Research Cards Year 6

Research cards can be laminated and used for individual pieces of research.

It is not necessary to follow through the pages in order.

This means that in a class of 30, a few sets can be prepared and shared around.

Students can work together in pairs.

Research topics

God is Provider: Plants; Earthworms
God is our Saviour: Ancient Egypt; Israel in Bible times
God is Pure-Holy: Light and the eyes
God is Creator: Spiders; Inventions
God is Wise: Food advertising & processed food
God is a Servant: Simple machines
God is Protector: Our special planet
God is Truth: Advertising

Plants 1

God gives life to plants

In the beginning God made the heavens and the earth. On the first day He separated the light from darkness. There was night and day. There was no sun yet, but God was the light. On the second day God divided the water and land. There was now soil for plants to grown in, and water to keep the plants alive. But the plants were not on the earth yet. On the third day God created plants. On the third day the earth had everything that plants needed:

- *Light and warmth (God was the light)*
- *Air*
- *Soil*
- *Water*

Parts of a plant

Draw a plant, show and label these parts:

Roots

Most plants have roots. Their roots go into the soil and hold them in the ground. Roots get food and water for the plant. The food and water come from the ground. Some roots are long and thick. Some roots are short and thin.

Why does a plant have roots?

Leaves

Most plants also have leaves. Leaves are nearly always green. Food is made in the green parts of the plant.

Where does the plant's food come from? (two answers)

Stems

Stems grow up from the roots. They take food and water to the leaves. They lift up the leaves into the sunlight.

Why do stems need to be strong?

Flowers, seeds and fruit

These allow a new plant to grow.

Plants 2

Food and water for life

Plants need food and water to keep them alive. Their food is sugar which they make in their leaves. People need food and water to stay alive too. But we don't just need food and water that goes into our stomachs. We need a type of food and water we cannot see. The Bible is *like* a food because it helps us get through life, just as food helps us get through the day. The Bible has the information we need for eternal life.

1 Peter 2:2 tells us that just as new born babies love milk, we should love God's word, the Bible, because by learning from it, we can *grow* into the people that God wants us to be.

Why is the Bible important for life?

Plants need water to stay alive

Plants need water. If a plant does not get water it will die. Jesus told us about a different kind of water. It is called the water of life. You cannot see it. It is something you have to pray for. It's a special something that Jesus gives you when you really love him. It is the Holy Spirit, which can live in us. Just as plants need water to stay alive, we need the Holy Spirit to help us through life. The Holy Spirit is God's spirit. He helps us do what Jesus would do. (John 4:7-29)

What is the water of life that Jesus gives?

Plants 3

Plants need air to stay alive

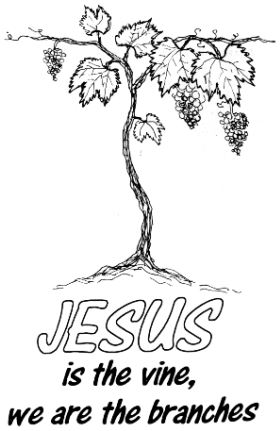
We know that the leaves of a plant make food for the plant. The plant uses sunlight to make the food. The leaves also help the plant get air. A plant breathes with its leaves and its stalk, a bit like we breathe with our lungs. Some plants have thick leaves. Some plants have thin leaves. A plant cannot live without air. People cannot live without air. But if a person wants to live forever in Heaven, then they must have Jesus. Jesus is just as important as air.

How does a plant breathe?

Plants need stems to stay alive

Some plants are big and some are small. A plant is held up by its stalk or stem. But if it is a very big plant, like a tree, the stalk is called a trunk. Grapes grow on grape vines. The branches of the vine grow out from one main thick stem. Jesus said that he is the true vine. He is like the main stem of the vine, and we are the branches. He holds us up and helps us through life when we stay connected to him. We can read about this in John 15 verses 5-10.

What is the job of the stem?
Why do the leaves need to be held up?
What is the stem of a tree called?
What is the stem of the grape plant called?



Plants 4

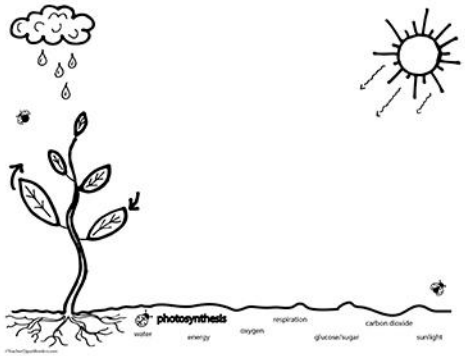
How plants make food

All living things need energy to live, and energy comes from food. But, have you ever seen plants munching on food? No. Plants get their energy in a different way. They use *photosynthesis*. Here's how it works:

Plants take water from the soil through their roots. The water goes to the leaves. The leaves take carbon dioxide (a gas) from the air into the plant. The carbon dioxide mixes with the water. The green part of the plant, called chlorophyll, traps the energy from the sun. Energy from the sun helps the plant make food in the leaves. The food is a sugar called glucose. The glucose is plant food. It gives the plants energy to grow.

When plants take carbon dioxide from the air, they release oxygen (the main gas in the air). Animals and humans use this oxygen to breathe and grow. We breathe out carbon dioxide, which the plants use. Too much carbon dioxide in the air would not be good for us, but that's OK because the plants need it and use it. That keeps the air fresh.

1. What are four things a plant needs to make its food?
2. How do plants help us to breathe and grow?
3. How do plants help to keep the air fresh?



Plants 5

Seeds are different shapes and sizes

Nearly all the plants around us started as seeds. Seeds are different shapes and sizes, but they are alike in two ways.

- A seed always contains the young plant, called the *embryo.* It is inside the seed.
- The seed contains food for the young plant to live on, before it can make its own food.

Draw some seeds you know to show their different shapes. Try to draw them the right size too. Here are some examples: pea, apple, pumpkin, tomato, bean, orange, watermelon, lettuce.

Copy:
Seeds are alike on two ways:

a) The seed contains the _____ _____ . This is called the em _ _ _ _.
b) The seed contains a supply of _____.

Why does the embryo need food from the seed?
Draw this seed and label the embryo.

Plants 6

Seeds have a hard coat

If you look at a seed closely and feel it, you will notice that it is hard and dry. The hard coat protects the young plant inside from hard. On the outside of the seed you will see a little scar. This is where it was attached to the stalk while it was growing on the parent plant. On the hard coat you will also find a little hole. It is here that the water gets into the send when it is planted.

Why did God give seeds a hard coat?

Ephesians 6 says “Put on the whole armour of God so that you may stand against the arrows that the devil fires at you.”
What is a hard coat that we can put on to protect us from fiery darts of evil?

Copy:
The little scar on the outside of the seed is where it was _____ to the stalk when it was growing on the _____ plant.

Draw some peas growing in a pod. Show the little stalks attaching the peas to the pod.

Copy:
The little hole on the hard coat of the seed is where the _____ gets into the seed.

Plants 7

Germination

When a seed starts to grow into a plant, we say that it has germinated. Before it can do this it must have three things: water, warmth and oxygen. Yes a seed needs oxygen just as we need it. The oxygen comes from the air in between the soil particles. The water comes from the moisture in the soil, and of course the warmth comes from the sun.

1. We say that a seed has germinated when …….

2. Add “ion” and “ing” to make words:

germinat _ _ _

germinat _ _ _

3. Before a seed can _____ it needs three things:
a)

b)

c)

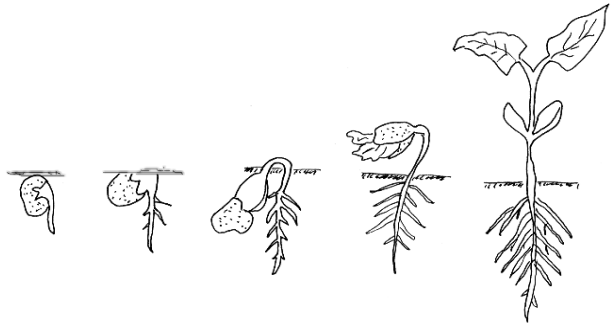
4. A seed gets oxygen from the _____.
Draw the soil showing small particles with air between them.

5. How does a seed get the moisture it needs for germinating?

6. How does a seed get the warmth it needs for germinating?

Plants 8

Plant a bean seed



1. Draw the diagram and label it using the words in bold words below.
Stage 1: the skin splits and soaks up moisture. Then a little white **root** appears. The root points down and pushes down through the soil.
Stage 2: a white **shoot** pushes upwards into the air.
Stage 3: tiny **hairs** grow out from the root and these suck in water and food from the soil.
Stage 4: two thick leaves from the seed. These are called the **seed-leaves**. They give food to the plant.
Stage 5: The plant grows **true leaves** and can make its own food.

2. Copy and choose the correct word:
The root grows (up / down)

3. How does a seed take in moisture at first?
4. How does the seed take up moisture later on?
5. What do the see-leaves do?
6. What can the plant do once it grows true leaves?

Plants 9

God is a Provider

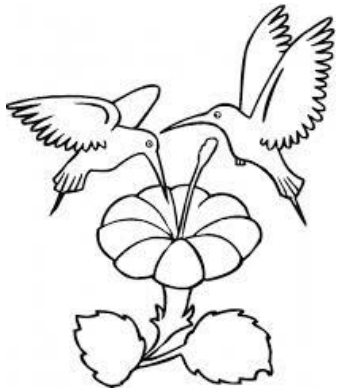
We can see how God has planned for new plants to grow from seeds. God provides everything the seed needs, even before it can make food for itself. God provides for new born babies too, by giving them milk to drink from Mum. Babies cannot get food for themselves, so God provides.

How does God use the following to provide for you? (Write one sentence for each.)

a) parents
b) plants
c) animals
d) the sun
e) the earth
f) the sky

God looks after his creation. He says, “Look at the flowers. Aren’t they dressed in beautiful colours? I look after them. Look at the birds. They don’t make their own food but I look after them. And I look after you, so don’t worry about anything!” (Matthew 6:25 – 31)

How do you know that God will look after you?



Plants 10

How seeds travel

Think about what would happen if seeds didn’t travel. What do you think would happen if seeds dropped to the ground only directly below the plant?

Seeds have special devices for making them travel faster through the air. Here are some:

a) wings
b) bits of fluff
c) parachutes

Find out which seeds have these devices, then draw and name them. Make a collection if you can.

Seeds have another way of traveling. They can get a ride on people of animals. These seeds can have:

a) bristles
b) hooks
c) gluey coats

Find out which plants have these, draw and name them.

Some seeds travel by floating on the sea or down a river. It may be the fruit that floats, and the seeds get a ride inside the fruit. Coconuts do this.
Find out which fruits or seeds float. Draw and name them.

Some seeds can act like rockets. As soon as they are ripe, the cases enclosing them become dry and brittle and snap open. The seeds shoot out in all directions.

Find out which seeds act like a rocket. Draw and name them.

Plants 11

Plants we eat: Roots, stems and seeds

Carrots are roots. Because root vegetables grow underground, they absorb a great amount of nutrients from the soil.

Some vegetables that grow underground are swollen parts of underground stems called tubers. Examples of these are potato, taro, yams and taro.

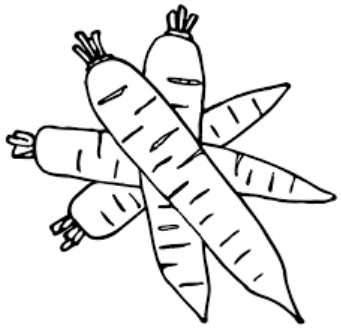
Onions and garlic grow underground too but are actually bulbs.

Sugar cane is an example of a stem foods growing above the ground.

Draw and label some roots and stems that we eat. Draw them growing underground or above ground.

There are many seeds that we eat. Seeds are found inside the fruit. For example, wheat, rice, corn, beans, peas and even coconuts are seeds. Nuts are also seeds from fruits.

Draw and label some seeds that we eat.



Plants 12

Plants we eat: leaves, flowers and fruits

Some of the leafy vegetables are cabbage, spinach, lettuce, coriander. The green leaves have many nutrients.

Broccoli and cauliflower are examples of the flower of the plant.

Draw and label some vegetables that are actually leaves or flowers.

There are many fruits that God has provided for us to eat. Did you know that tomatoes and pumpkin are technically fruits? We call them vegetables because they are not sweet like mangoes and pineapples.

There are many sweet fruits: pineapple, mango, papaya, bananas, guava, bread fruit, apples, pears, oranges, lemons, berries and many more.

Draw and label some fruits that we eat.

Earthworms 1
God is Creator

- In the beginning, God created the heavens and the **earth,** (Genesis 1:1). God made a very special little creature to look after the soil.

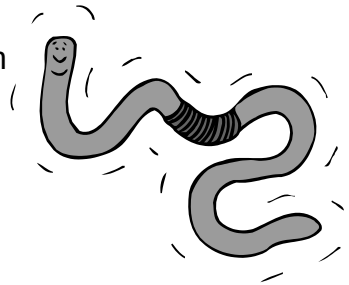
- The earthworm turns useless material into good soil that can be used by plants. God creates plant food through the earthworm.

- When God created the world He said that it was **good**. (Genesis 1:31)
- God has created everything for a purpose, even the earthworm.

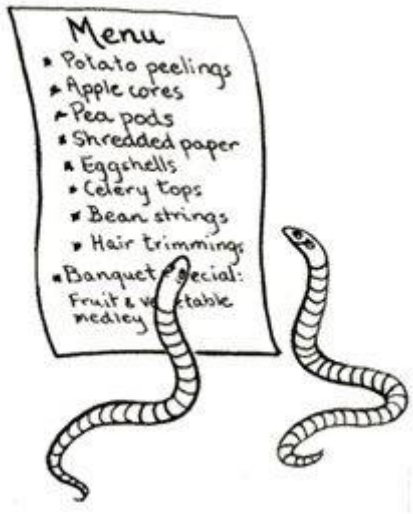
- An earthworm is only a small creature but is it very important. All of God's creatures play a vital role in the balance of nature.

- God has made sure that there will always be plenty of earthworms. God also made each earthworm to be both male and female. More baby worms are born that way. Their job is so important that we need them all!

- How do earthworms help plants?
- What are some plant foods that an earthworm might eat?
- How does God ensure that many baby earthworms are born?



Earthworms 2
How earthworms help us



Worms that live in the ground are some of our most useful helpers. You know how important it is to loosen-up the soil before planting? Earthworms help us by loosening up the soil for us.

First the earthworm burrows down into the soil, and then he eats large quantities of it. He eats pieces of decaying leaves and plant material that are useful to him as food. The soil and decaying matter pass through the earthworm and comes out as fine crumbly material called 'castings'.

When an earthworm burrows into the earth making little tunnels, the earth walls don't cave in. This is because the earthworm has special glands that give off a special cement. As he chews his way through the soil the cement sticks to the walls of his tunnel. An earthworm can dig and gobble two and a half metres in four days! The tunnels important to plants because air can get into the roots, gases can escape from the soil and rainwater can drain away.

1. What very important job does the earthworm do for us?
2. How does an earthworm loosen up the soil?
3. Draw and name some of the decaying (dying) matter in the soil that would be good food for an earthworm. Think of a compost heap.
4. How does the soil look when it comes out of the earthworm?

Earthworms 3

How an earthworm moves

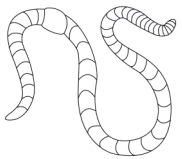
An earthworm can be reddish brown or grey. The job of the red earthworm is to bring good soil to the top of the ground. The job of the grey earthworm is to release his soil underground.

