gaps.

\_\_\_\_\_ is a measured in kilograms (kg)

The unit for \_\_\_\_\_ is the newton (N)

An object's \_\_\_\_\_ can change by raising the object above the planet or by taking it to another planet.

Look at the picture of the car. The arrows represent the driving force and resistive force acting on the car.



1 The driving force is bigger. What effect do you think this has on the car's movement?

\_\_\_\_\_

2 Explain what you think would happen if the resistive force was increased (e.g., if the driver applied the brakes).

\_\_\_\_\_

\_\_\_\_\_

In this task you are going to calculate the weight of an astronaut if they were to stand on the surface of each of the planets in the solar system. Also rank the planets in order according to the weight of the astronaut (Heaviest = 1).

Fill in your answers in the table.

Name of planet	Mass of astronaut (kg)	Gravitational field strength (N/kg)	Weight (N)	Rank
Mercury	70.0	3.7		
Venus	70.0	8.9		
Earth	70.0	10		
Mars	70.0	3.7		
Jupiter	70.0	23.1		
Saturn	70.0	9.0		
Uranus	70.0	8.7		
Neptune	70.0	11.0		

The gravitational field strength of Earth is 10 N/kg.

The gravitational field strength of the Moon is 1.6 N/kg.

The gravitational field strength on Mars is 3.7 N/kg.

Astronauts have visited the Moon, but they have not been to Mars. Apart from the increased distance between the Earth and Mars, another problem would be launching from the surface of Mars to come home.

Explain why it will be more difficult to lift off from Mars than the Moon?

\_\_\_\_\_

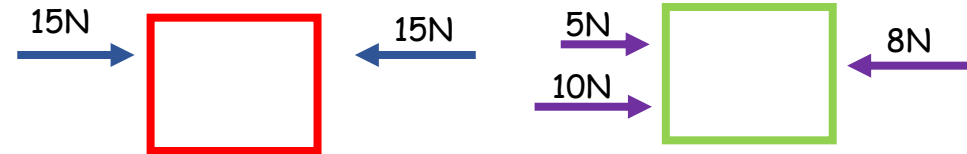
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

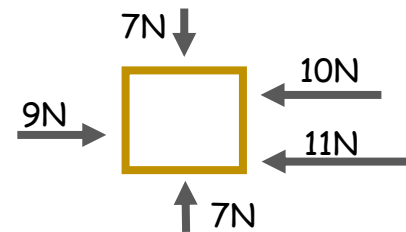
\_\_\_\_\_

Calculate the net force on the Box. Identify the direction the box will travel. Identify as balance or unbalance force.



Net Force \_\_\_\_\_  
 Direction \_\_\_\_\_  
 Balance or Unbalance \_\_\_\_\_

Net Force \_\_\_\_\_  
 Direction \_\_\_\_\_  
 Balance or Unbalance \_\_\_\_\_



Net Force \_\_\_\_\_  
 Direction \_\_\_\_\_  
 Balance or Unbalance \_\_\_\_\_

Complete this table using the following phrases:

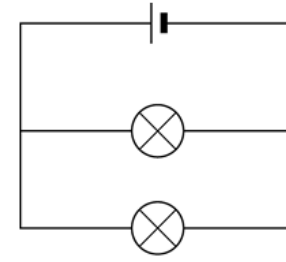
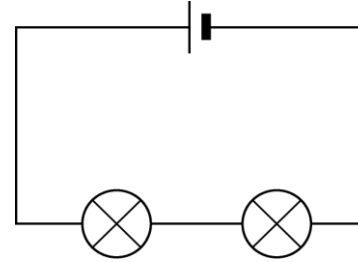
Card 49

ammeter connected in series    amount of charge flowing per second  
 how much energy is transferred to the charge  
 voltmeter connected in parallel

	Current	Potential difference
What it is measured with		
Definition		

The two circuits below show different ways circuit components can be connected. Label the components in these circuits and state whether they are series or parallel circuits. Explain your answer.

Card 50




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Complete the following paragraph to describe resistance using the words given below. Words can be used more than once.

