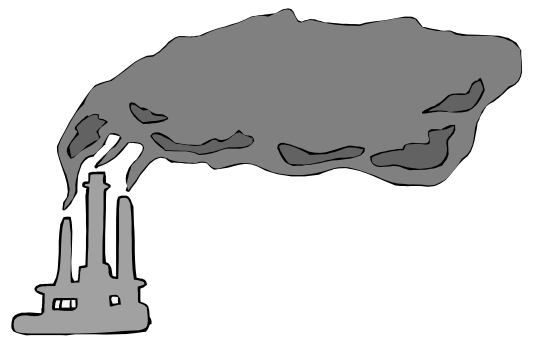
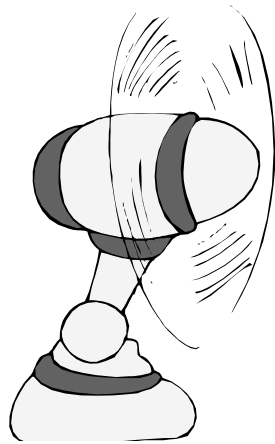


Air &

Water



Name: _____

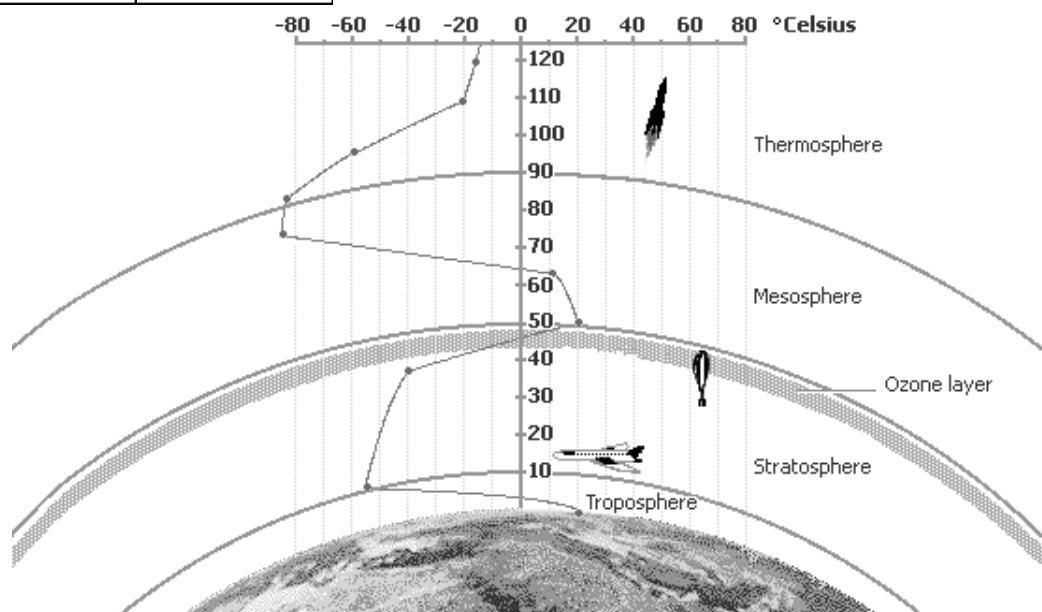
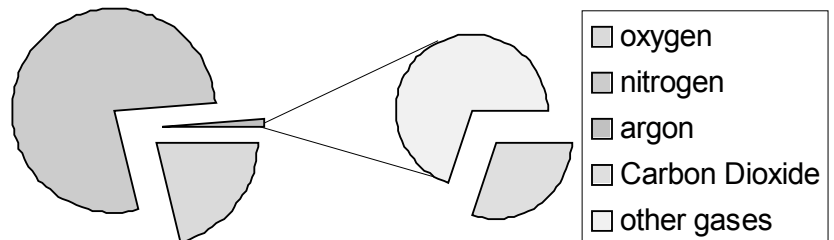
The Air:

The Earth is surrounded by a layer of gas which we call air. Air is a mixture of several different gases.

The Earth's atmosphere contains several different gases. Most of it 78 % is **nitrogen**. Almost all of the rest 21 % is **oxygen**. The rest is made up of very small amounts of **carbon dioxide, argon** and other **noble gases, and water vapour**.

Gases in the atmosphere

Gas	Percentage
Nitrogen	78
Oxygen	21
Argon	0.9
Carbon dioxide	0.03
Neon, krypton, xenon, water vapour	very small amounts



The atmosphere is made of air, while space is where there is no air.

The atmosphere is divided into three major layers:

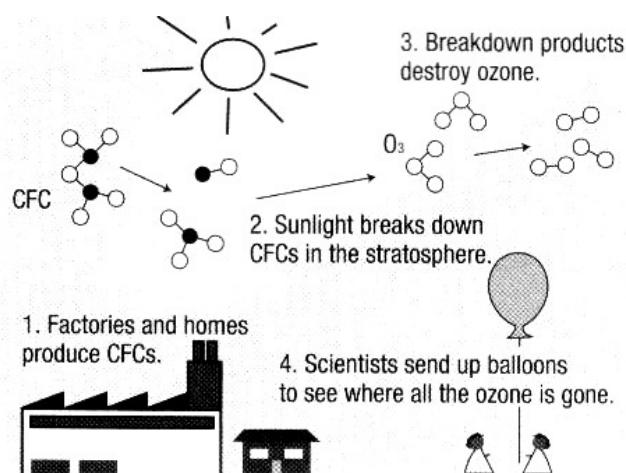
- 1 Lower atmosphere: Known as the **troposphere**, this layer contains about 80% of the air. Its thickness varies from 10 km at the poles to 15 km over the equator. All our weather happens in the troposphere. Clouds exist in this layer. The air moves around the Earth and moves up and down within this layer. As you go higher, the air pressure decreases and the temperature decreases from 20°C to -60°C Above the troposphere the atmosphere gets warmer.
- 2 Middle atmosphere consists of:
 - The **stratosphere** is a layer that extends from 11 km to 50 km. The temperature rises from -60°C to +20°C. The air moves horizontally and does not move up and down.
 - The **mesosphere** extends from 50 km to 90 km. The temperature decreases from +20 to -86°C as you go higher.
- 3 The upper atmosphere or **ionosphere**: It consists of:
 - The thermosphere extends from 90 km to 480 km. This is the hottest layer because it is closer to the Sun. The temperature increases from -86°C to more than +600°C.
 - **Exosphere**: This starts at the top of the thermosphere and continues until it merges with the space, which mainly contains hydrogen and helium gases. Between 200 to 480 km, charged particles from the Sun change some of the atoms into ions (= charged

particles). These charged particles cause auroras near the north and south poles. The ions reflect radio transmissions back to Earth.