Let's look at the earthworm. He is a moist slippery tube, without legs, feet, eyes, ears, feelers or wings. He can sense vibrations in the earth. At night when he comes out looking for food, he will quickly disappear into his burrow again at the feeling of an approaching footstep.

The wetness of his skin moistens the earth around him and makes it easier to work through. He also has rows of tiny bristles covering the length of his entire body. He can draw in or project these bristles whenever he wants to. When they are out, he can grip the soil firmly, and when they are in he can slide forward easily.

His body is made up of hundreds of rings, which he stretches and then contracts (drawn in) as a means of moving around. If you watch an earthworm move along you will see him stretching himself out long and thin, then drawing himself up short and fat.

1. What amazing thing can an earthworm do even though he has no eyes, ears, feelers or wings?
2. How does an earthworm's wet skin help him in his job?
3. What can an earthworm do when his bristles are out?
4. What do the rings help the earthworm to do?
5. Draw an earthworm with his rings stretched out.
6. Draw an earthworm with his rings contracted (drawn in).



Earthworms 4

Earthworm babies

An earthworm has a bulging part called a girdle. This is where the eggs are laid. When the eggs are laid the girdle is cast off and left in the earth. It is sealed at both ends so that the eggs are safe. This is now called an egg cocoon. Usually only one of the eggs hatches out into a baby worm. It stays inside the cocoon for a while, and then when it is ready it wriggles out into the open soil.

Earthworms have five hearts. These are found in sections 7 to 11 of its 16 sections. Please treat earthworms carefully, because God has asked us to be caretakers of his wonderful creation.

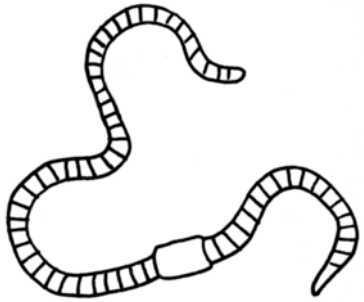
1. What is the girdle used for?

2. Draw an earthworm showing the girdle. Label it.

3. What does the girdle become when the worm casts it off?

4. How many babies will usually hatch from a cocoon?

5. Why should we treat earthworms with respect?



Earthworms 5

Earthworm questions

Work with a partner and ask each other these riddles.

1. What animal is both male and female, has five hearts, and enjoys being buried alive?

Answer: an earthworm

2. Where would you find an earthworm's hearts?

Answer: in the middle (sections 7, 8,9,10, 11)

3. If an earthworm weighs 2 grams and eats as much food as his own weight in a day, how mush would he eat in a week?

Answer: 14 grams

4. Name three things an earthworm would eat:

Answers: dead grass, dead leaves, soil, dead flower petals

5. Why did God make each earthworm to be both male and female?

Answer: More baby worms are born that way. Their job is so important that we need them all!

6. When an earthworm burrows into the earth making little tunnels, why don't the earth walls cave in?

Answer: The earthworm has special glands that give off a special cement. As he chews his way through the soil the cement sticks to the walls of his tunnel.

Earthworms 6

Earthworm questions

1. How far can an earthworm dig and gobble in four days?

Answer: two and a half metres

2. Why are the tunnels important to plants?

Answer: air can get into the roots, gases can escape from the soil and rainwater can drain away.

3. What are the two colours that earthworms can be?

Answer: reddish brown or grey

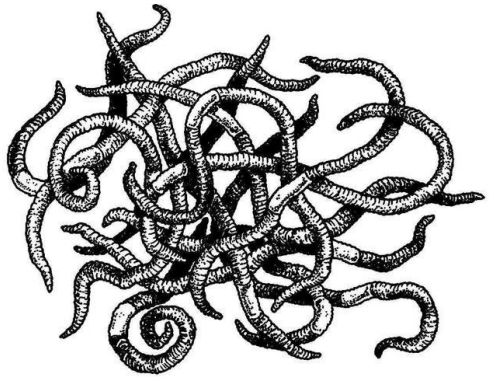
4. What is the job of the red earthworm?

Answer: to bring good soil to the top of the ground.

5. What is the job of the grey earthworm?

Answer: To release his soil underground.

6. Where would you find a lot of worms together?



Answer: In a compost heap or where there is lots of dead plant material.

Ancient Egypt 1

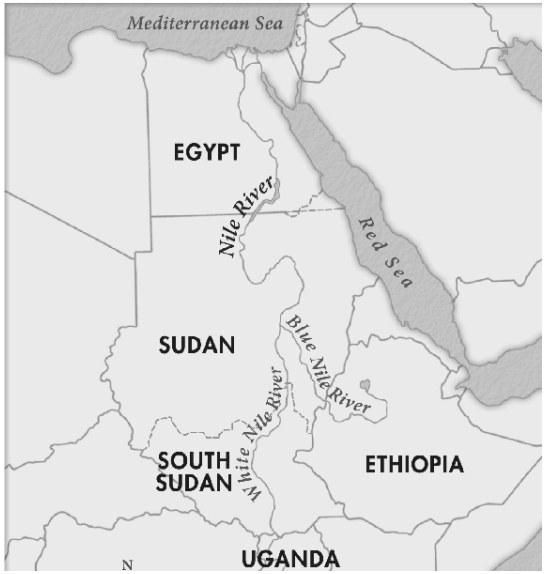
The River Nile

Ancient Egypt depended on the waters of the River Nile, which flows through harsh and arid desert. The land on the banks of the Nile could be used to grow food crops, but the rest of Egypt was, and is, desert.

Every year the Nile would flood because of:

1. the rain coming from the African countries to the south
2. the melting snow in the highlands of Ethiopia

When the flood water went down, the rich soil which the water had brought down from the mountainsides made the fields extremely fertile and excellent for growing crops. The Nile gave the civilization of Egypt its life.



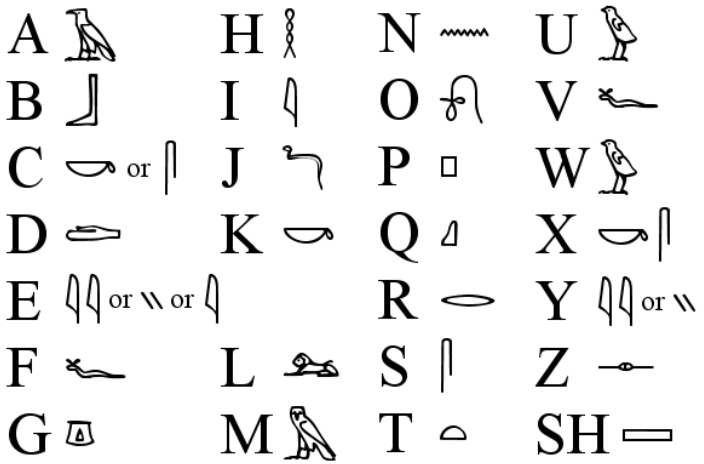
1. Find the meaning of:
   a) "harsh"
   b) "arid"
2. In which country does the Blue Nile start?
3. Why does it start here?
4. In which country does the Blue Nile join the White Nile?
5. Which sea does the Nile flow into?
6. Does the Nile flow from North to South, or South to North?

Ancient Egypt 2

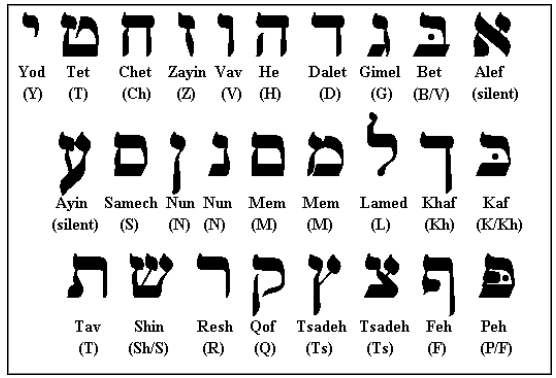
Writing

The ancient Egyptians were among the first people to develop a system of writing.

The best-known of the systems of Egyptian writing is the system using hieroglyphs, a mixture of pictures and 'glyphs' or symbols.



We know that the Hebrews also had a writing system. God wrote the Ten Commandments on the stone tablets when Moses was on Mt. Sinai.



Question:
What are some of the differences between the Egyptian and Hebrew writing systems?

Ancient Egypt 3
Beliefs

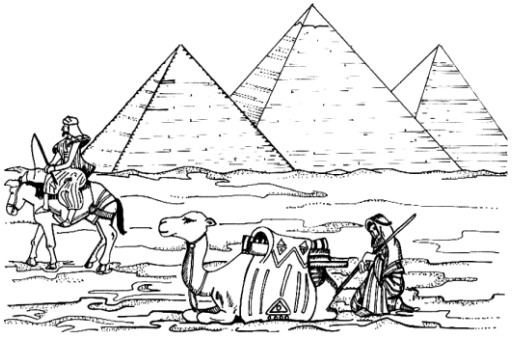
The early Egyptians worshipped many gods. Egyptians believed that there was a life after death and that a dead person's body should be preserved and buried in a tomb with everything he would need in the life after death.

The Egyptians believed that when they died, they would make a journey to another world where they would lead a new life. They would need all the things they had used when they were alive, so their families would put those things in their graves. Rich Egyptians paid vast amounts of money to have their bodies properly preserved as "mummies". (Find out what "mummies" are on the next card.) Egyptians who were poor were buried in the sand.

The Great Pyramid was a burial tomb for the Pharaoh Khufu. The pyramid once held all the treasures that Khufu would take with him to the afterlife. The pyramid is a massive structure, built of stone blocks each weighing about 1000 kg.

It took 20,000 workers around 20 years to build the Great Pyramid. Its construction began around 2580 BC. The two other pyramids that stand next to the Great Pyramid were built for the Pharaoh's son and grandson.

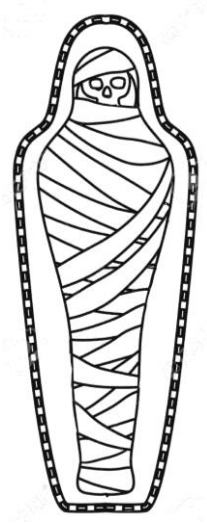
1. Draw the pyramids.
2. Draw what you might find inside the pyramids.



Ancient Egypt 4
What are mummies?

A mummy is the body of a person (or an animal) that has been preserved after death.

How were mummies made?
It took a very long time, from start to finish, it took about 70 days to embalm a body.



1. The body was washed and purified.
2. Organs were removed. Only the heart remained.
3. The body was filled with stuffing.
4. The body was dried by covering it with a substance called natron. This substance absorbed all the moisture from the body.
5. After 40 - 50 days the stuffing was removed and replaced with linen or sawdust.
6. The body was wrapped in strands of linen and covered in a sheet called a shroud.
7. The body was placed in a stone coffin.

Why did they leave the heart in the body?
The Egyptians thought the heart was the centre of intelligence and emotion.

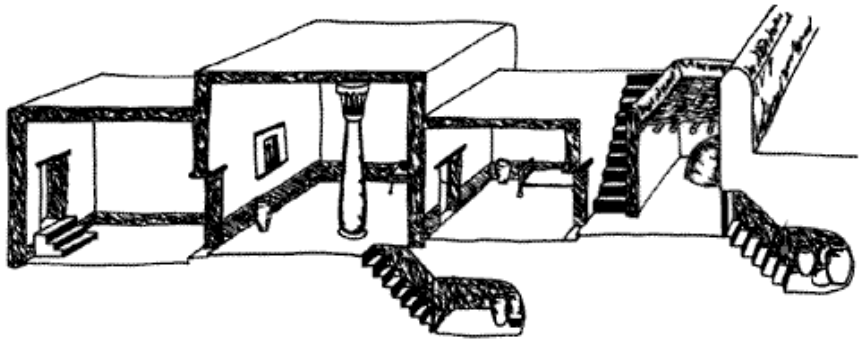
1. Why do you think they removed the organs?
2. Why did they use natron?
3. What did they stuff the body with?
4. What did they wrap the body in?
5. Why did they leave the heart in?

Ancient Egypt 5
Houses

The main building material was mud brick. People lived beside the Nile and Egyptian houses were almost all built from bricks of Nile mud. (The palaces of the Pharaohs were built from stone.) The mud was carried in baskets from the Nile and poured into moulds. When the mud in the mould was dry, it was turned out and left to bake in the heat of the sun.

A house built from mud bricks:

- was cool inside
- had a flat roof so that in very hot weather people could sleep on the roofs in the cool of the night
- often had courtyards with walls built round them where cooking was done



1. What did Ancient Egyptians build their houses from?
2. How did they make the bricks?
3. What are the advantages of this type of house?
4. Why do you think they did the cooking outside?

Ancient Egypt 6
Servants and slaves

The richer families in ancient Egypt had houses with beautiful gardens, looked after by slaves or servants.

Servants were given a small monthly allowance. They did these jobs:

- looked after the charcoal fires
- cooked food over fires
- ground wheat to make bread
- carried baskets full of vegetables from the gardens to the houses

Slaves were not paid, but given food and shelter. **Types of slaves:**

- Captives of war
- Forced labourers who worked in quarries, built pyramids and other constructions
- Bonded labourers who worked as a slave to pay off a debt

What did the rich people do while the servants were doing their work?

The men went hunting for wild ducks in the marshes and women are shown sitting on couches talking to each other and listening to music.

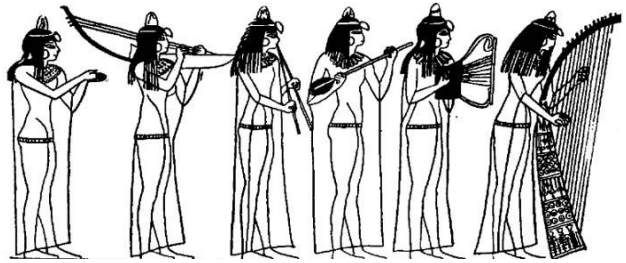
1. What did the servants of rich families do?
2. What did the rich people do during the day?
3. In the time of Moses the Israelites were slaves in Egypt. Which kind of slaves were they?
4. Joseph was sold as a slave by his brothers. Which kid of slave was he?

Ancient Egypt 7
Entertainment

Children played with toys such as spinning tops and wooden models of animals which they could pull along on strings. They played with balls made of clay and they played at leapfrog. Girls played dancing games, holding hands in a ring, and little boys played at being soldiers.

Adults played a number of board games. We know that they played a game for two people called Senet on a board with 30 squares. The aim was to reach the kingdom of Osiris through all the dangers on the way.

The Egyptians also enjoyed story-telling, parties and music. There were a number of great public festivals to honour their gods. Thousands of people got together and danced to the music of harps and flutes.



1. Draw and name some of the games that the children played.
2. Draw the board game that the adults played.
3. What was the purpose of their festivals?
4. What were some of the musical instruments they played? Name and draw these.

Ancient Egypt 8
Farmers

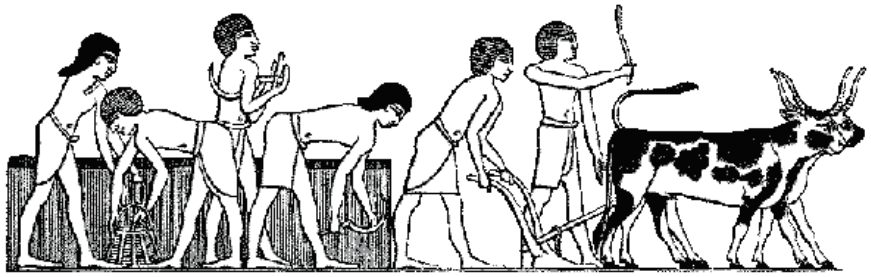
Many people in Egypt were farmers. They farmed the fields on the bank of the Nile. Men, women and children from a young age all worked in these tiny fields.