Card 51

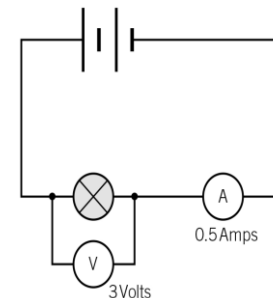
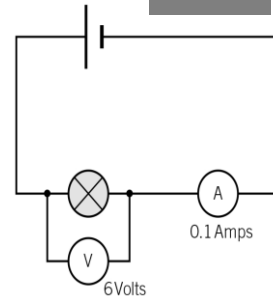
ohms    resistance    V    A    Ω    component    charges

Each circuit \_\_\_\_\_ has a different \_\_\_\_\_. This tells you how easy or difficult it is for the \_\_\_\_\_ to pass through the component. Resistance is measured in \_\_\_\_\_, which has the symbol \_\_\_\_\_. Resistance can be calculated using the equation:

$$\text{resistance ( } \quad \text{ )} = \frac{\text{potential difference ( } \quad \text{)}}{\text{current ( } \quad \text{)}}$$

Card 52

Calculate the resistances of the components in the following circuits.




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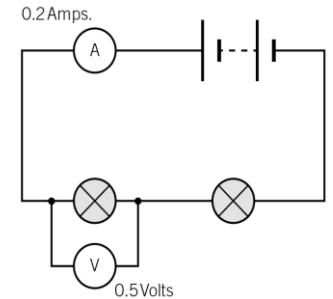
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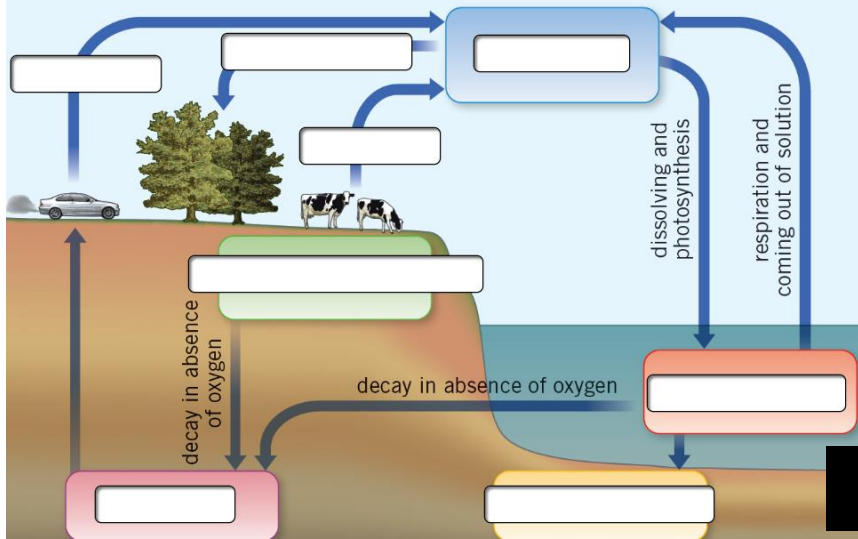
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Use the terms below to label the diagram of the carbon cycle.

animals, plants, and soil    sedimentary rocks    atmosphere    combustion  
 dissolved in sea    photosynthesis    fossil fuels    respiration



Card 53

Add the terms *global warming* and *greenhouse effect* next to the correct definition.

Definition	Term
transfer of the Sun's energy to the thermal store of gases in the Earth's atmosphere	
gradual increase in the air temperature of the Earth	

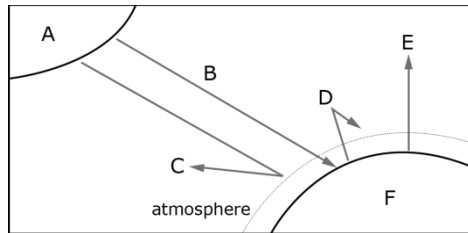
Match the key words to the correct definitions.

- Global warming ● ● When energy from the Sun is transferred to the thermal energy store of gases in Earth's atmosphere
- Greenhouse gas ● ● Contributes to the greenhouse effect; carbon dioxide is an example
- Atmosphere ● ● The gradual increase in the average surface temperature of the Earth
- Greenhouse effect ● ● The mixture of gases surrounding the Earth

Card 54

Card 55

Look at this diagram of the greenhouse effect. Draw lines to match each letter with the correct label.



Letter
A
B
C
D
E
F

Label
Earth's surface emits radiation
Sun
atmosphere absorbs and radiates some of the radiation from the Earth's surface
Earth
atmosphere absorbs and reflects some radiation
Sun warms the Earth's surface

Describe how global warming contributes to climate change and affects living things. Use these words to help you.

rainfall    flooding    droughts    heatwaves    crop failures

.....

.....

.....

.....

.....

.....

Card 56

Choose the correct terms to name the following chemical sentences on climate change.

A long-term change to weather patterns is called

greenhouse effect  
Climate change

. Currently, this is making many

glaciers and the polar ice caps melt. This is

causing sea levels to

fall  
rise

and flood low-lying

coastal areas. It may also lead to the

extermination  
extinction

of some plant and animal species.