Ozone Layer

While there is some ozone in the air we breathe, most of the ozone in the atmosphere is in the upper stratosphere. Even though ozone makes up only a small part of the stratosphere, it is often referred to as the ozone layer. Ozone is especially important to life on Earth because it blocks out more than 95 per cent of the sun's ultraviolet (UV) rays. Any decrease in the amount of ozone in the stratosphere is damaging to all living things because more UV rays reach the surface. For humans, this means a greater risk of the sunburn and skin cancer these rays cause.

Some chemicals used by humans drift up into the stratosphere, causing chemical reactions that reduce the amount of ozone. These chemicals include CFCs (chlorofluorocarbons), which were used in aerosol spray cans and older air conditioners and refrigerators.



EXPERIMENT

MAKE YOUR OWN ZINC CREAM

AIM

To find out how chemists make the zinc cream we use on our noses to prevent sunburn.

MATERIALS

- 50 ml light liquid paraffin
- 10 g soft micro wax
- 20 g zinc oxide
- large beaker
- thermometer (up to 100°C)
- hotplate
- stirring rod
- container with lid to store zinc cream
- non-toxic wax crayon (optional)

METHOD

- 1 Melt the paraffin and micro wax in a beaker over a low heat. Use the thermometer to check that you don't go over 80°C. If you would like to make coloured zinc cream, add a small non-toxic wax crayon at this melting stage.
- 2 Remove the beaker from the heat when the wax is melted. Gradually add the zinc oxide, stirring well with the glass rod between each addition.
- 3 Allow the mixture to cool and transfer to a container.

Caution: Zinc cream made in the laboratory should not be used on skin unless sterile equipment has been used.

Keeping *the* atmosphere balance

The air in the atmosphere is needed by plants and animals, which need oxygen to live. In breathing, animals replace the oxygen with carbon dioxide. During the day, plants use carbon dioxide to help them make their own food. In doing so, they produce and release oxygen. Fuels that are made of the remains of dead animals and plants are called **fossil fuels**. Coal, oil, gas and petrol are fossil fuels. When fossil fuels are burnt by power stations, cars, factories and in homes, oxygen is used up and carbon dioxide is released.

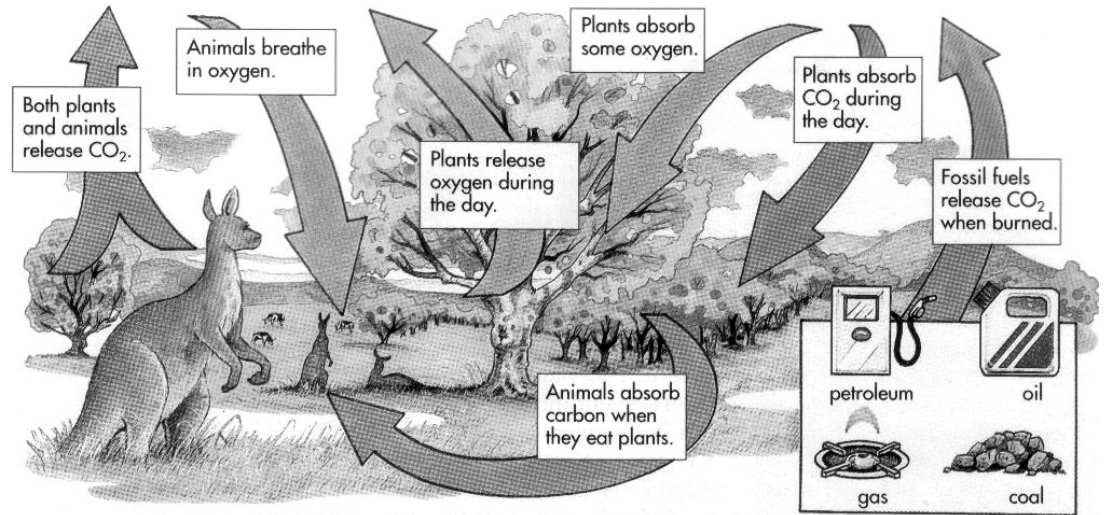
Together, plants and animals help to keep the amounts of oxygen and carbon dioxide in the atmosphere in balance. The amounts should not change much at all. The atmosphere should be in balance.

However, the balance is under threat. The amount of carbon dioxide in the air is increasing.

There are two main reasons for this:

1. The burning of fossil fuels. The people of Earth are using more fossil fuels every year. Australians add about 70 million tonnes of carbon dioxide to the atmosphere each year by burning fossil fuels.

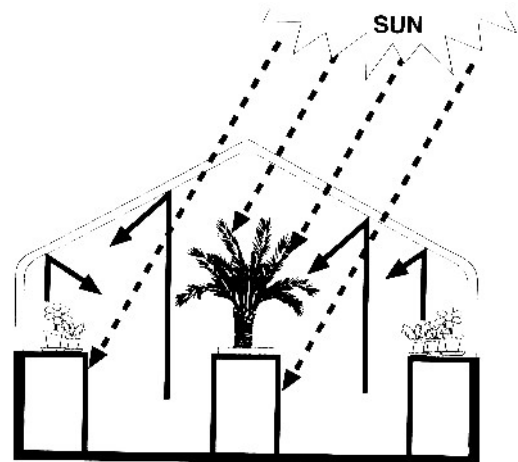
2. The clearing of forests. Trees absorb carbon dioxide from the air and produce oxygen. As they are cleared, another means of keeping the atmosphere balanced is removed. In Australia, two-thirds of all forests that existed 200 years ago have been cleared.



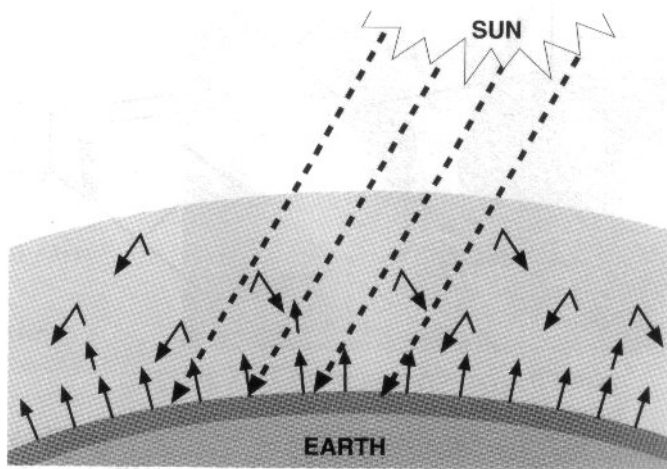
Greenhouse effect

Heat from the sun enters the atmosphere and warms up the Earth's surface. At night, this heat escapes through the atmosphere. Without the atmosphere, too much heat would escape and the Earth would be bitterly cold at night. The gases in the atmosphere trap some of the heat. This trapping of heat is called the greenhouse effect.