They ploughed the land with a wooden plough pulled by oxen.

They sowed the fields with seed and watered the ground with water from the Nile. They harvested the grain using a sickle.

They beat out the grain from the husk by getting their oxen to walk round and round treading on it. All the grain was controlled by royal officials and kept in a royal granary.

In the Bible we are told of the Pharaoh who dreamt of the seven fat cattle followed by the seven lean cattle. Joseph told the meaning of the dream: that there were going to be seven very good harvests, followed by seven poor harvests. He advised the Pharaoh to collect the grain during the seven good years so that the people would not starve during the seven poor years. This true story shows us that the grain was controlled by the Pharaoh's government and was then distributed when necessary.

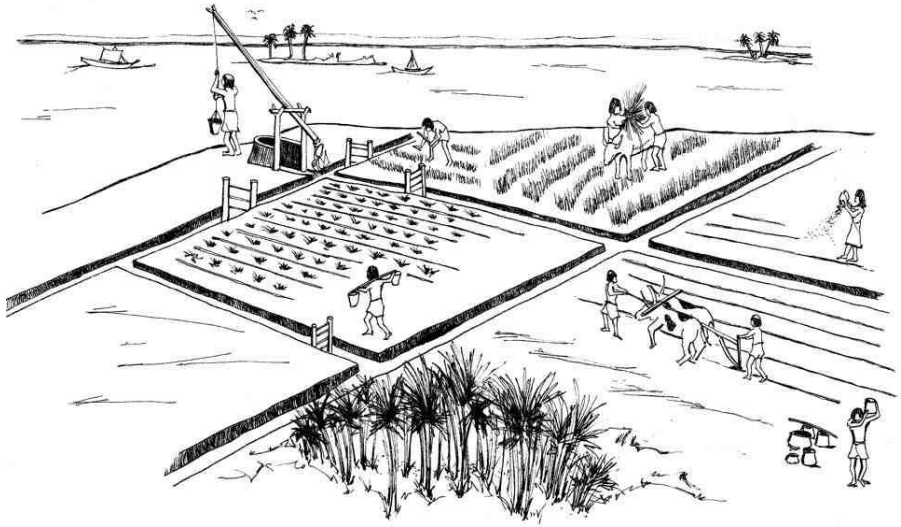


Draw and label: "Ploughing the fields" and "harvesting"

Ancient Egypt 9
Food

Crops and vegetables grew well on the banks of the River Nile. This meant that even the poorer Egyptians usually ate a good, balanced diet.

The staple food was bread from the grain. They grew onions and leeks and salad vegetables They grew beans and dried them so that they could be cooked and eaten throughout the year. They grew fruit such as figs and pomegranates. They caught fish from the Nile. They kept cattle. They made beer from barley and richer people drank wine made from grapes.

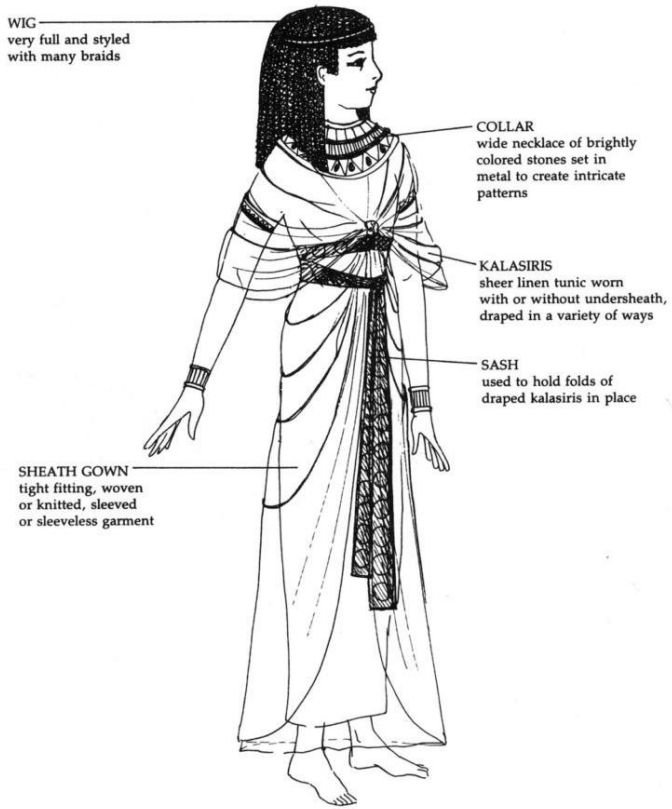


1. From the picture above, write a description of how food was grown in Ancient Egypt.
2. Draw a picture of the food and drink of the Ancient Egyptians.

Ancient Egypt 10
Clothes

Farmers grew flax. Linen cloth is made from flax and Egyptian clothing was made from linen. Men wore a short linen kilt (like a sulu) and women usually wore a linen tunic that hung from their shoulders. They wore jewellery around their neck. Men and women wore sandals, or had bare feet. Young children sometimes wore no clothes at all but often wore jewellery round their neck.

Draw a picture a man and a woman wearing typical early Egyptian dress.



Ancient Egypt 11
Trades

Although most people were farmers, there were many other trades, carpenters, metal-workers, bakers, goldsmiths, boat builders. Trade was carried out by way of exchanging goods. For example, a farmer might exchange a basket of onions for a bag of charcoal, or a cow for a small boat.

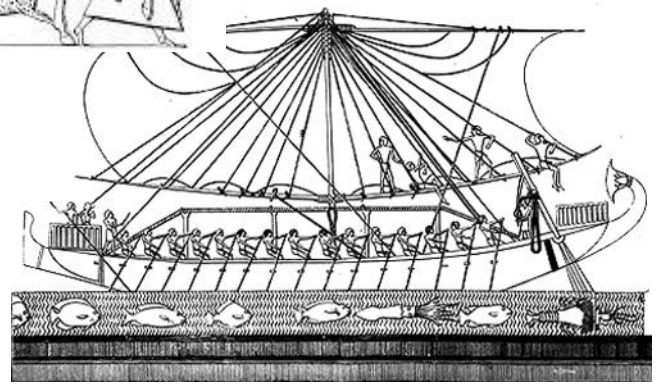
1. What were some of the trades that are the same as today?
2. What do you think the carpenters would have made?
3. What do you think the metal-workers would have made?

Ancient Egypt 12
Transport

Everything in Egypt depended on the Nile and everything was transported on boats and ships on the river. In order to fish and to transport goods from one place to another people had small boats made of papyrus stalks (stalks of water reeds) bound together.

Bigger boats and larger ships were made of wood, which was mostly imported from Lebanon. There are many paintings of boats carrying cattle and other heavy goods on the Nile. It was a very busy river with constant traffic.

On land, the Egyptians used horses and carts or chariots. We know of the Pharaoh's army that chased after the Israelites on their horses to the Red Sea, but were drowned when the Red Sea closed up after God allowed the Israelites to pass through.



Israel in Bible Times 1
Life in Jesus' Time

Jesus' lifestyle was very different from ours. The following passages from Matthew's Gospel give many clues about the climate, food, jobs, transport, laws and customs of the people of Palestine 2000 years ago.

Read each passage. Describe the aspects of the lifestyle which the reading tells us about.

Matthew 4: 18-22

Matthew 4: 23-25

Matthew 8: 23-27

Matthew 12: 1-8

Matthew 14: 13-21

Matthew 21: 33-46

Matthew 22: 1-11

Israel in Bible Times 2
Houses

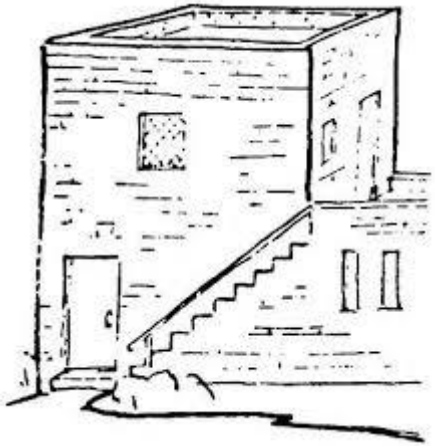
In Israel in the time of Jesus, houses were made of clay bricks or stones held together with mud and straw, and had dirt floors.

The average family lived in one-room, two-level dwellings with living quarters separated from and raised above the animal stalls. Jewish extended families often lived together.

The poor lived in one-room houses built of mud brick on a stone foundation. External steps led up to the flat roof which provided storage space and somewhere to sit. Inside the house a raised platform at one end of the room provided quarters for eating and sleeping. The lower level was used mainly as a stable.

Some items in the house included a table, a spinning wheel, wooden bowls, an olive oil lamp.

1. Draw this house and label it “Family home in Bible times”
2. Draw what this house would have looked like on the inside. Draw all the things described in the text above.



Israel in Bible Times 3

Occupations

Men's jobs were typically farmers, craftsmen, or fishermen.

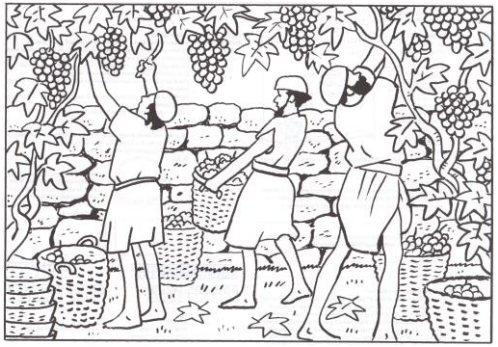
Women learned cooking and household duties. Women memorized scripture. And taught their children

Boys were taught a trade by their father, as Jesus was.

Many of those without a steady job would have been casual labourers whose day's wage depended on those who hired a group of workers each morning.

Some people were therefore reduced to a life of begging or even slavery.

1. What was the occupation of Jesus' father, Joseph? (Matthew 13:55)
2. Find out the occupation of Peter, Andrew, James and John before they met Jesus, (Matthew 4:20)
3. Find out the occupation of Zacchaeus and Matthew before they met Jesus, (Luke 19:2)
4. How did Jesus treat beggars? (Luke 18:35-43)
5. What kind of workers were the ones mentioned in Matthew 20:1-16… permanent or casual?



Israel in Bible Times 4

Food

The range of food was much more limited in New Testament times than it is today.

Seasonal vegetables (e.g. beans, onions, lentils, leeks, cucumbers), flavoured with herbs and salt, and bread (made from wheat or barley flour) and olive oil provided the basis of a staple diet.

There would also have been fruit (though not the citrus fruits for which Palestine is known today), together with nuts, honey and cheese.

Fish were plentiful, especially around Galilee, and could be preserved by drying and salting.

Meat would have been something of a luxury.

For the Jews, there were strict regulations about which animals could be eaten and which were regarded as 'unclean'.

The main meal was in the evening, at sunset, when the family gathered and all sat on mats on the ground to eat together.

Israel in Bible Times 5
Clothing

Clothing in the Jesus' day was much simpler than it is today. Most garments were made from wool, though linen was also used (made from flax grown in the Jericho area or imported from Egypt).

Both men and women would normally wear an ankle-length tunic next to the skin, often held at the waist by a belt (which could also be used as a purse). A cloak could be worn over this, especially at night or if the weather was cool during the day.

Jewish law required the cloak to have tassels attached to its four corners. Each tassel was to include a blue cord and was intended as a way of helping people to remember to keep God's Law.

If shoes were worn at all, they would have been leather (or perhaps wooden) sandals.

1. Draw and describe the clothing of Jesus day.
2. How is it different to clothes of today?
3. What were the two types of materials used for clothing?

Israel in Bible Times 6
The Family

People did not have the right to choose whom they wanted to marry. The families decided this.

According the Bible, children are a precious gift of God, given to parents. They are the future of the people. Children were born at home as there were no hospitals. They were wrapped in cloths or little blankets. They were carried around on the back of the mother.

From the age of 3 children were education by their mothers. They were taught the Law by their father. This includes the Ten Commandments and other laws of the Old Testament. Children over 5 went to school. They learned to read and write from the Scriptures. The Scriptures were written on long paper in a scroll. Books were not yet invented.

The fathers also taught their sons their own craft. We know that Jesus was taught to be a carpenter by Joseph. Girls were taught by their mother how to run the home. They were also taught from the Scriptures and memorized certain prayers.

At 13 the boys were given a special ceremony to show that they had grown up and could now join the men.

1. How was Jesus wrapped when He was born? (Luke 2:12)
2. Draw a scroll.
3. How old were boys when they were considered an adult?

Israel in Bible Times 7
Languages

The languages spoken were:

- Aramaic, the common, daily language
- Hebrew, the language used for prayer and the Scriptures
- Greek, the language of the land

Some Scriptures were written in Hebrew and some in Aramaic. The first translation of the Bible was from Hebrew and Aramaic into Greek.

Hebrew is written from right to left.

1. What are some of the differences between Hebrew writing and our writing?
2. What language did Jesus speak?

Israel in Bible Times 8
Water

Families had their own water supply called a cistern. This was a hole dug in the open courtyard of their house. During the rainy season the rain water came off the house roofs to the holes by means of troughs. Usually the water was drawn up by means of a rope that runs over a wheel, and a bucket made of animal skins is fastened to the rope.

In the dry season the family cistern would dry up and the women went to the village well to get water. The water in the wells came from an underground spring, so the wells could only be built where there was an underground water supply. The women carried the water to the home in clay jars. These were carried either on their shoulder or head. If larger supplies of water are needed, then the men carry it in sheepskin or goatskin "bottles."

In John 4:1-42 we are told how Jesus met a Samaritan woman at the well. Samaritans were enemies of the Jews and they usually did not speak to one another. But Jesus told the lady about water from a spring that would never run dry. He was speaking about the Holy Spirit.

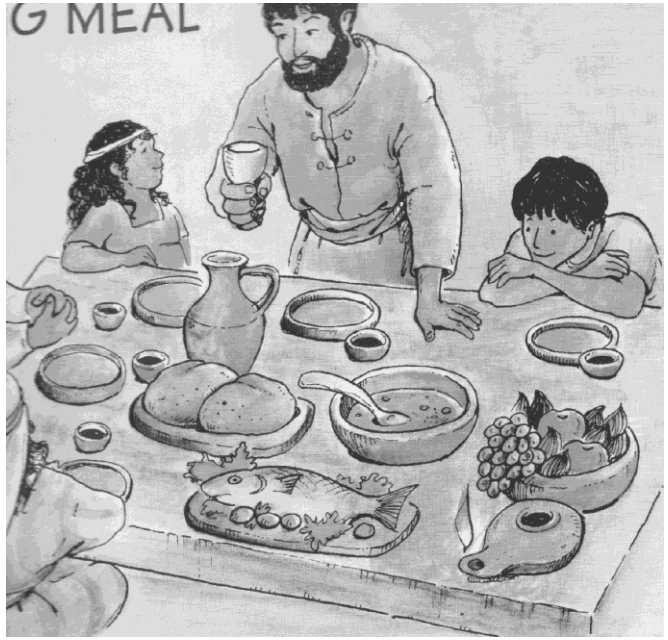
1. Draw the family cistern complete with bucket and rope.
2. Where were wells built?
3. How did the water get into the well?
4. What is the Living Water?

