Grade 2

Answer Key

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Spark of Science

Grade 2

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CONTENTS

Spark of SCIENCE

Unit 1 Plants and animals

How are plants and animals similar?

Vocabulary

roots	stem
leaves	flower
seed	fruit
domestic animals	
wild animals	

Objectives

- Identify plant parts.
- Explain what plants need.
- Describe changes in the life cycle of a plant.
- Recognise domestic and wild animals.
- Identify the importance of some domestic animals.
- Name some animal babies.

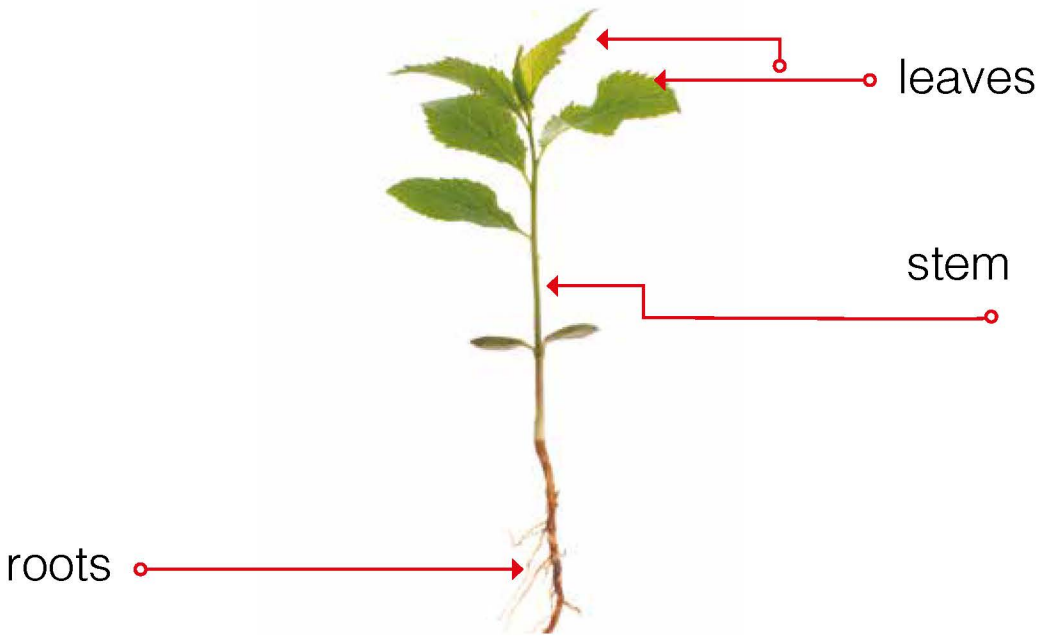
Parts of plants

Lesson 1

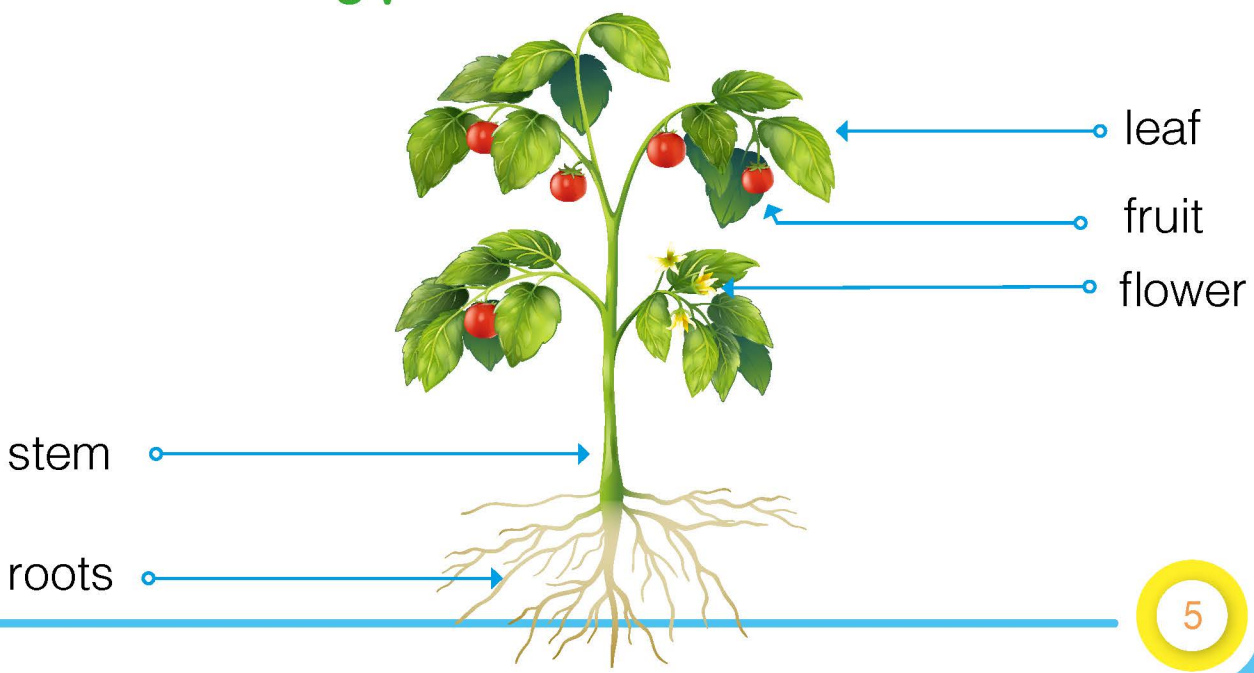
Plants are living things; they grow all around us.

Plants have three main different parts.

What are these parts? Leaves, stem, and roots



Some plants also have flowers and fruits, and they are called flowering plants.



Flowers are different in shape and colour.

My favourite flower colour is
.....Students' own answers.....

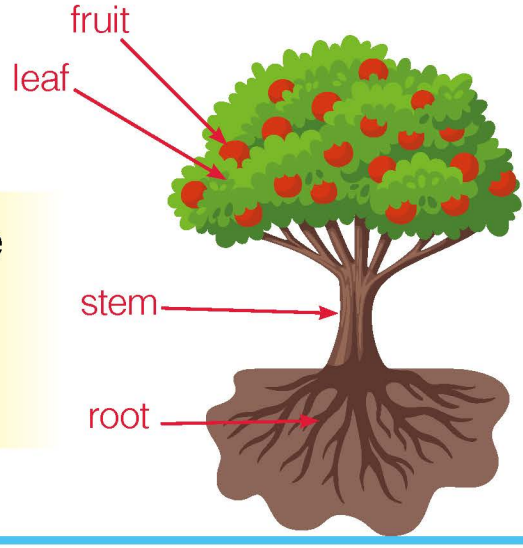