Scientists are now concerned that the carbon dioxide produced by burning fossil fuels is building up in the atmosphere. This extra carbon dioxide traps more of the heat that is radiated from the Earth. Scientists predict that the Earth will become warmer, and that this will cause major changes in the Earth's weather.



The glass in a greenhouse lets sunlight through but traps the heat inside.



Carbon dioxide and water in the atmosphere absorb the heat, which is radiated from the Earth. This keeps the Earth relatively warm at night.

Green House Experiment

Aim

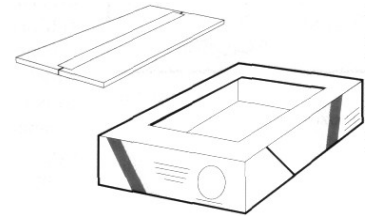
To set up a model greenhouse

Materials

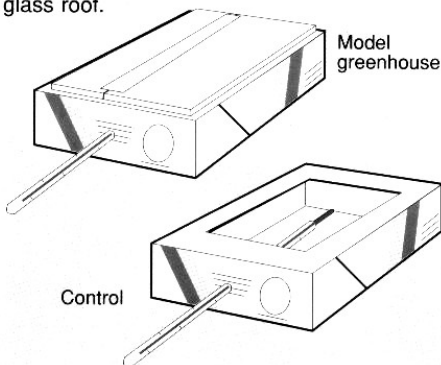
- 2 microscope slides
- adhesive tape
- 2 small cardboard boxes
- 2 thermometers
- stop watch

Method

- 1 Lay the two slides side by side and tape them together. Then cut a hole in both boxes as shown.
- 2 Lay the slides over the hole on one of the boxes. Punch a hole in the end of the box and insert a thermometer as shown below. This is your model greenhouse.



the glass roof.



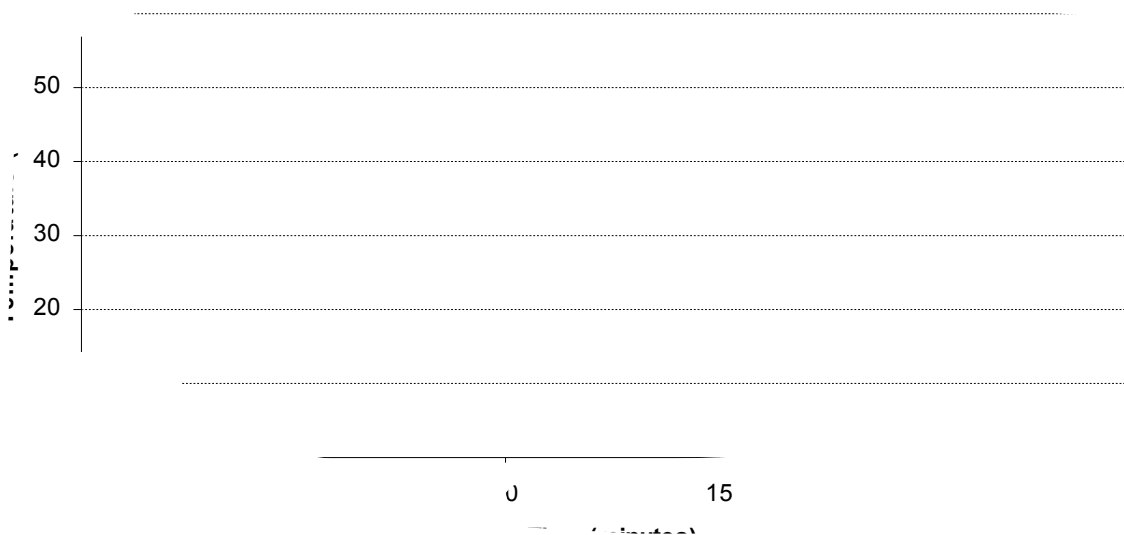
- 3 To see how effective your greenhouse is, set up a control box. This time it is the same 'house' without
 - Record the temperatures on both thermometers before you take the boxes out into the sunlight.
- 4 Leave the greenhouse and the control in the sun for about 20 minutes.
 - Record the temperatures every 2 minutes during that time.

Results

Time (Minutes)	0	2	4	6	8	10	12	14	16	18	20
Temperature (° Celsius)											

Plot temperature against time for the greenhouse and the control on the axis below.

Green House effect



Key

Questions and conclusions

1 Compare the green house and the control what can you say about the differences.

2 Use the greenhouse model to explain how the atmosphere affects the temperature on Earth.

EXERCISES

1 Some of the following statements are *false*. Find the false ones and rewrite them to make them correct.

- (a) The troposphere is the layer of the atmosphere closest to the Earth's surface.
- (b) The stratosphere contains more dense air than the ionosphere.
- (c) Auroras occur in the mesosphere.
- (d) Most weather changes occur high up in the stratosphere.

2 In which layer of the atmosphere do you live?

3 The highest mountain on Earth is Mt Everest, at 7600 m. In which layer of the atmosphere is the mountain's peak?

4 Lyndell told Angus that she was cold last night. Angus said that, unlike last night, tonight would be cloudy and he predicted that this would make it much warmer. On what knowledge did Angus base his prediction?

5 Mountain climbers scaling very tall mountains have to carry oxygen tanks. Suggest a reason for this.

6 What is ozone? Why is it so important for life on Earth?

7 How would you increase the accuracy of this experiment?

Cars, greenhouse and Kyoto

Greenhouse effect

Like the air in a greenhouse (or glasshouse) the Earth's atmosphere traps some solar radiation and warms the surface of our planet. About 10% of the energy reaching Earth as solar radiation is reflected by dust particles in the air or from the surface of clouds.