Israel in Bible Times 9

The Sabbath

The Sabbath is the day of rest for Jewish people. It starts at sunset on Friday evening and finishes at sunset on Saturday evening. It starts with a special meal. Songs are sung and prayer recited. On the table, among the different dishes, are always two whole loaves of bread and wine.

During the Sabbath no one is allowed to do any work. The family celebrates the end of the Sabbath by asking the Lord to bless the new week. God told them to do this. Read Exodus 20:8.

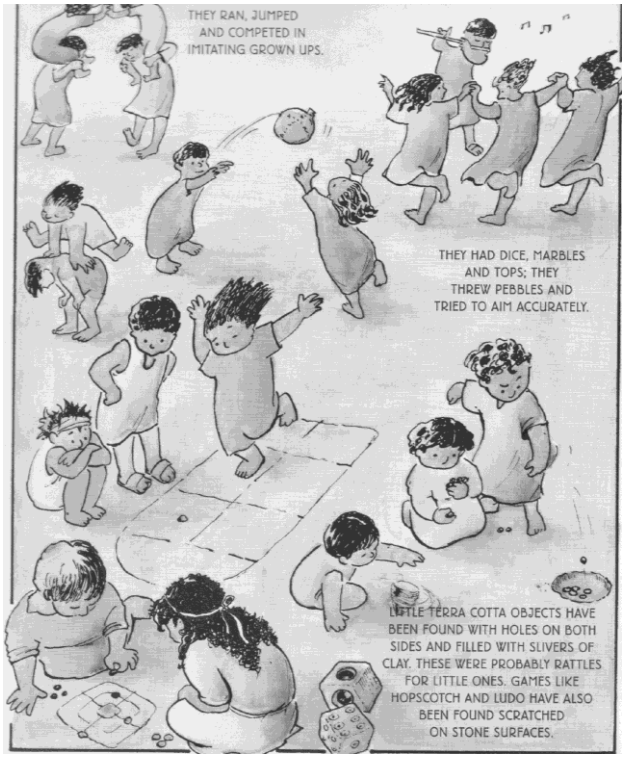


1. What must Jewish people do on the Sabbath?
2. Why do they do this?
3. When is it?
4. Draw the special meal.

Israel in Bible Times 10

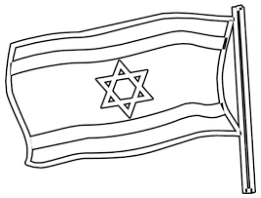
Games and activities

Although life was hard for the ordinary people of Jesus' day, it had its lighter moments. Feasting, singing, story-telling and dancing all had their place as recreational activities. Games, both indoor and outdoor, were also popular. Archaeologists have discovered a number of game boards with playing pieces. Children usually played outside as it was dark in the houses. They had dice, marbles, tops and threw pebbles to aim at objects.



1. Make a list of the games that are still played today.
2. Make a list of games they would NOT have played.

People of Israel today



Jews

Jews are the original descendants from Abraham and his son Isaac. Most of the people we read about in the Bible were Jews. Jesus is also a Jew! Most Jews are modern people who live like us but some Jews are very traditional and they wear traditional clothes and live according to the Old Testament's rules.

The men and boys who follow the traditional Jewish religion wear small caps called skullcaps.

Children are taught the Scriptures by their mothers. When they reach the age of 13, they have a special ceremony called a Bar Mitzva, to show that they are leaving their childhood behind and will now take on more responsibilities, and they move towards becoming an adult.

What is a Bar Mitzva and what is its meaning?

People of Israel today

Arabs

Arabs are the descendants of Abraham and his son Ishmael. Most of them live in the Middle East. They speak Arabic and most of them are Muslims. They have a very old culture.

What kind of dress do Muslims wear?

Samaritans

Samaritans are also descended from Abraham and the Jews but some of their ancestors married women from other countries and they became their own nation. They worship God in their own way on the mountains but some of them have become Christians or Muslims.

Can you think of two Samaritans that you have heard about in the Bible? Write a sentence about each.

People of Israel today

Christians

There are thousands of Christians in Israel.

They hold church services similar to the ones we are familiar with. They read the New Testament just as we do.

Christian Jews are called Messianic Jews. They believe that Jesus died for their sins.

Traditional Jews study the Old Testament but not the New Testament.

Israel has an important part to play in world history. When Jesus comes again, He will come to the Mount of Olives, in the same way that He left.

Make a summary

1. Write down the names of the major groups who live in Israel and explain who they are.

2. Write down where Israel can be found in the world.

3. Explain why Israel is so important.

Light and the eyes 1

God created light

Bible verses to read: Genesis1:1-5

Now copy the sentences filling in the missing words:
Before God created light there was only
d_____.
God said that the light was g_____. He called the light
d____ and the darkness n_____.

Think:
Why did God call the light good?
Now read from the Bible: 1 John 1:9

Cop and fill in the missing words:
God is l_____ and in Him there is no d_____.

Think and write:
What is the meaning of *light* in this Bible verse?
What is the meaning of *darkness* in this Bible verse?

Draw:
(1) A person living in light
The Bible tells us that living in the light means obeying God.
Draw something that this person might be doing, like sharing or caring.

(2) A person living in darkness
The Bible tells us that living in darkness is *not* following God.
This person might be stealing or fighting.
Read and write this Bible verse from John 1:7
Walk in the _____ as He is in the
_____.

Light and the eyes 2

Eyes are important

When God created light, He also created eyes, so that people and animals could see His creation. Imagine trying to live without eyes.

1. What things would be difficult to do?
2. What favourite things couldn't you see?
3. What dangers would there be if you didn't have help from others?

How eyes help us

Think and write:
How do eyes help us to stay alive?
e.g. Eyes help us eat the right food.

How eyes help animals

Think and write:
How do eyes help animals to stay alive? Think about the difference between meat-eaters and plant-eaters.

e.g. A lion needs eyes to spot other animals the it wants to hunt.

Think and write:
Why did God give us two eyes and not one eye?

Eyes are important to Jesus

Jesus touched many eyes and healed many blind people.
Read: Matthew 9:27-29

Fill in the missing word:
Jesus healed the blind men because they bel_ _ _ _ _.

Draw a picture of Jesus healing the blind men.

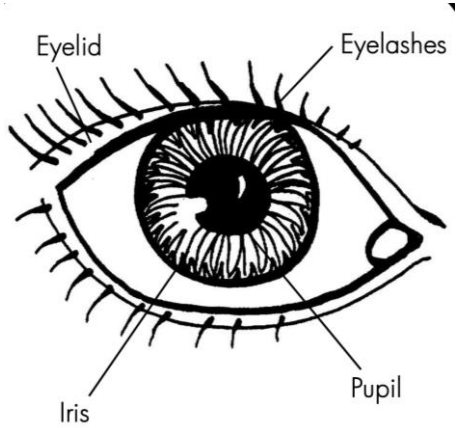
Light and the eyes 3

Eyes are an amazing part of God's creation

Did you know that inventors have copied ideas from God's creation? The first cameras worked like the eye. They were made of a strong black box. It let light in at only one spot called the *lens.* In the box there was a special black strip called a film. The light coming through the lens made pictures on the film.

Draw:
A picture of your eye, just as you would see it in a mirror. Draw the *pupil* (the black dot in the middle) and label it on the drawing. Draw the *iris* (the round coloured part around the pupil) and label it. You can also draw and label the eye lids and eye lashes.

Find out:
What happens to the pupil when you change from darkness to light?



Light and the eyes 4

The inside of your eye

Draw:
A picture of the eye that shows the inside of the eye. Mark on your drawing *the iris, the pupil, the lens, the retina.*

Our eyes are more perfect than a camera. At the back of the eye is the *retina.* That is like the film. Light gets into the eye through the *lens.* The coloured part of the eye is the *iris.* It can be brown, blue or green.

What colour are your eyes?
The iris opens and closes to let the right amount of light in.

The *pupil* is the black dot in the middle or your eye. In bright light the pupil is small. This stops too much light getting in. In dim light or darkness the pupil is large because the wants to get as more light for seeing.

Look in a mirror and to see the iris and pupil of your eyes.

Draw:
(1) an eye in bright light
(2) an eye in dim light

Light and the eyes 5
Caring for your eyes

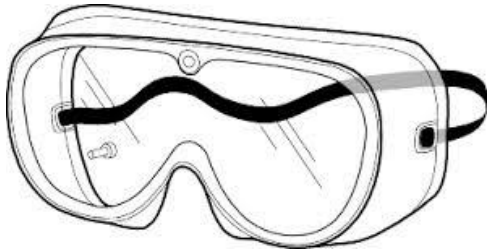
We know how important our eyes are. We should take good care of them. Think about ways in which your eyes could become damaged.

Make:
a safety poster about the care of eyes.
Make a chart divided down the middle. On one side write and draw the ways eyes can become damaged.
e.g. too much bright light or sunlight; watching an eclipse; sharp pointy objects; reading in dim light; spray cans containing chemicals that can harm your eyes; throwing sand or stones.

On the other side of the chart write and draw how you could protect your eyes from damage.

Why do you think God created our eyes with eye lids and eye lashes?

Sometimes workers wear goggles to protect their eyes. What work might they be doing?



Light and the eyes 6
Our eyes are lights

Read from the Bible:
Matthew 6:22-23

These verses tell us that the thoughts and feelings inside us, like love, happiness and hate, show through our eyes. Our eyes help to make an expression on our face.
What other parts of our face do we use to show our feelings?

Answer these questions:
How do our eyes look when we are happy?

How do our eyes look when we are sad?

How do our eyes look when we are angry?

Hint:
You may like to ask someone to make these expressions for you. You may like to draw pictures as part of your answers.

Cop and fill in the missing word:
When we are sad, _____ come from our eyes.

Think about this and write your answer:
When people have done something wrong, like telling a lie, they don’t want to look into the eyes of another person. Try to guess why this is so.

Light and the eyes 7
Seeing Jesus, but not through eyes

Have you ever heard someone say, “I see”? But the person is not talking about seeing with their eyes.

What the person really means is “I understand”.

When Jesus tells us about “seeing” in the Bible, He usually means “understanding”. It is possible to know a lot about Jesus and the Bible, but not really understand His love for us. Many people may know Bible stories, but they don’t understand that they can come to know Jesus as a person if the ask Him to forgive them for their sin and invite Him to become a friend.

We may see a picture of Jesus, but to really “see” Jesus we must get to *know* Him as a person and a friend. Jesus helps us to understand more about Him from the Bible.

The Parables
Jesus often told stories called parables. These were stories with hidden meanings. Many people listened to the stories but did not understand the hidden meaning. They did not “see” the meaning. They did not understand.

A project
Find a parable from the Bible. Write the story in your own words. Then explain the hidden meaning.

Light and the eyes 8
Optical illusions

Look at this optical illusion:

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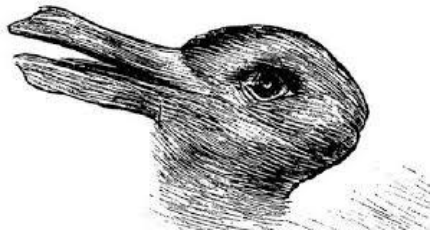


This is a picture that can be seen two ways. Can you see a rabbit or a duck? Try to see both.

Perhaps you didn’t see the rabbit at first, or perhaps you didn’t see the duck at first.

If the artist wanted us to see a rabbit and we could only see a duck, then we wouldn’t be getting the right meaning.

Sometimes people don’t get the right meaning from the Bible. They have to ask Jesus for special ‘eyes to see’ the meaning of the words of the Bible.

To “see” Jesus, we must get to **know** Him. Jesus helps us to understand his word.

Light and the eyes 9
Seeing Jesus

Try to find the face of Jesus in this photograph. It is a photograph of melting snow. A photographer who did not believe that God existed, saw the face of Jesus in the photograph he had taken. He no longer doubted who Jesus really was!

To find the face, look at the larger black parts.

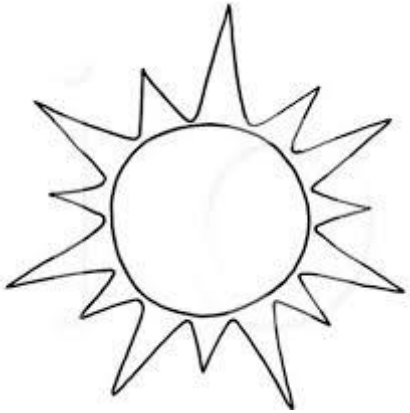
Light and the eyes 10

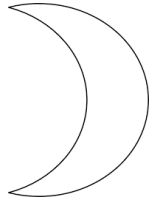
Light and Colour
It is light that lets you see things.
In the dark you cannot see at all.

The Sun gives us daylight.
The Moon gives us moonlight.
Fire gives us light.
Electricity gives light.
God made these things to give us light.

The Sun sends out rays of light. It shines on the Earth.
But the Sun shines only on one side of the Earth at a time. Half the Earth has daytime while half the Earth has night time.

The moon is like a giant mirror.
It bounces sunlight on to the earth.





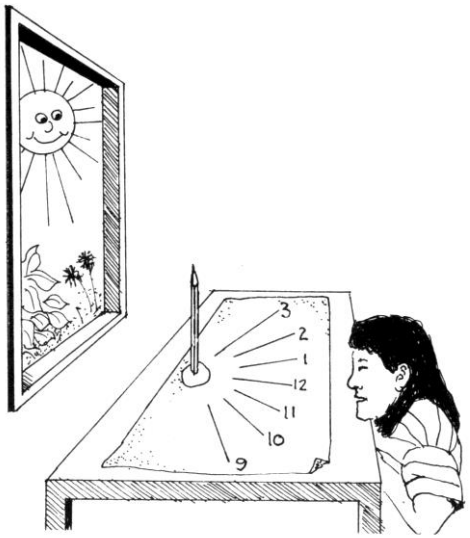
Light and the eyes 11
What makes shadows?

Shadows are made when something blocks the light shining on it.

A sun dial
In the olden days, people did not have clocks like the ones we have today. They measured time by the sun. They could tell the time by the length of the shadow made by a shadow stick (also called a Sun dial).

To make a sun dial:

1. Cut a circle from stiff cardboard to make a dial.
2. Push a sharp pencil or skewer through the middle of it.
3. Push the pencil into the ground.
4. Mark on the dial where the pencil's shadow falls each hour.



Light and the eyes 12
What is white light?

You can make a rainbow colour spinner.
When you spin it you will see white light.

White isn't a colour, but different colours together make white.
Light passes through some materials, like glass or water.
The light rays bend when they pass through a glass prism or water droplets in the sky.

The different colors that make up white light become separated. This makes a rainbow.

1. Draw a rainbow showing the seven colours in the right order. Red, Orange, Yellow, Green, Blue, Indigo, and Violet. (Red is at the top edge of the rainbow and violet at the bottom.)

2. What is white light?

Light and the eyes 13
Colour mixing

What happens when you mix colours together?
If you mix colours together you will make other colours.

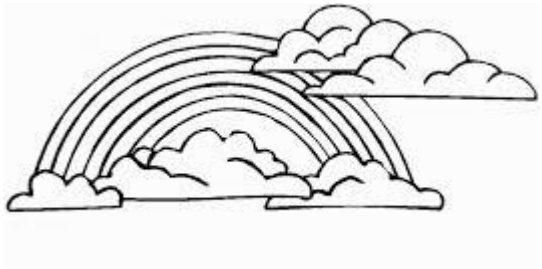
Write the answers:
What happens when you mix:
Blue and yellow?
Yellow and red?
Red and blue?
Red, blue and yellow?