Card  
57

Choose the correct terms to name the following chemical sentences on climate change.

Over time there has been a gradual increase in the temperature of the surface of the Earth.

This is called

greenhouse effect  
global warming  
global cooling

. During the last 100

years there has also been an increase in the

concentration of

Nitrogen  
Oxygen  
Carbon dioxide

in the atmosphere.

Scientists think that these factors are linked.

Card  
58

Choose the correct terms to name the following chemical sentences on climate change.

Global warming changes local weather patterns.

For example, in some areas rainfall has

increased which has led to

drought  
flooding

. In other

areas it has decreased, causing

drought  
flooding

. Both

these issues can result in crop failure.

Card  
59

State why recycling is needed.

Card  
60

.....

.....

.....

.....

.....

.....

Look at the table. It shows an estimate of when the sources we get four elements from might run out.

Card  
61

Element	Uses of element	When the source of the element will run out (estimated year)
phosphorous	making fertilisers	between 2060 and 2110
Gold	jewellery, electrical connections	2040
Tin	food containers, solder	2030
Aluminium	aeroplanes, overhead power cables, kitchen foil	2500

Suggest why it is particularly important to recycle tin, as compared with the other elements.

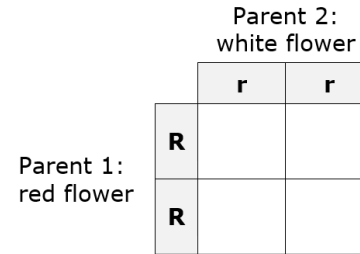
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### Genetics

Card  
62

- Complete the Punnett square to show the inheritance of flower colour. The allele for red flowers is **R**. The allele for white flowers is **r**.



- Describe, in detail, the difference between **R** and **r** in the genetic cross above.

.....

.....

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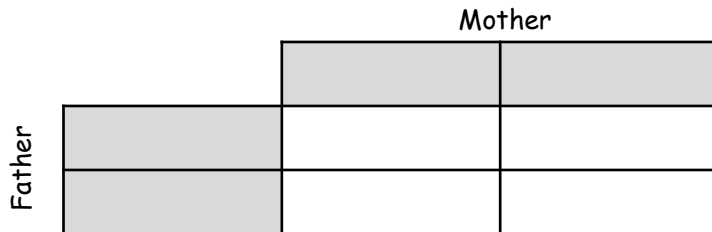
### Complete the Genetic cross

Card  
63

The allele for brown eyes is a dominant allele and can be represented by the letter B.

The allele for blue eyes is a recessive allele and can be represented by the letter b.

Mother brown eyes (Bb) x Father brown eyes (Bb)



What percentage of off-spring will have blue eyes? \_\_\_\_\_

What percentage of off-spring will have brown eyes? \_\_\_\_\_

Complete these sentences to describe evidence for Darwin's theory of evolution.

Natural    Extinct    Adapted    Resistant

The different types of finches all descended from a common ancestor.

This means that the finches have ..... to their surroundings.

The variation shown within the species over time is as a result of ..... selection.

These changes are also observed in other organisms, including in microorganism populations. An example of this is the development of antibiotic-..... bacteria.

Fossil records can also be used to demonstrate changes in organisms over time, and the fact that some organisms have become ..... shows how species that do not adapt to environmental changes eventually die out.

Card  
64



Biodiversity is the name given to all the species living in a particular ecosystem. Within an ecosystem, having many different species ensures resources are available for other populations, such as humans.

Explain how a lack of biodiversity can lead to a species dying out in an area.

.....

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Card  
65

Draw lines to link the techniques used to prevent extinction and maintain biodiversity with their descriptions.

Card  
66

seed banks	animals are bred in human-controlled environments; this creates a stable, healthy population of a species before reintroducing it back into its natural habitat
captive breeding	the protection of natural environment to ensure that habitats are not lost; this reduces disruption to food chains and webs
conservation	conserves plants by storing seeds of many different plant species under carefully controlled conditions; in the event that a plant species becomes extinct, the seeds can be used to reintroduce the species

Fill in the gaps using these key words. You can use each word more than once.

genes    characteristics    chromosomes    DNA

You inherit characteristics from your parents through genetic material stored in the nucleus of your cells. This material is a chemical called deoxyribonucleic acid (.....). It contains all the information needed to make an organism. Inside the nucleus, your DNA is arranged into long strands called .....

Humans have 46 ..... You inherit half of your ..... from your mother and half from your father. This is why you share some of your ..... with your mother and some with your father. Each chromosome is divided into sections of DNA. The sections that hold the information to produce a characteristic are .....