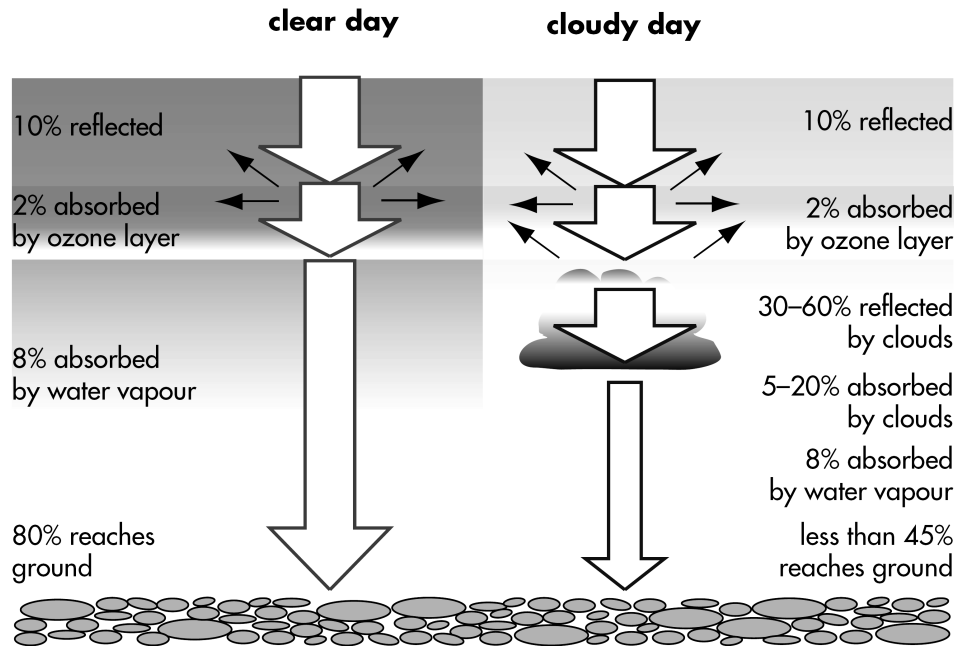
Gases in the atmosphere, mainly carbon dioxide, ozone and water vapour, absorb much of the non-visible solar radiation that reaches Earth. These are known as greenhouse gases. Ozone absorbs UV radiation, while carbon dioxide, water vapour and clouds absorb most of infrared radiation.

The average temperature of the Earth remains relatively stable when the proportion of these gases in the atmosphere is balanced. Without the greenhouse effect of these gases the Earth's average temperature would be around -18°C rather than 15°C, affecting weather conditions, plant growth and animal growth.

Atmosphere scientists fear the balance of these gases has been upset so that we have what they generally refer to as the **enhanced greenhouse effect** (often just called the greenhouse effect), an increase in the amount of heat being retained by the atmosphere.

Other greenhouse gases, such as methane, nitrous oxide, chloroform, and chloro-fluorocarbons (CFCs), have also

increased in concentration or have been introduced into the atmosphere as a result of the industrialisation of our society.



Methane (CH₄) is formed from the breakdown of organic matter. Cows and sheep produce methane from the bacterial digestion of cellulose. Rice paddies, garbage tips, coal mines and natural gas fields also release quantities of methane.

Nitrous oxide is produced in car exhausts and through many industrial processes and the use of nitrogenous fertilisers and burning of forests.

Chlorofluorocarbons were invented in the 1920s and were widely used in refrigerators, as propellants in aerosol cans and to create the bubbles in plastic foam. Concern about their effect on the **ozone layer** has led to international agreements to phase out their use.

Kyoto Agreement

The United Nations Framework Convention on Climate Change was held in Kyoto Japan during December 1997. Here, many countries agreed to reduce their emissions of greenhouse gases. However, the Australian government would only agree to limiting the growth of emissions but not to reducing them. In 1994, Australia's total greenhouse gas emissions were calculated to be approximately 576 million tonnes. The main sources of these gases were motor vehicles, electricity production and land clearing.

Did you Know

There is evidence from ice core samples taken in the Antarctic that the CO₂ concentrations in the atmosphere have increased by 25% in the last 200 years.

Activity

1 How does the Earth's atmosphere maintain relatively stable surface temperatures?

2 What factors affect how much solar radiation reaches the Earth's surface?

3 The amount of water vapour in the atmosphere is not likely to be altered directly by human activity. What factors would cause the concentration of water vapour to increase?

4 Why do you think the amount of methane in the atmosphere has increased so dramatically?

5 Deforestation is a major environmental issue not only in terms of the logging of native forests but because it contributes to the enhanced greenhouse effect. How would this practice cause changes in the concentration of greenhouse gases?

6 Do you think there are advantages to an enhanced greenhouse effect?

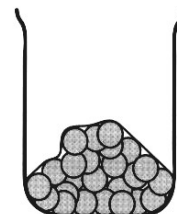
The Particle Theory of Matter (Revision)

This theory includes the following ideas:

- All matter is made of small particles.
- These particles are always moving.
- When matter is heated these particles move faster.
- When moving faster, particles occupy more space.
- When matter is cooled the particles move slower.
- When moving slower, particles occupy less space.
- Forces that vary in strength hold particles together.

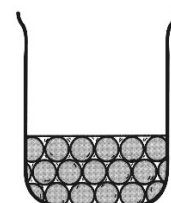
Solids

- The particles are as close together as they can be.
- Particles can only vibrate in fixed positions.
- Particles are not free to move.
- Particles are held together by strong forces of attraction.



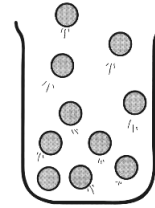
Liquid

- The particles are as close together as they can be.
- Particles are held together less strongly.
- Particles are not free to move.
- Particles can roll over one another.



Gases

- The particles are much further apart.
- Particles are not held together.
- Particles are free to move.
- Particles move randomly in all directions.
- Attractive forces between particles are very weak.



Activity

- Matter is made up of small _____.
- These particles are always _____.
- These particles move _____ in a hot substance than in a cooler substance.
- The particles of matter are held together by _____.
- Particles in a solid can only _____ in _____ positions.
- Particles in a liquid can _____ over one another.
- Particles in _____ move freely.
- Particles in _____ and _____ are as close together as they can be.
- Because particles in gases are _____ apart, they can be _____.
- Solids and liquids cannot be compressed because their _____ are as _____ together as they can be.
- Liquids can be poured because their particles can _____ over one another,
- Solids cannot be _____ because their particles are in fixed _____.
- Because particles in gases are _____ to move, they, like liquids, can also be _____.