Red, blue and yellow cannot be made by colour mixing.
They are called Primary colours.

How do you make brown?

What are you favourite colours?

Black and white are not colours. They are tones.
What happens when you mix black and white?



Light and the eyes 14
Light Facts

What is light?
Light is a form of energy which our sense of sight can detect. It is made of electro-magnetic radiation and travels in a straight path.

What is the speed of light?
The speed of light is the speed at which light travels. It is about 300,000 kilometres per second. Nothing travels faster than light.

Why are there different colours of light?
There are different colours of light because they are light waves which have different wavelengths. Red light has the longest wavelength while violet light has the shortest wavelength.

What is reflection?
The bouncing back of light waves when they hit an object with a very smooth and shiny surface, like a mirror, is called reflection.

What is refraction?
The bending of light as it passes from one transparent substance to another, like air to water, is called refraction.

Copy the questions above and answer write *short* answers, (no more than twelve words per answer)

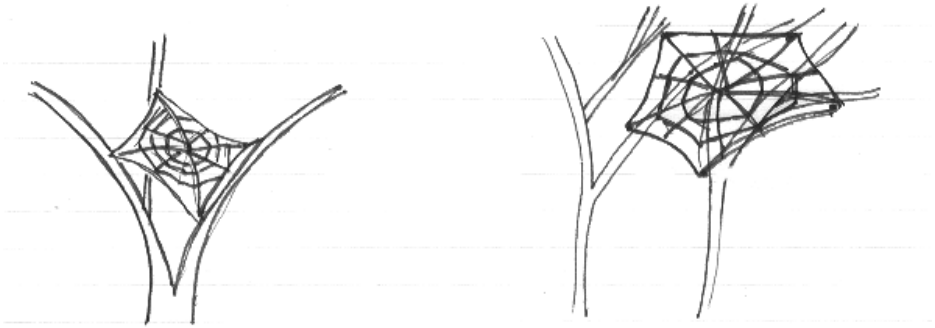
Spiders 1
A good place to build a web

God has given the spider the ability to make the web, but the way she does it is left to the spider to decide.

A spider builds her home on the things she finds around her. Here are some of the things spiders build their webs upon. Write down any others that you can think of.

- twigs and branches
- leaves
- window frames
- ceilings and walls

Now draw some spiders webs built upon these things, and write the heading, "A good place for a spider's web".



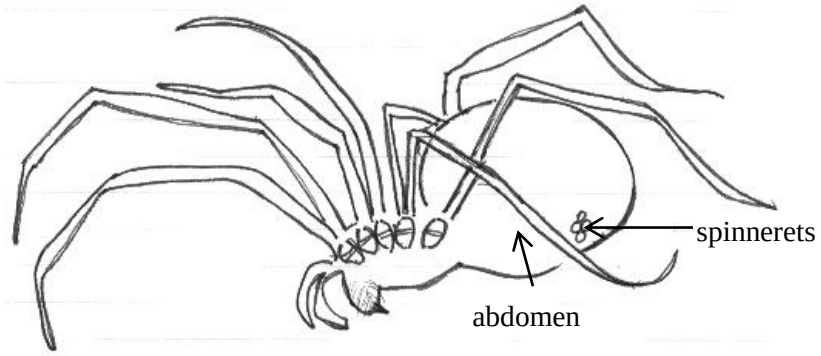
Spiders 2
Spider webs are sticky

The threads for the web come from the spider's body. Spiders' webs are built for catching flies or other insects for food. The spider waits in hiding and it feels if anything touches the web. When a fly is caught, the spider may wrap it up in sticky threads to take to its hiding place.

1. Why do you think spider's webs need to be sticky?

2. How does a spider catch its food?

3. At the end of a spider's abdomen is a factory for making silk. There are several nozzles called spinnerets. Draw a spider showing the spinnerets.



Spiders 3
Patient and diligent

If you brush away a spider's web from the corner of your ceiling, what will the spider do? Soon you will have to do your cleaning all over again. A spider never gives up building her home. We can learn from the example of a spider.

It is important to keep trying, even when you think you have failed.

A spider doesn’t take long to build a web. As soon as the web is damaged it eats the old one and spins a new one. It doesn’t give up.

A spider works with patience and diligence. This means it puts in a lot of effort. We can learn about diligence from the spider. It is important to do a job well and keep going right to the very end of the job, just like the spider.

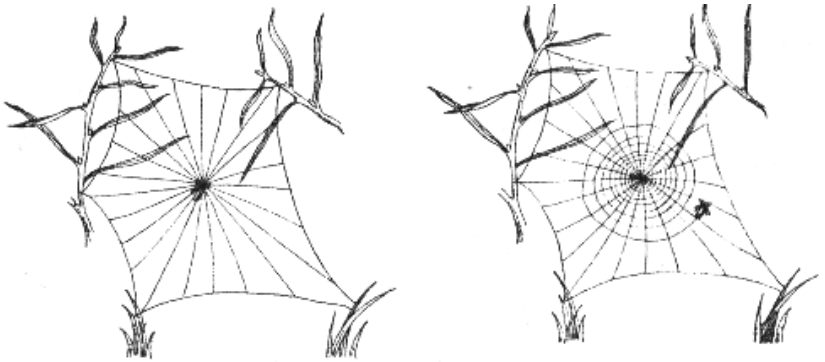
Have you ever seen two spiders working on the one web? No, this doesn't happen. A spider works by herself with patience and diligence.

1. How can we learn from the spider?
2. Write down something that *you* need to keep trying at.
3. Name a job that you have to finish on your own.

Spiders 4
How does a spider build a web?

Spiders' webs are strong and sticky. It is the lady spider who builds the web. First she chooses a good spot, and here she attaches the beginning of her web. Dangling on the end of the first thread, she now drops to the ground, or to a blade of grass, or a branch. Then she climbs back again, and waits for some wind to help her get across to something else, and so on until she has an outline for her web. Then she fills in the outline with threads running up and down, in every direction, all of them crossing one another like the spokes of a wheel.

Then she goes to the centre and takes the thread round and round in a spiral. Lastly, she goes over it again with a new sticky thread.



1. 1.Two words to describe the spider’s web: st and st
2. Who builds the web? Male or female?
3. After she chooses a good spot she dangles on the end of a _____ coming from her body.

Spiders 5

Designed by God

Do you know how many legs a spider has? A spider has eight legs. Spiders are not insects because all insects have six legs. Spiders are in a special family of their own called arachnids. There is another difference too. Insects have three parts to their bodies, but spiders have only two. Nearly all insects have wings but spiders have none.

Insects change in some way before they take their adult shape. Think about a caterpillar and how it changes to a butterfly. Little spiders, however, hatch straight away from the egg.

Although spiders do not change shape, they do grow bigger. To do this, they burst out of their hard skins, and grow new ones.

1. What is the difference between spiders and insects?
2. What happens to a spider's skin when the spider grows?

We read in the Bible: *Ask the animals, and they will teach you that God's hand can be seen in all His marvelous creation. (Job 12:7)*

Spiders 6

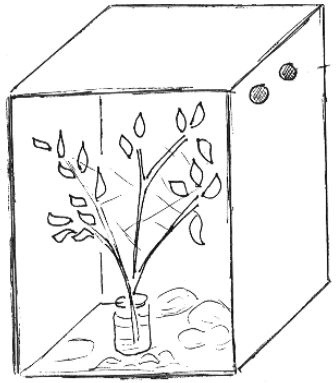
A house for spiders

You can easily keep a house spider for a short time in a big glass container with air holes in the lid. Give it some water, somewhere to shelter and some insects for food.

What spiders eat
Spiders like their food to be alive when it is caught in the web, so you will have to catch small flies for them. They need water too, so sprinkle some spots of water on the home occasionally. Spiders are carnivorous. That means they eat meat, and might even eat each other!

The spider sucks juices from the insects and leaves the bodies. It can last a long time without food. You might see your spider spin a web. It is a good idea not to put two spiders together in the same jar, because female spiders will eat male spiders if they get a chance!

1. What do you need to make a spider house?
2. What do spiders eat?
3. How do they eat their food?
4. Why shouldn't you put two spiders in the same jar?



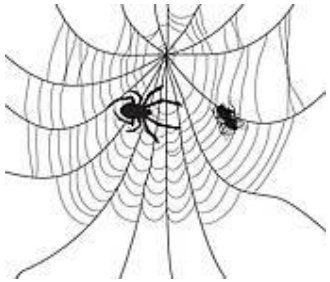
Spiders 7
Spiders help us.

Spiders seem rather nasty creatures because they eat insects, but really, they are a help to gardeners. The spiders keep down the insect population, which would otherwise eat our flowers and vegetables. If there were no spiders, there would be too many insects.

Spiders also help us because they eat many insects that are harmful to humans. Think about flies, which eat our food and carry germs, and also insects which suck our blood and can carry disease.

Do you think that spiders had poisonous bites and ate insects when God first created them? No. In God's perfect creation, there was no killing. It was only when people disobeyed God, that killing began. Let's think about how the spider lived at the very start of creation. All spiders and insects must have eaten plants, but maybe not the ones that humans ate, because all creation was in perfect balance and there were no pests and diseases.

1. How do spiders help us?
2. Did spiders kill insects in God's perfect creation?
3. When did spiders start to kill insects?



Spiders 8
A spider's body

A spider has eight legs. They are hairy and jointed, and end in curved claws. The claws have teeth like a comb on the inside. The claws help to hold food. Spiders also use their claws as combs for cleaning themselves. A spider has no antennae like an insect. Instead it has *palps* which are joined to the mouth parts. They are like arms and hands to a spider. Spiders use their palps for feeling and touching.

Copy and fill the gaps:
Palps to a spider are like _____ to an insect.

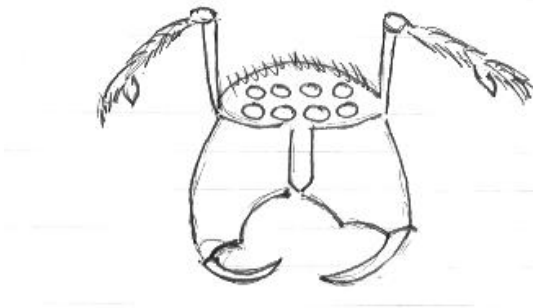
Palps to a spider are like _____ to a human.

A spider usually has eight eyes. They are simple eyes that shine like jewels. People think that some spiders can see colours! A spider has to keep watch for prey. With so many eyes it can see in many directions. A spider also needs to watch out for enemies. A spider is always *alert.* Christians need to be alert too.

1. Read 1 Peter 5:8 and find out why Christians need to be alert.
2. Why do you think a spider needs so many eyes?
3. Think of some enemies that spider has.
4. Describe the way a spider might move if a fly flew past its web?

Spiders 9
A spider’s head

1. Here is a drawing of a spider's head. The palps are the furry arms used for felling and touching. There are poison fangs and eyes. Draw the head and label the palps, the eyes and the fangs



2. A sense of smell is important to a spider:
for catching prey
for male spiders when trying to find a lady spider

3. A good sense of hearing is also important to a spider. A spider feels vibrations in the air through the hairs in its body. There are stories of spiders letting themselves down from ceilings to listen to music. They may think it is the buzzing of an insect.
Why is hearing important to a spider?

4. All spiders have fangs for injecting poison into their prey, but very few spiders are dangerous to humans. When a spider catches its prey, it sticks its fangs into the prey, and instantly kills it with poison. A spider doesn’t really eat its prey. It sucks out the juices from the body of the insect, and leaves just an empty skin. Name something that is prey to a spider.

Spiders 10
Amazing builders

All that God has made is wonderful, and reflects His character. Just as a painting tells us something about the person who painted it, so nature can be studied to see what it tells us about God. The world which God has made has patterns and designs in it. All these things did not come about simply by chance. God is a God of order and He made things this way.

Some animals are amazing builders. Shellfish, ants, bees and termites build complex homes. Birds build nests. Both small and large animals make burrows.

God has provided all these animals with the ability to make these things. The spider is able to spin complex webs. Spiders are different from insects because they have eight legs, not six, and no spiders have wings. Baby spiders look like adults and don't go through the larva stage. Spiders have eight tiny eyes. Baby spiders spin webs and are not taught by their parents. God has given spiders some program, which we might call *instinct*, (which means we don't know how or why it works).

1. How do spiders know how to spin webs?
2. Make a table to show the difference between spiders and insects.

Spiders	Insects

Spiders 11
How baby spiders are born

Male spiders are usually smaller than female spiders. This means that they face the risk of being mistaken for prey and eaten! When it comes time for mating, the male spiders use many kinds of tricks. Some male spiders vibrate the female's web with a special rhythm to tell her that they are not to be mistaken for food. Other types of male spiders give the female a present to distract her attention. The present is an insect wrapped up in silk. Some clever male spiders suck up the food from the insect first, then spin the insect shell into a pretty silk cocoon for the female. When she finally gets it open she is in for a surprise because there is nothing to eat! Then the female spider gets angry and might kill the male spider!

As a result of mating, the female spider lays a group of eggs. She hides these under leaves of bark. Sometimes she makes a silk box for them. Baby spiders can make thread soon after they born. Some can use their thread like a kite to carry them away on the air from the nest.

Do you think that our Father who has provided so many things for the spider to enable it to live, has done an even better job providing for us?

Are you not much more valuable than them to God? (Matthew 6:26)

1. What does a male spider do to attract a female spider?
2. How does the female spider hide her eggs?
3. What special thing can baby spiders do as soon as they are born?

Spiders 12
How a spider catches prey

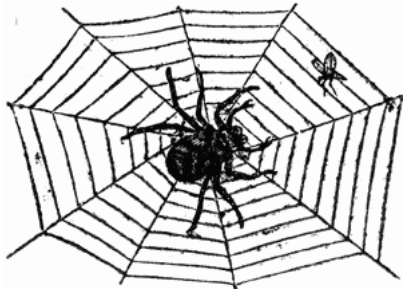
The spider can keep very still and sit in the centre of the web, or in a hide-out made of leaves woven together on the side.

The spider moves on the dry parts of the web, not the sticky part, so that it doesn't get caught. Also, the spider moves on the underside of the web, and by hanging upside down, keeps free from the sticky thread.

The spider knows if it has caught something because the web's spokes are tight and vibrate if something is caught. It is similar to us holding a fishing line. When a fish is caught we feel the line move. A big fish moves the line a lot more than a little one, so we know its size. A spider, in a similar way, knows the size of what has been caught in the web.

If the insect caught is big, the spider runs over and spins a lot of threads around it. Many spiders can inject poison to kill the insect. The spider eats the soft part on the insect and throws the shell away.

1. Why does the spider sit very still in the centre of the web?
2. How does a spider know if it has caught something?
3. What happens to the web if a big insect is caught?
4. What does the spider do after it catches an insect in the web?



Inventions 1
Questions about technology

1. What do you think are the 3 greatest inventions of all time?
2. How has technology changed the workplace?
3. Has technology ever *let you down?* (Have you ever been disappointed because something did not work properly?) What happened?
4. How has technology improved our daily lives? Give examples and explain the advantages of technological advances.
5. What could never be replaced by technology? Explain why not.
6. What things should never have been invented?
7. Do computers save time or do they just make us waste more time? Explain.
8. What would you like to see invented in the future? Explain why.
9. Which modern invention could you not live without? Explain your choice.
10. How has technology changed medical care?
11. How has technology revolutionized transport?