Card  
67

Explain why brothers and sisters with the same parents look similar but not identical.

Card  
68

.....

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.....

Animals can become extinct or endangered for different reasons.

Read the following information about animals that are extinct or endangered. Choose the most likely reasons for extinction, from:

- changes to the organism's environment
- destruction and loss of habitat
- outbreak of a new disease
- introduction of new predators and competitors.

**Card  
69**

Dodos used to live on the island of Mauritius, which was uninhabited. Dodos had no natural predators. In the 17th century, people arrived on the island, and dodos were hunted for food. Rats that came on the ships ate the dodos' eggs. In less than a century, the dodo became extinct.

**Reason for extinction:**

Animals can become extinct or endangered for different reasons.

Read the following information about animals that are extinct or endangered. Choose the most likely reasons for extinction, from:

- changes to the organism's environment
- destruction and loss of habitat
- outbreak of a new disease
- introduction of new predators and competitors.

**Card  
70**

The black rhino is an endangered species. They are poached for their horns. Some rhino habitats have also been taken over by landless people with nowhere else to live.

**Reason for extinction:**

Animals can become extinct or endangered for different reasons.

Read the following information about animals that are extinct or endangered. Choose the most likely reasons for extinction, from:

- changes to the organism's environment
- destruction and loss of habitat
- outbreak of a new disease
- introduction of new predators and competitors.

**Card  
71**

Christmas Island was uninhabited until 1888. When people inhabited the island, rats from the people's ships also inhabited the island. The native rat population became extinct within a decade.

**Reason for extinction:**

Describe how animals, such as the woolly mammoth, became extinct, while other species survived.

**Card  
72**

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.....

Sort these 'For' and 'Against' statements about genetic modification.

- characteristics can be changed in one generation
- can create crop plants with high yields
- very precise process – single genes targeted
- organisms created may trigger allergic reactions
- could lead to the production of 'superweeds'
- new plants created could outcompete natural species
- can be used to create bacteria that produce medical drugs
- some people believe it is unethical
- produces organisms with desired characteristics

Card 73

For

Against

Sort these statements into those which are potential advantages of genetic modification, and those which are potential disadvantages of genetic modification.

- new pathogens may form if genetically modified organisms breed with other species
- organisms with desired characteristics are made
- bacteria can be modified to produce vaccines
- some people believe it is unethical to interfere with an organism's genetic material
- modified food products could trigger allergic reactions
- tomatoes can have antifreeze genes added to become frost resistant
- bacteria can be modified to produce insulin

Card 74

Advantages

Disadvantages

Machines make work easier. Draw diagrams to illustrate and explain the following statements.

A screwdriver makes it easier to take the lid off a paint can.



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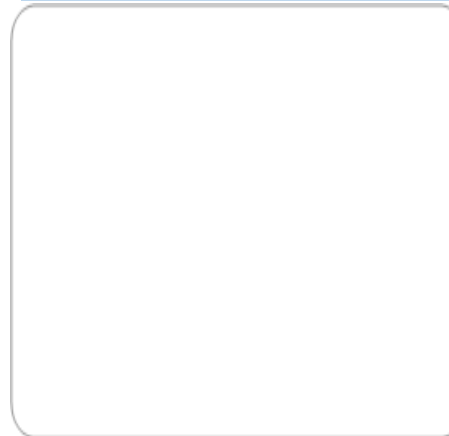
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Card 75

Machines make work easier. Draw diagrams to illustrate and explain the following statements.

A spanner with a longer handle is easier to use than one with a shorter handle.



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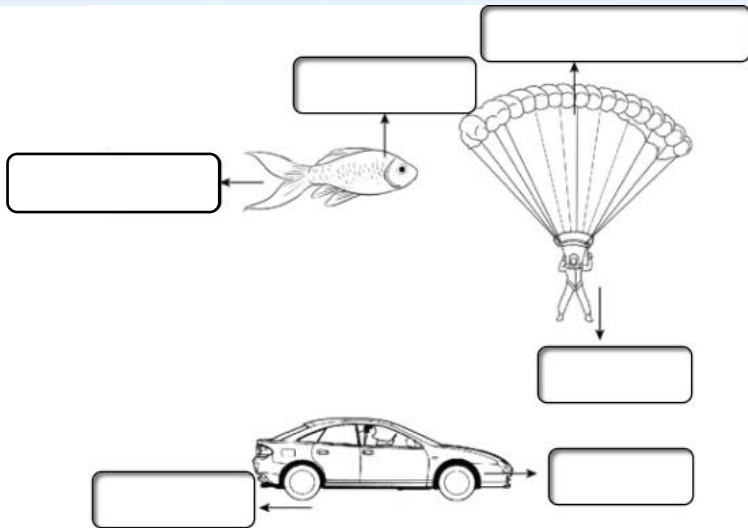
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Card 76

Use the terms below to complete the diagrams.