Particles and pressure

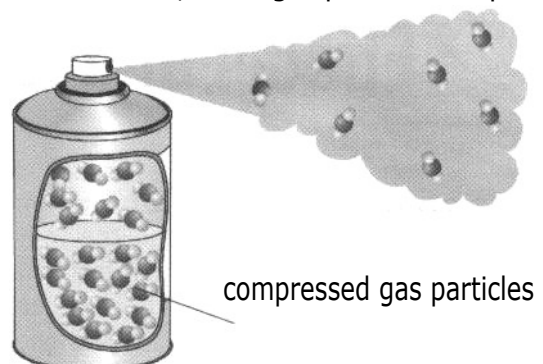
Each particle in a gas has energy and can push against anything that it hits. In a gas the particles are very tiny, so their energy is very small. But there can be billions of particles in just 1 mL of gas. The total push of these particles is very big. It is called gas pressure. In air it is called air pressure. Gas pressure depends on:

- the number of gas particles—the more particles there are, the more they push and the greater the pressure
- the speed (energy) of the particles—fast particles are at a higher temperature and push harder than slow particles

When a tyre goes flat, it has lost most of its air. There are no longer enough air particles inside the tyre to push it outwards.

An aerosol can contains gas at high pressure. There is a lot of gas compressed in the can. The valve on top is like a gate that lets the particles out. When you release the valve, some gas particles are pushed out by the other particles.

The constant fast motion of the gas particles causes the pressure in an aerosol can

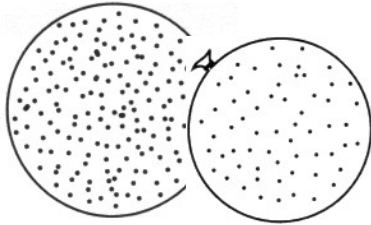


Blowing up a balloon

Take Blowing up a balloon and blow it up until it is fully inflated. Tie up with a string and notice the shape and size of the balloon. Take another balloon and blow it up until it is about half full.

Balloon 1

Balloon 2



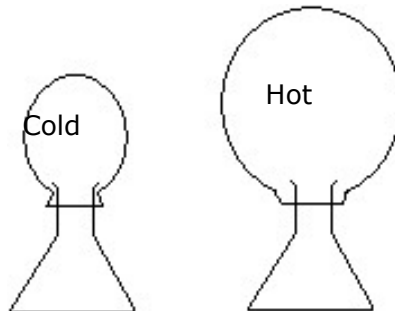
100 air particles

50 air particles

1. Balloon 1 has _____ gas particles inside it, and there is more _____ inside the balloon pressing on the balloon skin.
2. Balloon 2 has _____ gas particles and there is _____ air pressure inside the balloon pressing on the balloon _____ so It Is smaller.

Pressure and temperature

Obtain two flasks and fit a balloon over the top of each flask. Each flask contains only air. Place the first flask into a beaker of warm water. This warms the gas and the gas particles move faster. Notice the shape and size of the balloon. Put the second flask into a refrigerator or freezer. After ten minutes observe the shape and size of this balloon.



1. When the gas in the flask was heated, the gas particles started to move _____ and take up _____ space, so the balloon go t _____
2. When the flask was cooled, the gas particles moved _____ and took up less space.



Water pressure

Take an empty drink bottle and punch three holes in a line down one side of the bottle. Place your fingers on the holes and fill the bottle with coloured water. Take your fingers off the holes and observe whether the water comes out of each hole with the same force.

- 1 Draw how the water comes out of each hole on the diagram on the left.
- 2 Water comes out with greater force from _____ hole because the pressure _____ with depth.
- 3 As you get deeper in the ocean the water pressure _____.

Activity

Refer the previous 3 experiments

- a. What is teacher trying to show or teach you with the balloon drawings labelled "100 air particles" and "50 air particles"?

- b. What conclusion may we come to about gas pressure and gas temperature?

- c. Look at the diagram of the flask and the balloon. Now say what else may increase if gas temperature rises?

Under pressure

When you are landing or taking off in a plane, your ears 'pop'.

If you climb steeply, the air pressure inside your middle ear remains the same while the air pressure outside drops. The air inside pushes on the eardrum causing an uncomfortable feeling.

The 'popping' is caused as the Eustachian tube, which is normally closed, opens. This allows air to rush out of your middle ear to your nose and mouth. The pressure is then the same on both sides of the eardrum.

When you descend quickly the 'popping' occurs as the air rushes into your middle ear to balance the increasing pressure outside. If you swallow hard you can make the 'popping' happen sooner.



Density

Density is a measure of how closely particles are packed together in a material. If the atoms in a material are packed very tightly together, the material will have more mass (a greater number of atoms) and therefore weigh more. These materials are said to be very dense, for example lead. Materials such as marshmallows don't have many atoms but they do have a lot of air between the atoms, so they don't weigh much and are less dense. Gases are even less dense, and do not weigh much at all. How heavy something is depends on its size and its density.

Measuring Matter

- Weight — the weight of something depends on its mass and how much gravity is pulling on it. A sugar cube on Earth has the same number of atoms as a sugar cube on the moon but it will weigh less on the moon because there is less gravity.
- Mass is easy to work out — just put the object on some scales and measure how many grams it weighs.
- Volume can be measured by dropping the object into water and measuring the volume of water it displaces, or pushes aside (**1 millilitre = 1 cubic centimetre**).
- Density can be calculated by dividing the mass (grams) by the volume.

$$\text{Density}(g / ml) = \frac{\text{Mass}(g)}{\text{Volume}(ml)}$$

Buoyancy Experiment

Aim

To investigate the effects of buoyancy

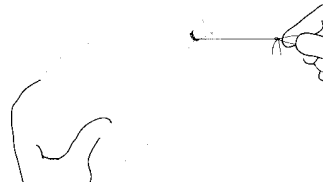
Materials

- small round balloon
- spring balance (Newton scale)
- piece of string (30 cm long)
- aquarium (share with class)

Method

1 Fill a small round balloon with water and tie up the end. Lay the balloon on the bench. Observe its shape and draw it in your results.

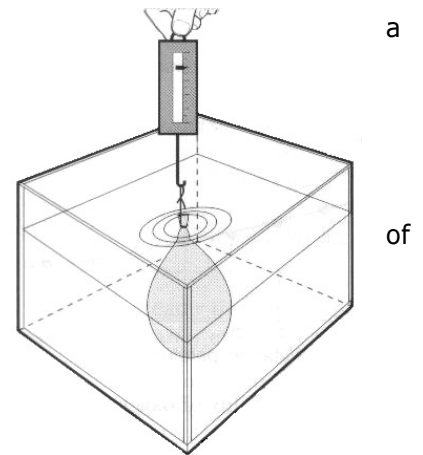
2 Tie some string around the end of the balloon so that you can suspend it from spring balance. Find the weight of the balloon.