Inventions 2
The Invention of Umbrellas

It seems natural to open an umbrella when it rains. But actually the umbrella was not **i**nvented for protection against rain. It was first used as a shade against the sun. Nobody knows who first invented it, but the umbrella was used in very ancient times. The first people to use it were probably the Chinese in the eleventh century B.C. The umbrella spread to ancient Egypt and Babylon. At that time it was a symbol of honor and authority. The umbrella was only for royalty or by those in high offices.

It is believed that the first people to use the umbrella as protection against rain were the ancient Romans.

The umbrella became popular in Europe in the eighteenth century and then started to become popular worldwide. Umbrellas have not changed much in style during all this time; however, it wasn't until the *twentieth century* that umbrellas began to be made in a v**ariety** of colors.

1. Who first invented the umbrella?

2.When did the first people start to use the umbrella?

3. Who were the first people to use the umbrella for protection from the rain?

4. When did umbrellas began being made into different colors?

Inventions 3
For good or for bad

Just a few hundred years ago, life was far different than it is today. When people wanted to travel or communicate, they had to go on foot or horseback.

Whatever people owned—from clothing to tools—had to be made by hand.

Diseases were difficult to treat without modern medicines.

Quality of life has improved over the years through the efforts of the men and women who had the brilliance, diligence, and creativity to come up with new and better ways of doing things.

Alexander Graham Bell discovered how to send sound down a wire from the speaker to the listener, and so invented the telephone, which ultimately led to the cell phone, and our modem, and a communication system that now links the entire globe.

The electric light illuminated the darkness so people could work at night. Braille made it possible for blind people to read.

These inventions, like many others, have clearly improved life by keeping people healthier, helping them to communicate and work more efficiently, and allowing them to travel farther.

Other inventions were controversial because of their potential for destruction. Some people think that the world would be better off without the invention of the hydrogen bomb.

List 5 good inventions. Explain how they have changed people's lives.

Inventions 4
Telephone and Computers

The Telephone

The telephone is an instrument that converts voice and sound signals into electrical impulses for transmission by wire to a different location, where another telephone receives the electrical impulses and turns them back into recognizable sounds. In 1875, Alexander Graham Bell built the first telephone that transmitted electrically the human voice.

Computers

There are many major milestones in the history of computers, starting with 1936, when Konrad Zuse built the first freely programmable computer. In the 1960s computers were used by NASA to place a man on the moon. The computers then were very large.

1. What are the advantages and disadvantages of having a mobile phone?
2. Explain in 3 sentences or more how have computers changed since 1936.

Inventions 5
The car and the camera

The Car
In 1769, the very first self-propelled road vehicle was invented by French mechanic, Nicolas Joseph Cugnot, (French). It was a steam-powered model. In 1885, Karl Benz, (German) designed and built the world's first practical car to be powered by an internal-combustion engine. In 1885, Gottlieb Daimler (German), took the internal combustion engine a step further and developed a gas engine. He later built the world's first four-wheeled motor vehicle.

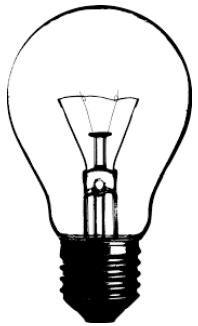
1. Apart from walking, how did people travel before the invention of the car?
2. How is the modern car different to the first car invented?

The Camera
In 1814, Joseph Nicéphore Niépce (French), created the first photographic image with a camera he invented. The image required eight hours of light exposure and later faded. In 1837 Louis-Jacques-Mandé Daguerre (French), invented of the first practical process of photography.

3. How did people produce images before the camera?
4. What can we do with cameras today?

Inventions 6
The light bulb

In 1809, Humphry Davy, an English chemist, invented the first electric light. Fifty years later Thomas Edison (American), improved upon this idea. In 1878, Sir Joseph Wilson Swan, an English scientist, was the first person to invent a practical and longer-lasting electric lightbulb that burned for 13 hours. In 1879, Thomas Edison invented a carbon filament that burned for forty hours. The filament is made of tungsten wire. Tungsten is a hard metal with the highest melting point of any metal.

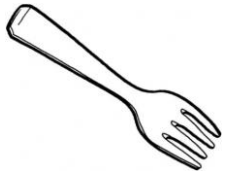


1. How did people light their homes before the invention of the electric light?
2. Why was Thomas Edison's invention in 1879, better than any previous attempts at making a light bulb?
3. Why is tungsten a suitable metal for using in a light bulb?
4. Draw the light bulb and label the tungsten wire filament.

Inventions 7
Household objects

Choose five of the following objects.
Name and draw each object.
Explain how life would have been without this object, or how the job would have been done before it was invented.

1. Hammer
2. Fork
3. Spade
4. Mop
5. Broom
6. Screwdriver
7. Grater
8. Peeler
9. Scissors
10. Saucepan
11. Clothes peg



Inventions 8
Household objects

Choose five of the following objects.
Name and draw each object.
Explain how life would have been without this object, or how the job would have been done before it was invented.

1. Mirror
2. Pen
3. Washing machine
4. Clock
5. Sewing machine
6. Can opener
7. Ironing board
8. Lawn mower
9. Saw
10. Drill
11. toothbrush

Food advertising & processed food 1
Chemicals

The world around us is made of chemicals. All food is made of chemicals. Chemicals are the “stuff” that something is made from. Chemicals can be safe or unsafe. They can be helpful or harmful. They can be good or bad.

Man-made chemicals are the problem chemicals. They are often sprayed on the fruit or vegetables to keep the bugs away. These chemicals are not good for us so we should always wash our fruit and vegetables before we eat them.

Chemicals are added to processed foods, to make them last longer (preservatives), to make them look or taste better (artificial colourings and flavourings) or to change the texture. These are called food additives. We are told that all food additives are safe because they have been tested for safety. But the truth is, some food additives have a bad effect on the health of some people. Some children have allergies and other have their concentration is upset by certain additives. No one really knows what the long-term effects might be. Eating natural foods is always better!

1. What is a chemical?
2. Are all chemicals bad?
3. What are the three types of food additives?
4. What do these additives do to the food?
5. Name two foods that contain food additives.
6. How can we avoid eating food additives?

Food advertising & processed food 2
Food additives

Food additives are substances that are added to food. Here are a few of the most common food additives that may not be so healthy:

Preservatives:
Used to make the product last longer.
Found in:
bread, cakes and biscuits
in vegetable oils, chips and fried foods
in some fruity drinks and soft drinks
in some sausages
in processed meats like ham and bacon

Colours:
These are made from man-made dyes
Found in:
Sweets, icing, ice-cream, drinks

Flavours:
Used to make a product taste spicier or saltier
Found in:
instant noodles, savoury snacks, pies, take-away food, sweets, and drinks

Make a chart of processed foods. Make three columns with the three headings. Draw and label foods in each column.

Food advertising & processed food 3
My personal eating plan

Make up a personal plan for improving your diet for one week. Decide which foods you are going to cut out, or cut down on, and which foods you are going to eat more of. Remember to include drinks too. Write down your plan. Include the date. Review your plan after a week and write a report on how well you stuck to your plan.

This is what I plan to eat for:
Breakfast:

Lunch:

Evening meal:

Snacks:

Drinks:

After one week...
I think that my diet over the last week has been:

- ❑ the same as before
- ❑ a little healthier
- ❑ very healthy

I think my diet was healthier than before because….
OR I could have done better if I had …….

Food advertising & processed food 4
Food advertisements

Truthful lips endure forever, but a lying tongue lasts only a moment. Proverbs 12:19

Do you ever get the feeling that advertisements are trying to fool you? It is very easy to be tricked when you see picture of junk food. It makes us feel that we must have whatever we see in the picture.

We see food advertising on TV, on signs and posters all around us when we go to the shops.

However, commercials do not tell us about all the bad effects this junk food will have on our bodies. That is a deception. Deception is making something look good, when it is really not good at all.

The advertisements do not tell us about the bad effects of sugar and salt the bad fats. Sometimes advertisement will tell us that a food is healthy when it is really not-so-healthy.

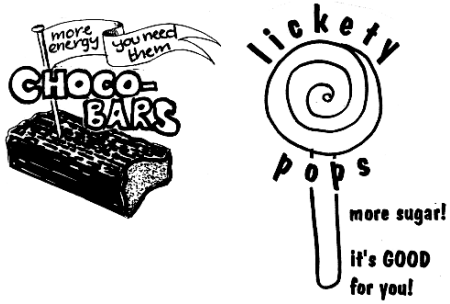
We don't need to be deceived by misleading information. God has given us wisdom. We can think carefully about the information we hear, and say, "Is it really true?" Ask God for wisdom and He will give it to you. Try to find out who's telling the truth.

1. *Where have you seen food advertising?*
2. *Make a poster to advertise one or more natural foods. Give some true information about the food on the poster.*

Food advertising & processed food 5
Food advertisements: Are they telling the truth?

Some food advertising tells us that sugar will give us energy, but this is not the whole truth. Sugar gives us a spike of energy for a short time, then we suddenly have a drop in energy making us feel more tired than before.

Here are some junk food advertisements. Explain why they might be misleading. Explain how the words in the advertising are trying to tempt you into buying the product. Is it true? Why?



Chocobars: "give you more energy" and "you really need them".
Lickety Pops: "more sugar. It's good for you".
Fizzo: "for people on the go".

Food advertising & processed food 6
Food advertisements: learning their tricks

Advertisements often try to trick people into buying products they don't really need. This is true about junk food. We don't need it. It is bad for our bodies and an absolute waste of money. If we want a delicious snack, then there are plenty of healthy snacks we can make to replace junk food.

Here are some of the tactics advertisers say to make you buy their products:

- "Everyone else is buying one so you must get one too."
- "It tastes good."
- "It is good for you."
- "It is recommended by important people."
- "It gives you energy."
- "It will make you happy."
- "You get a lot for your money."
- "You need to buy it **now**."
- "You get a free gift if you buy one."
- "Buy one and get one free."
- "You deserve it."
- "Spoil yourself"

Here are some other methods that advertisers use to trick you:

- big packets but only small quantities
- close-up photographs to make you think that the item is bigger than it really is

Choose an advertisement that you have seen. Think about the tricks that have been used. Try to find anything about the advertisement that is not completely true or honest. Now write about the advertisements you have chosen. Draw the product.

Food advertising & processed food 7

Food Labels

If we want to know the truth about the packaged food we eat, then we must find out what's in it. All processed packaged food should have a list of ingredients. We can read the labels to find out more about the ingredients.

Collect information from food wrappers and food packets. Look at the ingredients list. Write the name of the product you are investigating. Give comment on how healthy the food is.
Does it have any food additives?

Name of product	Food additives
Rice	no
Biscuits	yes

Food advertising & processed food 8

Good fats, bad fats

Bad fats:
Fast food and junk food usually contain bad fat. Let's find out what bad fats are.

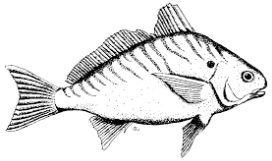
Vegetable oil in plastic bottles have been processed with heat. The oil then cools and gets heated again in cooking. These oils are not good for our health. We don't see the effects straight away, but over time bad fats can cause health problems.

Margarine is another example of a heat processed oil and is a bad fat. However olive oil is an exception. It is a good oil because can withstand heat.

We find heat-processed vegetable oils in foods cooked in oil. Chips, crisps, deep fried foods and pastries are examples.

Good fats:
Butter, olive oil, coconuts, avocadoes, nuts, fish

Make a list of good fats and a list of bad fats.



Food advertising & processed food 9

White salt

White salt, used in most processed foods, is called refined salt, and contains no goodness. If we could get salt straight from the sea, that salt would contain minerals that are useful to our bodies.

Where do we find white table salt?
Apart form on the table, it's in potato crisps, most breakfast cereal, tinned foods, cracker biscuits, bought bread, tomato sauce, hamburgers, sausages, hot dogs and many other foods.

What can I eat instead?
Avoid junk food and processed foods and eat real food.

List some healthy foods that you could make or buy:

Food advertising & processed food 10

Sugar

Although this comes from natural sugar cane, it is no longer natural once it has been processed. This type of sugar is called refined sugar, unlike the sugar you would find naturally in a piece of fruit. People who eat a lot of sugar have less energy and can catch colds more easily.

Where do we find it?
Refined sugar is found in sweet foods and soft drinks. It is also added to many other foods, like tinned foods, sauce, bread, cakes and biscuits.
What can I eat instead?
Eat fruit in which there is natural fruit sugar. The body can use this type of sugar more easily.

Sugar comes from a plant called sugar cane. The stalk of the plant, which looks a bit like bamboo, contains a very sweet liquid. This is natural sugar and has nutrients. However, very few people eat sugar in this way.

The sugar we use as food today is a white crystal substance that can cause damage to our bodies because:

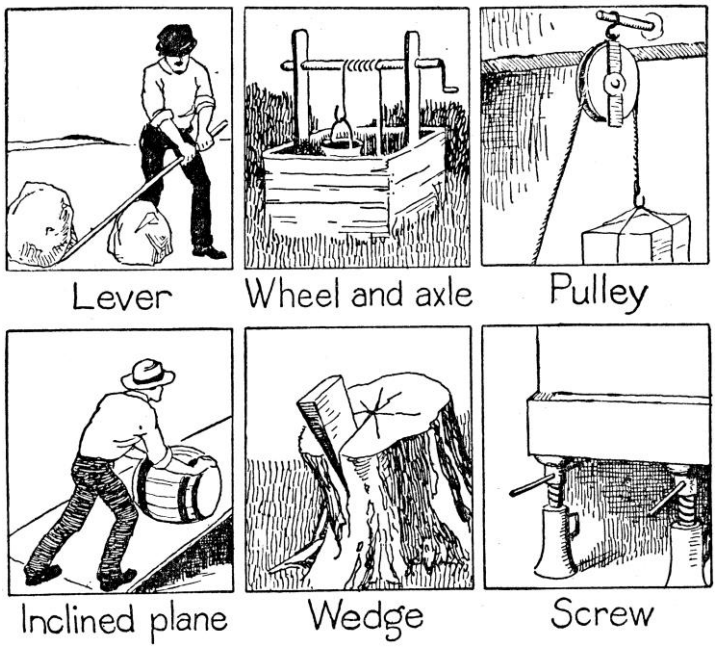
- People eat sugar in large quantities.
- Babies and toddlers are given sugary drinks, and they want to keep having it.
- People cannot stop eating it. (addicted)
- Sugar causes tooth decay.
- Sugar is the main cause of diabetes.
- Sugar weakens our immune system, so that we catch colds more easily.
- Sugar can make us feel tired.
- Sugar can cause people to gain weight.

Make a poster, "Eat less sugar" and give 4 reasons why.

Simple machines 1
The six simple machines

Simple machines can be used to make work easier. They can change the direction of movement and can lessen the amount of work needed for moving things.

Although people had been using simple machines in earlier times, scientists like Galileo and Da Vinci identified the six simple machines we have today: pulley, screw, wheel & axle, lever, wedge, and inclined plane. Most modern machines use one or more of these six simple machines.