Air resistance Drag Friction Upthrust Thrust Weight



Card 77

Card 78

Match the terms with their meaning.

law of moments  
drag force  
resultant force  
moment

	A measure of the ability of a force to rotate an object about a pivot.
	Single force which can replace all the forces acting on an object and have the same effect.
	The force acting on an object moving through air or water that causes it to slow down.
	An object is in equilibrium if the clockwise moments equal the anticlockwise moments.

Match the term with its definition

Card 79

A	Up thrust	Force squashing or pushing together
B	Deformation	Changing shape due to force
C	Tension	Force extending or pulling apart
D	Compression	Force opposing motion between surfaces
E	Friction	Upward force exerted by a fluid on a body.

## Resultant forces

Card 80

Sort these statements into situations where the object is in equilibrium and situations where there is a resultant force acting.

	Equilibrium	Resultant force
A diver slowing down as they hit the water	<input type="radio"/>	<input type="radio"/>
A tennis ball speeding up just after it has been hit	<input type="radio"/>	<input type="radio"/>
A swimmer swimming at a steady speed of 1.5 m/s	<input type="radio"/>	<input type="radio"/>
A toy boat floating in the bathwater	<input type="radio"/>	<input type="radio"/>
A table standing on the dining room floor	<input type="radio"/>	<input type="radio"/>
Train driving at a steady speed of 100 mph	<input type="radio"/>	<input type="radio"/>
A toy car slowing down as it rolls along a desk	<input type="radio"/>	<input type="radio"/>

Mattresses often contain springs. Draw a diagram and label the forces to help describe and explain what happens to the springs when you sit on a mattress.

Card  
81

Complete the following table for different objects in water and decide whether the object will float, rise or sink.

Weight (N)	Upthrust (N)	Rise, float, or sink?
20	20	
5	6	
8	6	

Card  
82

A student uses a newtonmeter to measure the weight of an object in air and then when it is suspended in water. The reading in air is 0.5 N. Describe and explain what will happen to the reading in water if the object floats.

.....

.....

.....

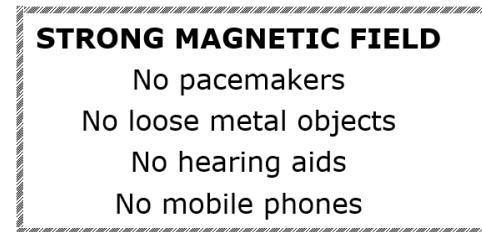
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Card  
83

Magnets are used in hospitals.  
A door in a hospital has this warning sign:



Explain why you are safe outside the door.

.....

.....

.....

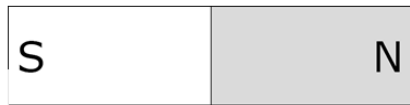
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Card  
84

Draw the magnetic field lines around the bar magnet. Add the direction of the field lines. Label your diagram with these four labels:

Card 85

north-seeking pole	south-seeking pole
strongest magnetic field	weakest magnetic field



This question is about permanent magnets and electromagnets.

Card 86

**a** State two similarities between a permanent magnet and an electromagnet.

.....

.....

.....

**b** State two differences between a permanent magnet and an electromagnet.

.....

.....

.....

How would you move a car safely in a scrapyard from one place to another?

Card 87

.....

.....

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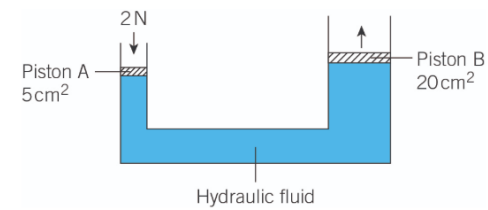
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## Hydraulics

Card 88

The diagram shows a simple model of a hydraulic system used in a demonstration. Pistons A and B can move freely. Which of the following statements are true?



- The pressure on piston B is  $0.1 \text{ N/cm}^2$ .
- The force at B is equal to  $4 \text{ N}$ .
- Liquid is used because it is incompressible.
- Liquid is used because its pressure increases with depth.
- The pressure transmitted by the liquid is  $0.4 \text{ N/cm}^2$ .