Observe the shape of the balloon. • Record your results.

3 Suspend the balloon in an aquarium full of water. Observe the shape the balloon and again find its weight.

4 Let the balloon rest on the bottom of the aquarium. How does its shape compare with its shape lying on the bench?



Results

<p>Diagram of Balloon on table</p>	<p>Diagram of Balloon on spring balance</p> <p>Mass of Balloon =</p>	<p>Diagram of Balloon in aquarium</p> <p>Mass of Balloon =</p>
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Questions and conclusions

- 1 Compare the weights of the balloon in water and in air. Infer what caused the difference.

- 2 Water has a buoyancy effect on the weight of objects. From your results, what do you think 'buoyancy' means?

- 3 Why is it that beached whales often break their bones, particularly their ribs?

Buoyancy in water

Why do you feel almost 'weightless' when swimming in water? What we feel as an upward 'push' is called **buoyancy**. This buoyancy is greater in water than in air because water is denser than air. Salt water has a higher density than fresh water so the buoyancy effect is greater and you float better, or feel more buoyant, in salt water.

Aquatic animals can easily swim around in water but some are crushed by their own weight on land. For example, jellyfish float in seawater but are flattened when stranded on the beach.

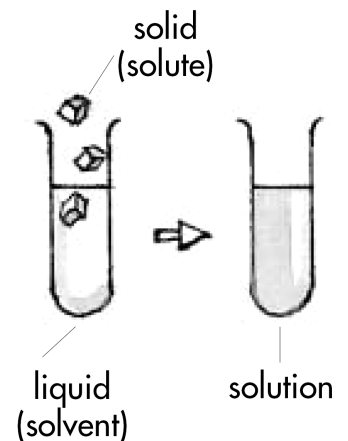


Whales are so heavy that when beached, they are virtually unable to move and often die. In the ocean, their weight is supported by the buoyancy force of the water.

Soluble and insoluble substances

Many substances will dissolve in water. These substances may be described as water-soluble. A **soluble** substance is one that can dissolve in another substance. Substances that do not dissolve in water are called water-insoluble substances. **Insoluble** substances do not dissolve. When a substance dissolves in another substance, a **solution** is formed. A solution is clear, that is no particles can be seen. The substance that takes in, or dissolves, other substances are called the **solvent**. The substance being dissolved is called the **solute**. If sugar is mixed with water, for example, a solution is formed since the sugar dissolves. The water acts as the solvent and the sugar is the solute.

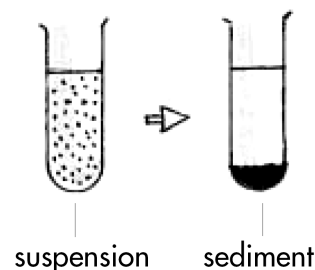
A sediment may be formed when insoluble substances settle to the bottom of the container they are in. A mixture in which some or all of the particles settle out is called a **suspension**. Solutions are not always made up of a solid dissolved in a liquid. Liquids and gases can also dissolve in solvents.



A solute dissolves in a solvent to form a solution.

Liquid dishwashing detergent dissolves in water. Two-stroke motor fuel, used in lawn mowers and outboard motors, is a solution of oil in petrol. In soda water and soft drinks, carbon dioxide gas is dissolved in water and bubbles out when you take off the lid.

Oxygen is only slightly soluble in water but sufficient oxygen can dissolve in water for fish to breathe using their gills.



A suspension settles on standing to form sediment.

SOLUBLE AND INSOLUBLE SUBSTANCES

AIM

To investigate the differences between soluble and insoluble substances.

MATERIALS

- 6 test-tubes labelled A, B, C, D, E, F
- test-tube rack
- rubber stoppers
- small quantities of the substances in following Table

METHOD

- 1 Place 30 ml of water in each of the six test tubes and then to each test-tube A, B, C, D, E and F add a small quantity of the substance listed in Table.
- 2 Place a rubber stopper in each of the test-tubes in turn and shake the tube gently. (If you are reusing a stopper, rinse it in water between test tubes.) **Safety:** *Never put your finger or hand over a test-tube to shake it since what is in the test-tube may be poisonous or may burn you.*
- 3 As you shake each tube, hold it up to the light. Is it cloudy, or does the light shine through it? Is the liquid coloured or colourless?
- 4 Allow the test-tubes to stand in the rack for five minutes. Have any of the substances you added to the water settled to the bottom?
- 5 Record your observations in the Table.

Results

Test-tube	Substance	Observation	Substance soluble (Yes/No)
A	copper sulfate		
B	salt		
C	copper carbonate		
D	sugar		
E	chalk		
F	sand		

DISCUSSION

1 Which of the substances you tested were soluble and formed a solution in water?

2 Which of the substances you tested were insoluble in water?

3 Did any of the insoluble substances form sediments if so which ones?

Activity

1. Complete the following sentences:

When one substance dissolves in another a _____ is formed. The substance which dissolves is the _____ and substance in which it dissolves is the _____ .

_____ is the most common solvent. Any substance that does not _____ in a solvent is said to be _____ in that solvent.

2. Many substances that are insoluble in water will dissolve in another solvent. Make a list of five such substances and include the name of both the solute and the solvent.

3. In your own words describe the difference between dissolving and melting.

FEATURES OF A WEATHER MAP

Isobars

Places with equal barometric pressure are joined by lines called isobars. Isobars are continuous lines joining areas of equal barometric pressure.

Pressure systems

Major features of the weather map include high and pressure systems. High pressure systems are sometimes referred to as anticyclones and low pressure systems as cyclones or depressions. Pressure systems over southern Australia generally move from west to east. Their movement is variable systems may become stationary. The systems change with time as they develop, intensify, weaken and eventually die out.

The weather maps produced daily and found in the media are for surface conditions only and accurate forecasting without upper atmospheric information is difficult. The Bureau of Meteorology uses satellites, radar and radiosondes to obtain a three dimensional picture of the weather.