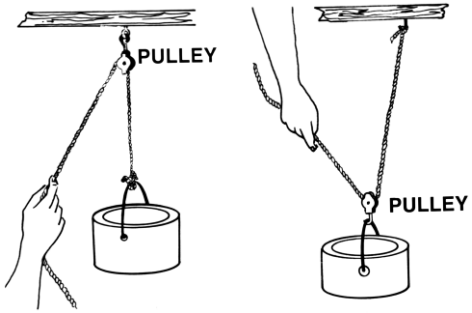
Draw the six simple machines and explain how they are being used in each picture.

Simple machines 2
Pulleys

A pulley is a simple machine that uses a rope over a wheel, or a tree branch or similar. When one side of the rope is pulled down, the other side goes up. The direction of movement is changed, and the load is easier to lift.

Here are some examples:

- a flag pole
- an old fashioned well where a bucket was pulled up by a rope
- pulleys in construction work
- window blinds and sails on a ship that get hoisted up.



Draw and name two pulleys in action.

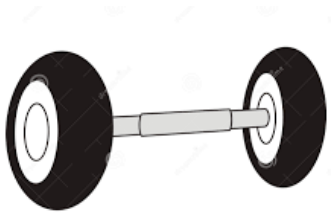
Simple machines 3
Wheel and axle

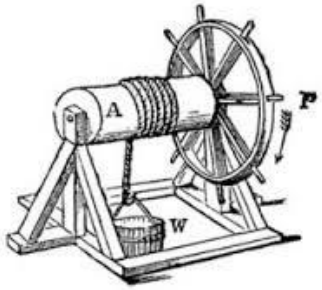
The wheel and axle is a machine used to help move heavy things. It is a large wheel with an axle connected at the center of it. When the wheel is spun the axle spins with it.

Examples of wheel and axle:

- a wheel barrow
- a car
- roller skates

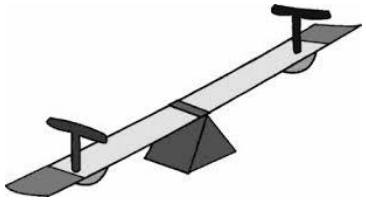
Write a list of machines that use the wheel and axle. Add two things that are not on the list above.
Draw two things that use the wheel and axle.



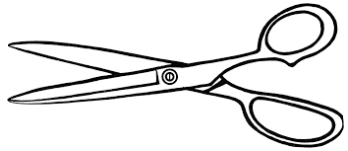


Simple machines 4
Lever

A lever is a machine with a board or bar that is fixed on a support called a fulcrum. The fulcrum is a pivot point. Find the pivot point on this see saw.



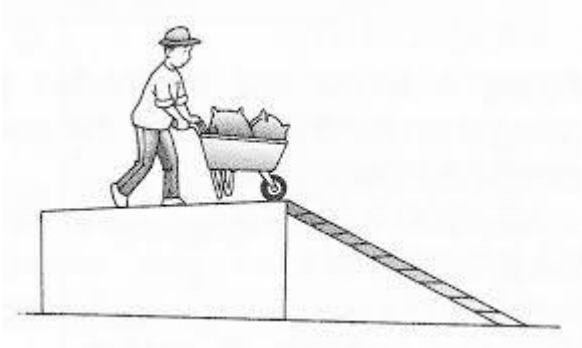
By changing how much of the board (or bar) is on each the side of the fulcrum it can be made more difficult or easier to lift a weight. If you push down on the long side it will be easier to lift something on the short side.

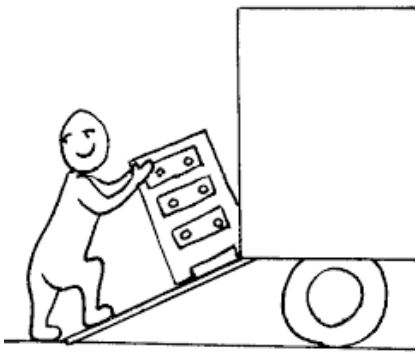


Draw three different types of levers and explain where the fulcrum is.

Simple machines 5
Inclined plane

An inclined plane, also known as a ramp, is a flat supporting surface tilted at an angle, with one end higher than the other. It is used to help raise or lower objects more easily by allowing them to move diagonally instead of up and down.



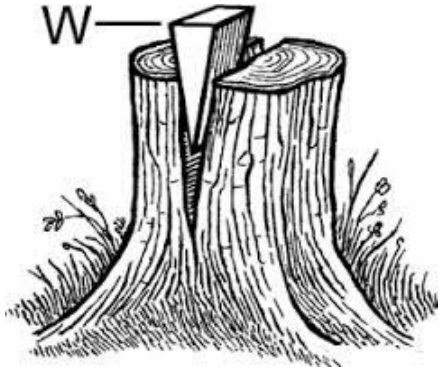


1. How would the man in the first picture get his sacks down if he didn't have the ramp?
2. How would the man in the second picture get his chest of drawers into the van if he didn't have the ramp?

Simple machines 6
The wedge

A wedge is triangle shaped. It can be used to stop or hold things in place. When a wedge is pushed under a door, the diagonal edge pushes up against the bottom of the door and holds it still.

An axe is an example of a double-wedge. It is also triangle shaped. It is used to split wood or separate things. When the triangle is pushed down, its two sides push out diagonally.

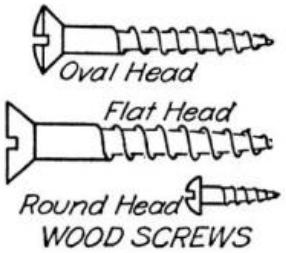


1. Give examples of two types of wedges and draw them doing work.
2. How do they make the work easier?

Simple machines 7
A screw

A screw is a nail-shaped rod with threads spiraling down it. A screw twists as it goes into wood, but it goes in straight. It stops turning because of the head.

Examples of screws:
A corkscrew
A bolt



1. Draw different kinds of screws.
2. Why is a screw sometimes stronger than a nail?

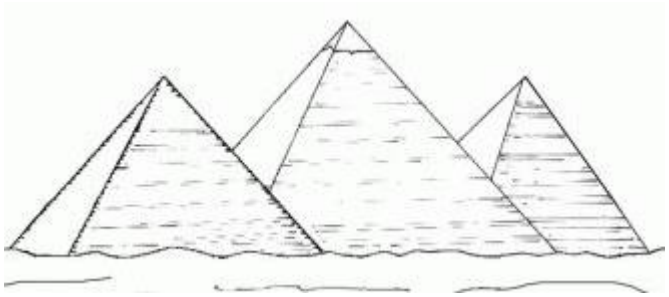
Simple machines 8
Machines in the Bible

1. Here are some machines used in Bible times:

A sling shot
An axe
A bow and arrow
A chariot

Explain where in the Bible these machines were mentioned. Explain what type of machine they are and how they were used.

2. In the time of Moses, the Israelite slaves worked on building the Great Pyramids of Egypt. The slaves had to transport huge block of stone to the top of the pyramids. What kind of machines do you think they may have used? Draw a picture to explain, and label your drawing.



3. Machines can help us serve the Lord

God created us with intelligence. Over history, scientists have discovered the energy principles built into God's creation, and used these principles to develop machines.
Explain how machines can help us serve the Lord and spread the Gospel.

Our special planet 1

Where is our planet?

Planet earth is the third planet from the sun. The earth, along with the other seven planets, travel around the sun, while at the same time spinning as they go. Here is a special way to learn the order of the eight planets:
***M**y **V**ery **E**nergetic **M**other **J**umps **S**aturdays **U**ntil **N**ight-time*
The beginning letters stand for:
Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune

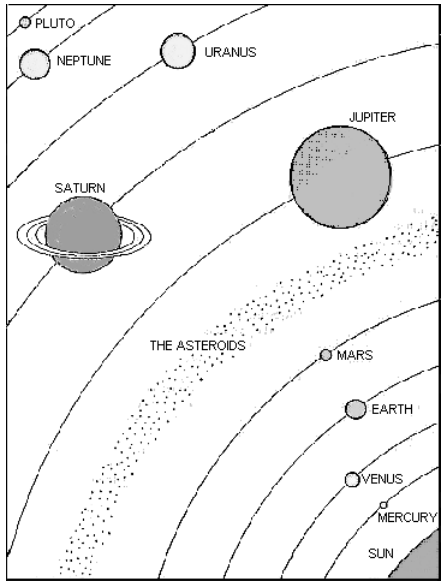
The smallest planets are Mercury and Mars.
Medium sized planets are Venus, Earth, Neptune and Uranus.
Larger planets are Saturn (with rings) and Jupiter (the biggest).

Why is our Earth so special?

No other planet has the right conditions for life. For plants, animals and people to live, we need:

- sunlight, with times of darkness for rest
- water to drink
- air to breathe
- the right temperature
- the right weather conditions
- gravity

Draw and name the planets in the right order from the sun.
Name the six conditions for life that our planet has.



Our special planet 2

Wonderfully designed

No other planet has the right conditions for life. They are either too hot or too cold.

Some have water, but not in the right form. No other planet has the right kind of gases for breathing. Many have poisonous gas in their atmosphere. Air is the only gas suitable for living things. Air is a mixture of gases, but mainly Oxygen, hydrogen and carbon dioxide.

Gravity is like a magnetic force that pulls from the centre of the Earth. This means we do not float off into space. The moon has a little gravity. It has one-sixth of the earth's gravity.
Some planets have terrible storms all year round. Humans could never survive these storms. Try to find out the planet that has wild storms.

This is rather amazing! No other planet has the right conditions for life. Do you think this happened by accident or do you think a wonderful designer planned and created our planet?

God wanted some living beings to be His friends. He chose human beings on planet Earth. We are His special people. God wants us to get to know Him and be His friend.

1. What are some of the dangerous conditions on other planets that make living there impossible?
2. What gases make up air?
3. What would happen if there was no gravity?
4. What would happen if you tried to walk on the moon, where there is a little gravity?

Our special planet 3

The earth in space

What holds up the earth?
That question puzzled people for thousands of years. Long ago, in India, they thought the earth was resting on the backs of several large elephants. The elephants were resting on the back of a very large turtle. The turtle was either resting on a snake or swimming in a sea of milk.

Others said the earth was on the back of a catfish swimming in an ocean. According to the ancient Greeks, a god named Atlas had the difficult job of holding the earth on his shoulders.

But the Bible says that God “hangs the earth on nothing” (Job 26:7). And today we know that this is true: The earth is suspended in space. It isn’t sitting on anything!

But when the book of Job was written, people didn’t know that. How did the writers of the Bible know it? Only God could have told them.

1. What did ancient people believe about what was holding the earth in space?
2. What does the Bible say about this?
3. Why did the Israelite people of Old Testament times know some of the science of today?

Our special planet 4

Is the Earth flat?

Today we know that the Earth is a sphere, and not flat. People believed hundreds of years ago was that the earth was flat. If you went too far you would fall off the edge!

In the 1500s a sailor from Portugal, Ferdinand Magellan and his crew were the first to sail all around the world. That helped prove that the earth was round.

But that too was already written in the Bible long before Magellan’s discovery. Isaiah 40:22 says, “God sits on His throne above the circle of the earth.”

The fact that the earth is like a ball is shown in another way in the Bible. In Luke 17 Jesus tells us about when He will come to earth again for the second time. He said, “On that night two people will be in one bed; one will be taken and another left.”

The next verse tells us that it will also be daytime when He comes, because people will be grinding grain, and that is always done during the daytime.

How can it be daylight and dark at the same time? If the earth is flat, it can’t. But if the earth is round like a ball, it means that it’s always daytime on one side and night on the other. Jesus knew this because He created the earth, and He told us about it over 2000 years ago.

1. What did most people believe about the Earth before the 1500s?
2. Who may not have believed this?

Our special planet 5

Earth's orbit

Planet Earth moves in a nearly perfectly circular orbit around the sun. It is not too hot and not too cold. If it was too hot, all the water would boil away. If it was too cold all our water would freeze.

For liquid water to exist on a planet, that planet must have a solid surface and an atmosphere. Our planet has both. On earth, water exists in all three states (liquid, solid ice and water vapour) and can move fairly easily from one state to another. If the earth's orbit were highly elliptical (oval-shaped), there would be large variations in temperature, making the environment unsuitable for life.

Earth's spin

The earth spins on its axis once per 24-hour day, providing variation of night and day. The rotation of the earth helps to regulate the temperature around the globe so no one part becomes too hot or too cold. If the earth didn't rotate, one side would be permanently facing the sun, and would be unbearably hot, with the other in permanent frozen darkness.

Earth's axis

The axis of the earth is tilted, so we experience seasons. From June to August, the northern hemisphere has summer while the southern hemisphere has winter. At the equator it is hot.

1. What shape is the orbit of the Earth?
2. What are the three states of water on Earth?
3. What would it be like if the Earth's orbit was oval-shaped?
4. What would it be like of the Earth didn't rotate?
5. In which months does winter occur in your country?
6. What is the equator and why is it always hot there?

Our special planet 6

The Moon:

- orbits around the earth every 29.5 days
- is vital in making the earth suitable for life
- is larger compared than any other moon in the solar system.
- Is a source of light at night (reflected sunlight)
- is the main cause of tides in the oceans of the world.

Tides:

- Each day there are two high tides and two low tides, which repeat on an approximately 25-hour cycle.
- These tides provide oxygen to the coastal waters and river estuaries around the world. This is essential to marine life.
- If the moon was much smaller, like other moons in the solar system, the tides would be ineffective in supporting coastal life. If it were much larger, the coasts would be subject to massive destructive tides twice a day.

Write four facts about the moon.
Write two facts about tides.

Our special planet 7

Solar Eclipses

Although the sun is 400 times larger than the moon, it is 400 times further away, and so both look to be almost exactly the same size in the sky.

This means that on rare occasions, when the alignments are precisely correct, the moon will block out the light from the intensely bright photosphere of the sun for just two minutes or so, which enables us to observe the sun's outline. This can only be done using special glasses. Looking directly at a solar eclipse may damage your eyes.

Astronomers have learnt much about the nature of the sun, and therefore the stars, because of total solar eclipses. If the moon were much bigger or a little smaller we wouldn't see a solar eclipse. God has designed the sun and moon to be exactly the right sizes.

1. What is a solar eclipse?
2. Draw what you think it might look like.

Our special planet 8

Early beliefs about Eclipses

Ancient people were often afraid of the sun, moon and stars. This is because they thought these things were alive. The Egyptians believed that the stars were the souls of dead people who had become gods. Others thought that since the stars looked smaller than the moon, they must be the moon's children. Many people groups throughout history worshipped the sun and moon as gods.

Genesis 1 tells us that the sun, moon and stars were created by God. They were not gods, and they were not to be feared.

Many people in ancient times were afraid of eclipses. An eclipse happens when the sun's light is blocked by the earth or moon for a short time. Usually the moon is bright because it reflects the sun's light. But when the earth blocks that light, the moon looks as if it is disappearing. Also, when the moon comes between the earth and the sun, it looks as if the sun is disappearing.

This was very frightening to people long ago. The Chaldeans, who lived close to the Israelites, thought that eclipses happened when the moon was angry with the earth and turned its face away. The Chinese believed that an eclipse was caused by a demon or some huge animal that ate the sun.