Choose the correct terms about pressure in liquids.

little	incompressible	force
pressure	deeper	greater
thicker	hydraulic machines	

Liquid  acts in all directions. The  you go in a liquid, the  the pressure becomes. This is why the wall of a dam is  at the bottom than at the top.

Because there is  space between molecules, liquids are said to be . This property is used in , which can be used as  multipliers.

Card  
89

Which of the following situations describe situations where stress is reduced?

- Sharp knives cutting easily through foods.
- Elephants having very wide feet.
- Caterpillar tracks on a tank that spread the weight of the tank over a large surface area.
- Studs on football boots designed to dig into the ground.
- Wearing snow shoes to increase a person's surface area in contact with the ground.
- Wearing stiletto heels that leave marks on wooden floors as their surface area is small.

Card  
90

Match the terms with their meaning.

Card  
91

compression    pressure    tension    elastic limit

	Force extending or pulling apart.
	The ration of force to surface area, in $N/m^2$ , and how it causes stresses in solids.
	The point beyond which a spring will not return to its original length when the force is removed.
	Force squashing or pushing together, which changes the shape of an object.

Sort the statements below into the correct order to describe the path that air takes into the body as you inhale.

- Air moves down the trachea (windpipe).
- Oxygen diffuses into the blood capillaries
- Air moves through a bronchiole.
- Air moves down a bronchus.
- Air moves into an alveolus (air sac).
- 1 Air enters your body through your mouth and nose.

Card  
92

To have a balanced diet, you must eat food containing the right nutrients and in the correct amount. Fill in the name of the nutrient whose role in the body is being described.

Card 93

\_\_\_\_\_ used to build new tissue for growth and repair.

\_\_\_\_\_ store of energy; insulation; protects organs.

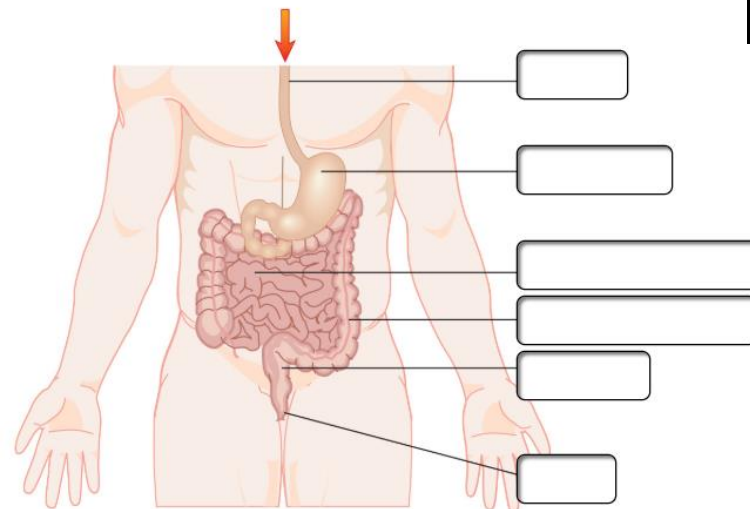
\_\_\_\_\_ provides bulk to keep food moving through the gut.

\_\_\_\_\_ and \_\_\_\_\_ needed in small amounts to keep the body functioning properly

\_\_\_\_\_ main source of energy for the body

Correctly label the digestive system below.

Card 94



Large intestine    anus    stomach    mouth    Oesophagus  
Rectum    gall bladder    pancreas    small intestine

Match the organ with its function.

A	Small intestine
C	Oesophagus
E	Stomach
F	Rectum
G	Mouth
I	Large intestine

Card 95

	A muscular bag. Hydrochloric acid is added to food to kill bacteria. Enzymes digest proteins. The food is churned up here.
	Mastication occurs here. Saliva is added to the food containing mucus, water and the enzyme amylase.
	This is where water is reabsorbed from the waste.
	Faeces is stored here before it leaves the body through a ring of muscle called the anus.
C	A muscular tube connecting the pharynx (throat) with the stomach. Food moves through it by peristalsis.
	A muscular tube approximately 6m long. Enzymes digest carbohydrates, proteins and lipids. Food molecules enter bloodstream here.

Use the words below to fill in the gaps to describe what happens to food during digestion.

Card 96

sugar	smaller	digestion	large
Enzymes	carbohydrase	proteins	intestine

The nutrients in most of the food you eat are \_\_\_\_\_ molecules, like lipids and \_\_\_\_\_. During \_\_\_\_\_ these molecules are broken down into \_\_\_\_\_ molecules that can be absorbed.

\_\_\_\_\_ are special proteins that help to speed up the breakdown of nutrient molecules. For example, \_\_\_\_\_ helps speed up the break down of carbohydrates into \_\_\_\_\_ molecules.