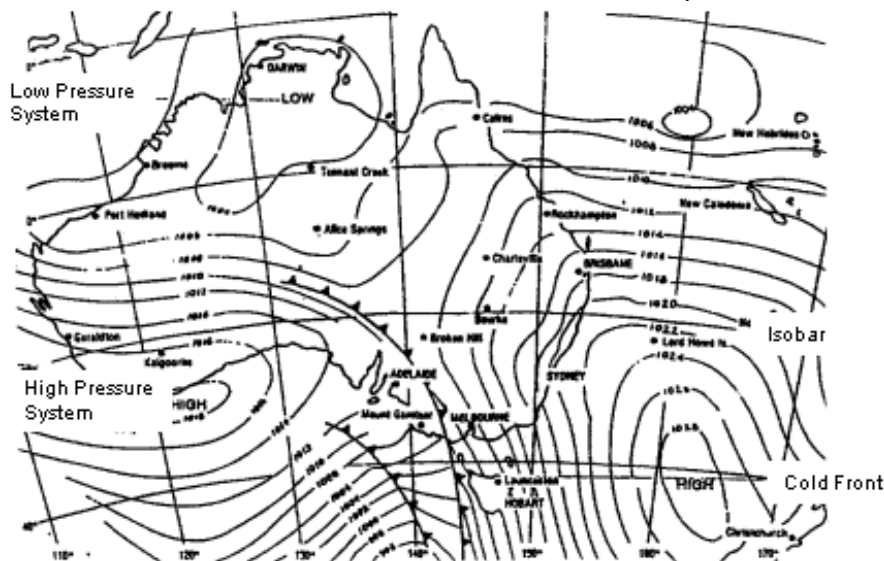


Figure 1 - Weather Map

High or anticyclones

Highs or anticyclones tend to be elliptical and when greatly elongated are known as ridges or wedges of high pressure.

In a high pressure system the winds circulate in an anticlockwise direction. This combination of air movement from high to low pressure and the earth's rotation causes the winds to blow approximately along the isobars, but with some deflection outwards from the centre. However, for most purposes it is satisfactory to assume that winds blow parallel to the isobars.

An anticyclone approaching from the west indicates that the following events are likely to occur:

- Clearing skies;
- Lighter winds;
- Higher temperature;
- Lower relative humidity

High pressure systems are large masses of air that are subsiding and therefore warming and drying as they approach ground level. Temperature inversions are common, moisture levels are lower and the vertical development of clouds is therefore unlikely.

High pressure systems provide dry, warm weather with the possibility of a lead up to critical fire weather.

Lows or depressions

In a low-pressure system the winds circulate in a clockwise direction, approximately along the isobars but with some deflection towards the centre. Again, for most purposes it is satisfactory to assume that winds blow parallel to the isobars.

The following effects are likely:

- Increasing cloud;
- Increasing moisture in the atmosphere;
- Unstable weather;
- Rain

Low pressure systems are board areas of slowly ascending air which cools and becomes more moist as it rises, producing cloud and instability and therefore an increased likelihood of rain.

Low-pressure areas are therefore significant to fire suppression in contrasting ways; the possibility of rain to help suppress fires versus the possibility of dry thunderstorms producing multiple ignitions from lightning strikes.

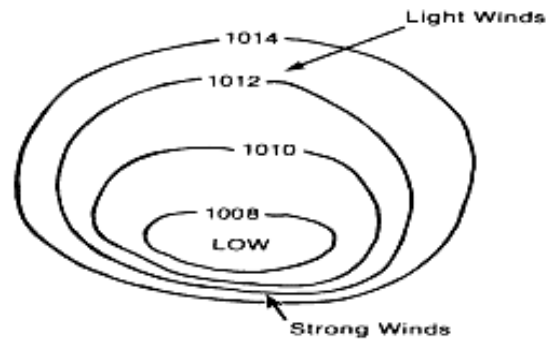


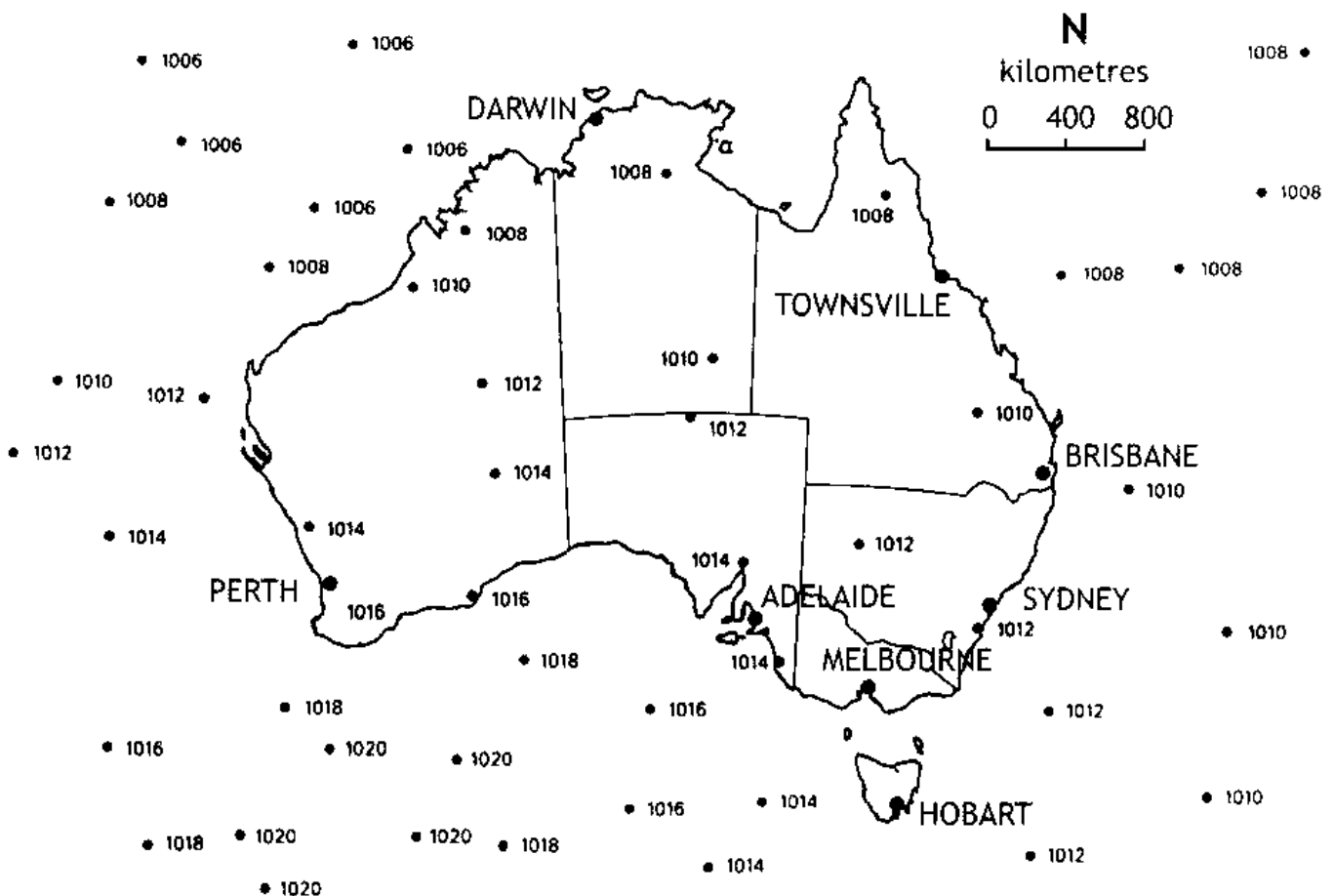
Figure 2 - Wind Strength in

Wind Strength

Wind strength is proportional to the pressure gradient that is shown by the spacing of the isobars. Where isobars are closest the winds are strongest, and where they are widely spaced the winds are light.