But this is what God told Jeremiah in the book of Jeremiah in the Bible:
"Don't be afraid of special signs in the sky, even though other nations are afraid of them" (Jer. 10:2)

1. What did some ancient people believe about eclipses?
2. What signs in the sky has God used to say something?

Our special planet 9

Earth's atmosphere

- Consists of 78% nitrogen and 21% oxygen
- Forms a thin sheath around the globe, held there by gravity, protecting us allowing life to exist on our planet.
- The atmosphere is about 100 km (60 miles) thick, and is similar in proportion as the skin of an apple.
- Scatters the sun's light making the blue colour of the sky
- Allows us to normally see only the sun and moon by day, and the stars at night. At night the atmosphere becomes transparent so that we can see the planets and the stars.
- Oxygen is vital for life for all air-breathing creatures, but too much oxygen would make the air dangerously combustible and too little would not provide sufficient for life to thrive.
- Contains water vapour and carbon dioxide, along with traces of other gases. Carbon dioxide is essential for plant life. Plants need carbon dioxide for photosynthesis (making their own food through their leaves). Plants take in carbon dioxide and give out oxygen.
- Helps regulate the temperature of the earth and transports water vapour to create rain and snow. This distributes water around the earth.
- Protects us from harmful sun rays.

Write five facts about the atmosphere.

Our special planet 10

Water

- The most abundant substance on the planet
- The chemical formula for which is H2O. This means two parts Hydrogen to one part Oxygen. This is a unique formula which gives water special properties for supporting life.
- Water, unlike most liquids, expands on freezing, so ice floats on water. This prevents lakes and rivers from freezing from the bottom up, so animals living in water are kept alive during winter.
- Water stops our Earth from getting too hot or too cold.
- Water keeps people and land animals cool.
- Around 72% of the earth's surface is covered in water.
- If the mountains were lowered and the ocean basins raised so the earth was a perfect sphere, the oceans would cover the Earth to a depth of around 3 km (2 miles)

1. How much of the Earth is covered with water?
2. How does water keep living things alive?
3. Ice floats on water. How does this help animals that live in water in places where lakes, rivers and seas freeze in winter?
4. What does H2O stand for?

Our special planet 11

How amazing is that?
The more we learn about our planet the more amazed we are at how extraordinarily well suited it is for life.

Those who believe there is a Creator God, and that God created the Earth just as He told us in the book of Genesis, are not surprised to find evidence of amazing design.

Through God's creation we see His power and intelligence. We also see how much He cares for us. So when we see such things, we realize there is a Designer who made planet Earth to be our home.

Isaiah 45:18 says, "For this is what the LORD says—He who created the heavens, He is God; He who fashioned and made the earth, He founded it; He did not create it to be empty, but formed it to be inhabited … ."

God created the Earth as a special home for His people. He did not create other planets like Earth with life on them. If He did, God would have told us about them.

Many people believe that there is life on other planets, and claim to have seen UFOs (unidentified flying objects from space). However God tells us about all the beings that live in the universe: angels, demons and us. We can only assume that people who have strange visions of visitors from outer space are actually seeing demons. Christians do not have to fear demons because God says, "Greater is He that is within you…" (1 John 4:4). Yes God is stronger than Satan and we do not have to be afraid.
Question: How do we know that the Earth is special to God?

Our special planet 12

Antarctica: Weather and Seasons
Antarctica is a large continent that surrounds the South Pole. It is covered with sheets of ice that are several kilometres thick. Beneath the ice is rock, which can only be seen in a few coastal areas, and on some large mountains.

Find a map of Antarctica in an atlas and draw it.

Antarctica has not always been covered with ice. Before Noah's flood, the Earth was surrounded by a thick blanket, thicker than the atmosphere today. The blanket was made of water vapour. The Bible says that there was water above the Earth and under the Earth. This meant that even the places further from the Sun could be kept warm inside the blanket. However, after the flood, the world's weather changed and there were hot places and frozen places.

We know that Antarctica was once a warmer, wetter place, because scientists have dug below the surface and found layers of coal four metres thick. Coal is formed from trees and other plants that grew before the flood, about 6,000 years ago.

Antarctica's weather
Antarctica now is the coldest place on Earth. Temperatures rarely rise above freezing point and often fall below fifty degrees Celsius.

Seasons
In Antarctica, half the year is daylight and half the year is dark. This is because of the tilt of the Earth's axis as the Earth moves around the Sun. Summer and Spring have twenty-four hours of sunlight, while winter and autumn have twenty-four hours of darkness.

Our special plant: 13

Antarctica: Land and Sea

The Land

Antarctica is the windiest continent on Earth. The winds are very cold and very wild. It is also the word's driest continent. Water falls from the sky as snow, not rain. This snow stays on the ground as ice. Even though the land is covered with frozen water, the continent is still regarded as 'dry' because the amount of water falling from the sky per year is not very much. In other places water would run off into rivers and seas, but in Antarctica it doesn't. It just turns to ice.

There are often blizzards in Antarctica. These are a combination of very strong winds and falling or drifting snow. There are also *whiteouts*. This means you can't see ahead of you. Everything is white.

Antarctica has the world's biggest glaciers. These are huge rivers of ice. Antarctica is covered by a giant sheet of ice called the Antarctic ice-cap. This is snow, which has turned to ice which has built up over thousands of years. Under the sheet of ice is rock. Only 2% of the rock is visible. The rest is covered by snow and ice.

The Sea

In the sea you will find icebergs. These are floating lumps of ice. They get moved along by ocean currents. Four-fifths of the iceberg is below the surface of the ocean. As winter approaches, the ocean surface begins to freeze. This is called sea ice. It is like pancake-shaped circles of ice on top of the ocean.

Write 2 facts about the land and 2 facts about the sea.

Our special planet 14

Antarctica: Explorers

People who visit Antarctica are explorers or scientists.

The first to cross Antarctica was Captain James Cook and his team, in 1773. When he returned to England, he reported that the frozen continent was surrounded by dangerous seas, pack-ice and ice bergs, and of no use to anyone. Captain Cook also told of the many whales and seals that he had seen. This encouraged people to go to Antarctica to hunt whales and seals to make money from the oil from these animals

Several explorers followed James Cook. One was Ernest Shackleton. In 1914, Shackleton and his team set out in their boat, the Endurance. The ship was packed with dog-sleds, sleeping bags and tents, guns, maps, compasses and tools, tons of food for men and dogs, books and playing cards and scientific instruments. However, when they got close to Antarctica, they became closed in by the icy sea. They were stuck in the ice for the winter, but the small ship started to crack and buckle with the pressure of the surrounding ice. They had to abandon ship and set up camp on an ice-pack. Not long after this, their boat sank. They still had the life boats, so as Spring approached and the ice started melting, they packed the life boats and attempted to row to Elephant Island. They survived this dangerous journey. However they could not stay here forever. No one would find them. Some of the men set off for South Georgia Island where there was a whaling station. They survived another amazingly dangerous journey. However they arrived on the wrong side of the island. They had walk across icy mountains to the other side of the island. Days later they arrived at the whaling station. They looked like wild men, but were treated as heroes!

List three difficult experiences for Shackleton and team.

Our special planet 15

Antarctica: scientists and tourists

Today scientists live in Antarctica. Most come in summer when there is 24-hour daylight. Scientists live in comfortable fibre-glass apple huts. Once they used dog-sleds but now they use special motorized vehicles that travel well on the icy and rocky ground.

The scientists study weather conditions and animals. Animals living in Antarctica are penguins, seals, walruses as well as many different kinds of sea birds and sea life.

Tourists can also visit Antarctica. It is possible to fly over the continent from New Zealand. Cruise ships take tourists to Antarctica from Australia, New Zealand and South America.

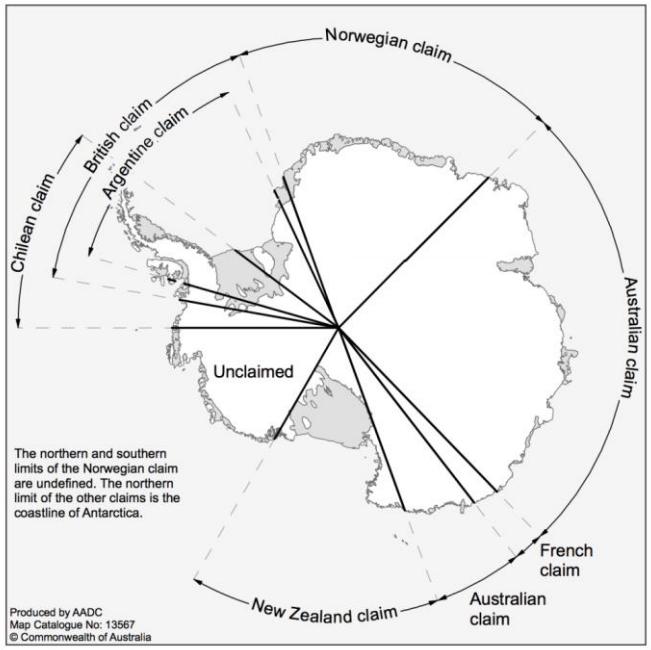
A writing project

Write about a visit to Antarctica. You can pretend you are either a scientist or a tourist. Think about:

What would you take with you?
What work would you do?
Where would you stay?
What animals would you see?
Include some drawings.
What are the most difficult things about the trip?
What do you enjoy most?

Our special planet 16

Who owns Antarctica?



1. Draw a map of Antarctica and label the countries that have claim to areas of Antarctica.
2. Make a list of Antarctic explorers, their dates and countries, from earliest to latest:

Edmund Hillary, New Zealand 1959
James Ross Clark, England, 1839-1843
David Edgeworth, Australia, 1909
Robert Scott, England, 1901
Roald Amundsen, Norway, 1911
Ernest Shackelton, Ireland, 1901
Jose Sobrai, Argentina, 1902

Advertising 1
Food advertisements

Truthful lips endure forever, but a lying tongue lasts only a moment. Proverbs 12:19

Do you ever get the feeling that advertisements are trying to fool you? It is very easy to be tricked when you see picture of junk food. It makes us feel that we must have whatever we see in the picture.

We see food advertising on TV, on signs and posters all around us when we go to the shops.

However, commercials do not tell us about all the bad effects this junk food will have on our bodies. That is a deception. Deception is making something look good, when it is really not good at all.

The advertisements do not tell us about the bad effects of sugar and salt the bad fats. Sometimes advertisement will tell us that a food is healthy when it is really not-so-healthy.

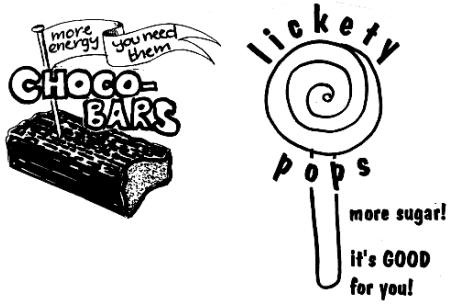
We don't need to be deceived by misleading information. God has given us wisdom. We can think carefully about the information we hear, and say, "Is it really true?" Ask God for wisdom and He will give it to you. Try to find out who's telling the truth.

3. *Where have you seen food advertising?*
4. *Make a poster to advertise one or more natural foods. Give some true information about the food on the poster.*

Advertising 2
Food advertisements: Are they telling the truth?

Some food advertising tells us that sugar will give us energy, but this is not the whole truth. Sugar gives us a spike of energy for a short time, then we suddenly have a drop in energy making us feel more tired than before.

Here are some junk food advertisements. Explain why they might be misleading. Explain how the words in the advertising are trying to tempt you into buying the product. Is it true? Why?



Chocobars: “give you more energy” and “you really need them”.
Lickety Pops: “more sugar. It’s good for you”.
Fizzo: “for people on the go”.

Advertising 3

Food advertisements: learning their tricks

Advertisements often try to trick people into buying products they don't really need. This is true about junk food. We don't need it. It is bad for our bodies and an absolute waste of money. If we want a delicious snack, then there are plenty of healthy snacks we can make to replace junk food.

Here are some of the tricks that advertisers use to make you buy their products:

- "Everyone else is buying one so you must get one too."
- "It tastes good."
- "It is good for you."
- "It is recommended by important people."
- "It gives you energy."
- "It will make you happy."
- "You get a lot for your money."
- "You need to buy it **now**."
- "You get a free gift if you buy one."
- "Buy one and get one free."
- "You deserve it."
- "Spoil yourself"

Here are some other methods that advertisers use to trick you:

- big packets but only small quantities
- close-up photographs to make you think that the item is bigger than it really is

Choose an advertisement that you have seen. Think about the tricks that have been used. Try to find anything about the advertisement that is not completely true or honest. Now write about the advertisements you have chosen. Draw the product.

Advertising 4 (group work)

Advertising Strategies

Advertising companies use a variety of strategies to encourage consumers to buy their products. Often, they try to link the product with a lifestyle, or an image.
In your group, discuss these strategies and give examples. Choose someone to record your ideas.

- **Ideal kids and families**: are always attractive and pleasant, they have big happy smiles and care for each other.
- **Family fun:** Mum or dad brings home the right food and the dinner turns into a party.
- **Excitement!** One bite of a snack bar and you're having the time of your life on some exotic island.
- **Star power:** Your favourite sports star is telling you what to eat.
- **Join the club:** Join the cool crowd, don't be left out.
- **Scale:** The product looks bigger or smaller than it actually is.
- **Music and jingles:** Music and other sound effects add to the excitement. Jingles ensure you remember the product.
- **Repetition:** You hear the same ad over and over.
- **Animated characters:** Advertisers attach a character to a product and children's interest increases.
- **Misleading words:** such as "The taste of real, natural"; "because we care".
- **Misleading messages:** When you eat a product, you become a cool person doing amazing things.
- **Freebies:** Free give-aways, prizes to be won, tokens or points to collect.

Advertising 5a (group work)

Advertising Strategies Assignment

Here are some more common techniques advertisers use to convince you to buy or do something. In your group, think of some examples and choose a recorder to write down your ideas.

Association: Using images (like a cartoon character), in the hope you'll transfer your good feelings about the image to the product.
Call to action: Telling you what to do— "Buy today!" or "Vote now"—removes all doubt about next steps.
Claim: Informing you about how the product works or helps you.
Games and activities: Putting a commercial into the form of a game can be a fun way for you to get to know more about a product and spend more time with it.
Humor: Using ads that make you laugh can catch your attention and be memorable.
Hype: Using words like 'amazing' and 'incredible' make products seem really exciting.
Must-have: Suggesting that you must have the product to be happy, popular, or satisfied.
Fear: Using a product to solve something you worry about, like bad breath.
Prizes, competitions, and gifts: Using a chance to win a prize to attract attention.
Repetition: Repeating a message or idea so you remember it.
Sales and price: Showing or announcing a discounted price can make a product look better.
Sense appeal: Using images and sounds to appeal to your senses: sight, touch, taste, etc.
Special ingredients: Promoting a special ingredient may make you think the product works better than others.
Testimonials and endorsements: Featuring someone, like a celebrity, saying how the product worked for them can be convincing.

Advertising 5b (group work)

Your Assignment:

Create an advertisement in the form of a poster. When finished, share your poster with the class and see if they can guess which strategies you have used.
Work in a group and brainstorm the following:
1. What product is being sold?
2. What audience is the ad targeting?
3. What techniques does your ad use?
4. What does the ad say or about the product you are trying to sell?
5. What does the ad say about the people who buy the product?

Use the information below to choose which type of audience might like your product.

a) Busy Mums
- Doing the best for their kids and family
- Always rushing
- Deserve to spoil themselves when they can

b) Social boys aged 11 - 12
- Like making their own food
- Must look sharp
- Need to be on the move
- Love keeping up with friends
- Play sport

c) Social girls age 11 - 12
- Love to be with friends
- Love to laugh
- Look for adventure
- Need music to focus
- Love fashion