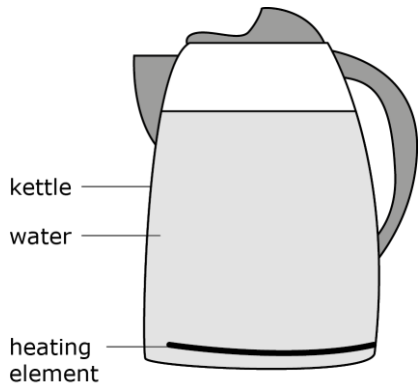
Most of the small nutrient molecules produced during digestion pass into the blood through the wall of the small \_\_\_\_\_. The blood then transports them to cells around the body to support their function.



The heating element in a kettle is always at the bottom. Add to the diagram of a kettle to show how all the water in the kettle heats up, rather than just the bottom layer. Use these key words.

Card 97

sink    dense    particles    rise    faster    convection current



Draw a diagram to show heat passing through a metal rod. Describe, using these key words, how the thermal energy is transferred.

vibrate    faster    particles    electrons    conduction    collide    thermal energy



Card 99

If you are standing in front of a bonfire on a cold night and someone walks between you and the fire, you can no longer see the fire and instantly feel cold. Draw a diagram and explain these observations using the following key words.

shadow    straight line    radiation    thermal    wave



Card 98

What makes extraction by electrolysis so expensive?

Card 100

Why are electrolysis plants often situated by hydroelectric generators?

Choose from this list of words to complete the statements below.

carbon	reactivity	ores	electrolysis
--------	------------	------	--------------

- a Many metals are found as compounds in rocks called .....
- b Extracting metals depends on their .....
- c Metals *more* reactive than carbon are extracted by .....
- d Metals *less* reactive than carbon are extracted by heating with .....

Card 101

Use the reactivity series to name the metals that are extracted using carbon and the metals that are extracted using electrolysis.

Card 102

Metals that are extracted using carbon:

.....  
.....

Metals that are extracted using electrolysis:

.....  
.....

Complete the sentences below.

The elements on the left side of the stepped line on the Periodic Table are \_\_\_\_\_.

The elements on the right side of the stepped line of the Periodic Table are \_\_\_\_\_.

A vertical column in the Periodic Table is called a \_\_\_\_\_.

A horizontal row in the Periodic Table is called a \_\_\_\_\_.

Properties that you can observe and measure are called \_\_\_\_\_ properties.

Features of the way a substance reacts with other substances are called \_\_\_\_\_ properties.

Card 103

Sort the properties into those of group 0 elements and those of group 7 elements.

Card 104

- low melting points
- become more reactive going up the group
- examples include argon and helium
- colourless gases at room temperature
- exist in the atmosphere
- examples include bromine and iodine
- unreactive
- low melting and boiling points
- mixture of solids, liquids, and gases at room temperature

Group 0

Group 7

Fill in the meaning of the prefixes in the table below.

Card  
105

Prefix	Meaning
Mono-	
Di-	
Tri -	

Match the compounds to their symbols.

hydroxide	CO <sub>3</sub>
nitrate	SO <sub>4</sub>
sulfate	NO <sub>3</sub>
carbonate	OH

Write down the names of the chemicals represented by the following symbols.

Card  
106

H .....  
O .....  
N .....  
C .....  
Fe .....  
Zn .....  
Cu .....  
S .....

Al .....  
I .....  
Br .....  
Cl .....  
Na .....  
K .....  
Mg .....

Complete the proportions of each element in these common compounds.

Card  
107

Compound name	Chemical formula	Relative number of atoms of each element
water	H <sub>2</sub> O	2 hydrogens, 1 oxygen
sulfur dioxide		
sodium hydroxide		
calcium carbonate		

Complete the sentences below by circling the correct term.

Card  
108

As you go down Group 1 the metals get **more/less** reactive and their melting point **increases/decreases**.

As you go down Group 7 the halogens get **more/less** reactive and their melting point **increases/decreases**.

Describe how caesium (Cs) will react with water.

.....  
.....  
.....

Link the two halves of each sentence to explain common mass changes observed during reactions.

Card  
109

- |   |   |  |
|---|---|--|
| If a gas combines with a solid or liquid, the mass will | ● | ● appear to decrease in mass.            |
| If a substance melts, the mass will                     | ● | ● stay the same.                         |
| Reactions that release gas                              | ● | ● appear to increase.                    |
| When two liquids react, the mass of each liquid will    | ● | ● add together.                          |
| Conservation of mass states that the mass               | ● | ● of reactants and products is the same. |

Complete the word equations of the missing reactants and products. Propane, butane and pentane are all compounds of carbon and hydrogen.