Activity

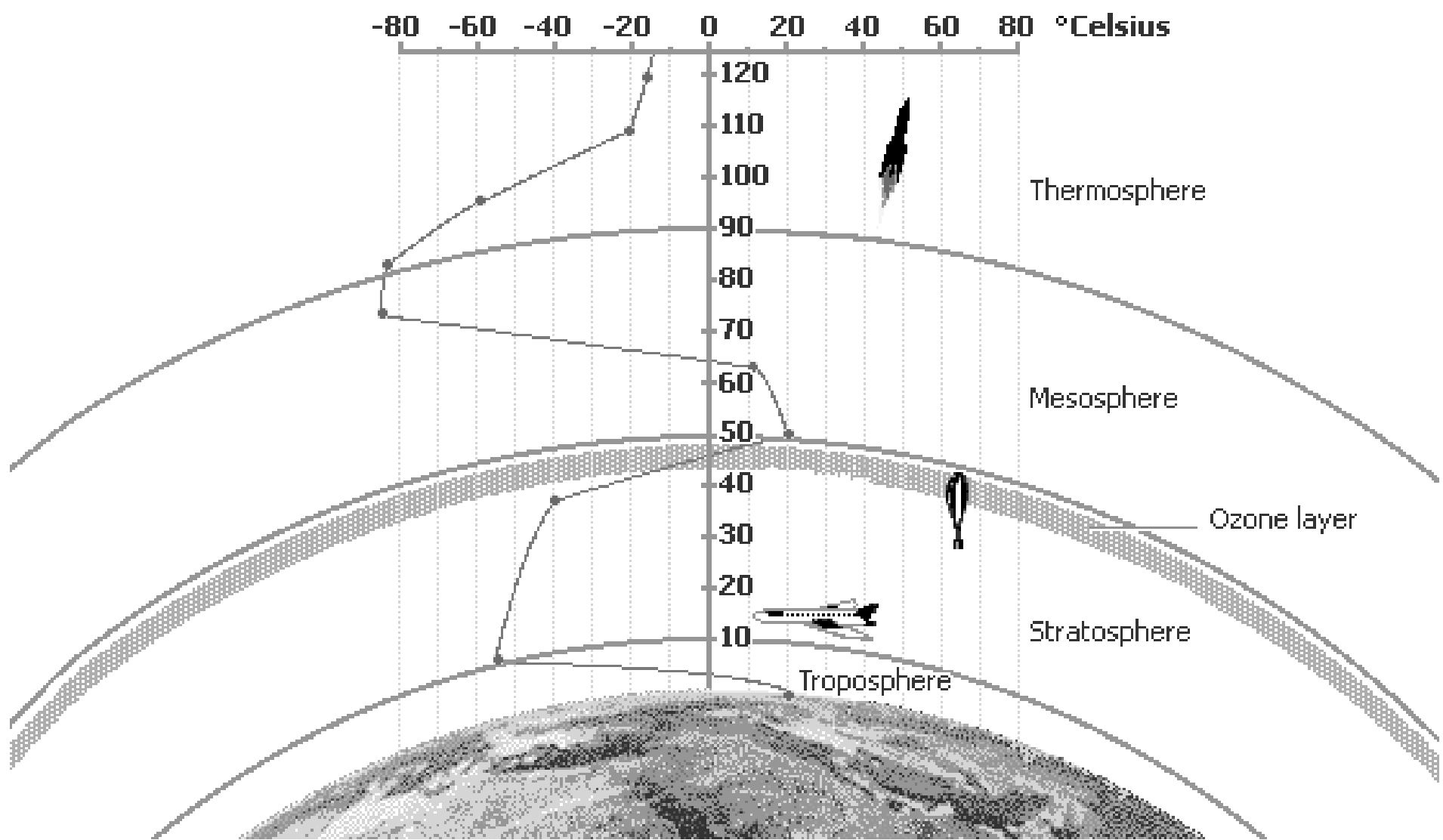
1. On the following diagram draw lines joining the places with equal air pressure.
2. Mark on the map any highs and lows



Find each of the following words.

SOLUTE	PRESSURE	TEMPERATURE	VACUUM
LIQUID	TROPOSPHERE	OZONE	BALANCE
DENSITY	SPACE	GREENHOUSE	SOLVENT
STRATOSPHERE	SOLID	DISSOLVE	GAS
OXYGEN	MESOSPHERE	BUOYANCY	ATMOSPHERE
METHANE	MATTER	PARTICLE	KYOTO

D H E M S T M R E A R T E M P E R A T U R E Q
 T E B N I U E C E N O E O T O Z O N E E R R O
 H M N A E P R E S S U R E E O O N Y R R E U A
 T I M S L K O S H A O O X Y G E N A E E O E I
 V E B L I A Y S G R E E N H O U S E T H R U S
 T E U E I T N O N C O S I V T E Y U U P O A R
 N L O T E Q Y C T E R E G N E E L E T S T S A
 E C Y V M S U I E O R E R A A O T E A O R Y E
 V I A A E Y D I S S O L V E S E T E O S S U U
 L T N C C Y S P D E D O D N N T G A S E E E E
 O R C U A U T R O P O S P H E R E S I M R D I
 S A Y U P Y O S R M A T T E R T Y E E P I E A
 H P H M S G S S T R A T O S P H E R E L L D E
 Y E L A T M O S P H E R E O O L E E O E O E O
 G A X M E T H A N E T E C P P E C S N T L V V
 R D X P S Y U A E H U H T T P E G E B O M S Y



Gas	Percentage
Nitrogen	78
Oxygen	21
Argon	0.9
Carbon dioxide	0.03
Neon, krypton, xenon, water vapour	very small amounts

Gases in the atmosphere