Oxygen  
Calcium oxide  
Carbon dioxide  
dioxide  
Carbon

Card  
110

- magnesium + \_\_\_\_\_ → magnesium oxide
- propane + oxygen → carbon \_\_\_\_\_ + water
- butane + \_\_\_\_\_ → \_\_\_\_\_ dioxide + water
- calcium + oxygen → \_\_\_\_\_
- pentane + oxygen → \_\_\_\_\_ + water

Each statement is true for either chemical changes only, physical changes only or both chemical and physical changes. Put each statement into the correct box.

Card  
111

- boiling    may transfer energy from or to the surroundings
- atoms rearrange to make new substances    oxidation    dissolving
- burning    easy to reverse

**chemical changes**

**physical changes**

**both**

Look at these equations:

Card  
112

- carbon + oxygen → carbon dioxide
- magnesium + oxygen → magnesium oxide
- lead carbonate → lead oxide + carbon dioxide

Place the elements and compounds into the correct box if they are reactants or products.

- carbon dioxide    magnesium    lead carbonate    magnesium oxide    lead oxide
- carbon    oxygen

**Reactants**

**Products**

Match the correct term with the correct definition.

Card  
113

conservation of mass

A chemical reaction in which a compound breaks down to form simpler compounds and/or elements.

combustion

A chemical reaction in which substances react with oxygen to form oxides.

decomposition

A chemical reaction in which a substance reacts quickly with oxygen and gives out light and heat.

oxidation

In a chemical reaction, the total mass of reactants is equal to the total mass of products.

Match the correct term with the correct definition.

Card  
114

exothermic

A reaction that takes in energy, usually as heat. In other words, it transfers energy from the surroundings.

physical change

A substance that stores energy in a chemical store which it can release as heat.

fuel

A change that is reversible, in which new substances are not made. Examples of physical changes include changes of state, and dissolving.

endothermic

A reaction that gives out energy, usually as heat or light. In other words, it transfers energy to the surroundings.

Balance these symbol equations.



Card  
115

Circle the correct words to complete the information about combustion reactions.

Combustion is a reaction of Oxygen  
carbon dioxide,

with a compound containing Nitrogen  
Carbon

and Helium  
Hydrogen in which energy is transferred

From  
to the surroundings as

Sound  
Heat and Light  
Sound.

An example of a combustion reaction:

methane + oxygen → Methane  
Carbon dioxide + Water  
Oxygen

Card  
116

Look at this key:

● carbon atom ● oxygen atom ● nitrogen atom ○ hydrogen atom

Now **match** the particle diagram of the molecules to their formula and name.

Card  
117

<b>A</b>		<input type="checkbox"/>	H <sub>2</sub> O	<input type="checkbox"/>	water
<b>B</b>		<input type="checkbox"/>	NO	<input type="checkbox"/>	carbon dioxide
<b>C</b>		<input type="checkbox"/>	O <sub>2</sub>	<b>A</b>	ammonia
<b>D</b>		<input type="checkbox"/>	CO <sub>2</sub>	<input type="checkbox"/>	nitrogen monoxide
<b>E</b>		<b>A</b>	NH <sub>3</sub>	<input type="checkbox"/>	methane
<b>F</b>		<input type="checkbox"/>	CH <sub>4</sub>	<input type="checkbox"/>	oxygen

When 6.4g of copper powder is heated in air it forms 8.0g of copper oxide. What mass of oxygen was taken from the air chemically joined with the copper?

- 6.4 g
- 0.8 g
- 8.0 g
- 1.6 g

Card  
118

On heating 8.4g of magnesium carbonate it decomposes to leave 4.0g of magnesium oxide. What mass of carbon dioxide would be given off if 16.8g of magnesium carbonate was heated?

- 8.8 g
- 12.4 g
- 8.0 g
- 4.4 g

Card  
119

Calcium carbonate on heating decomposes to produce calcium oxide and carbon dioxide gas.

Calculate the correct answers to fill in the gaps below.

Card  
120

Select the correct answers to fill the gaps below.

(a)

If 100 g of calcium carbonate is heated it decomposes to make 56 g of calcium oxide and  g of carbon dioxide.

(b)

If 50 g of calcium carbonate is heated it decomposes to make  g of calcium oxide and 22 g of carbon dioxide.

(c)

If  g of calcium carbonate is heated it decomposes to make 224 g of calcium oxide and 176 g of carbon dioxide.