What I have learned

- The main plant parts are: roots, stem and leaves.
- Some plants also have flowers and fruits.
- Flowers are different in shape and colour.

LEARN MORE

Some trees have a very thick stem called trunk.

- Point to and name all parts of the plant in the picture.
- Name the part that is hidden underground.



Activity

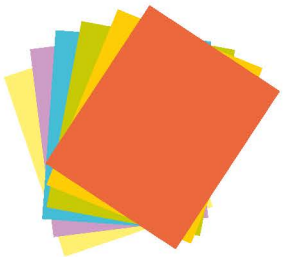
1. Make an apple tree model using:

Towel roll

Crayons

Cardboard piece

Scissors



Coloured paper

Glue

- With the help of your classmates, paste the towel roll with a brown coloured paper.
- Draw on the cardboard the leaves of the tree.
- With the help of your teacher, make a slit in the towel roll.
- Form apple fruits using the red colored paper, and paste them on the coloured cardboard piece.

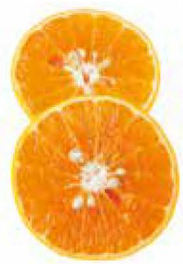
Lesson 2 The importance of flowers

Flowering plants have flowers. Flowers produce fruits.

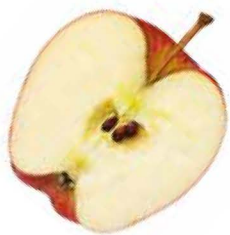
Fruits contain seeds. Point to the seeds in the following pictures:

Flower

Fruit

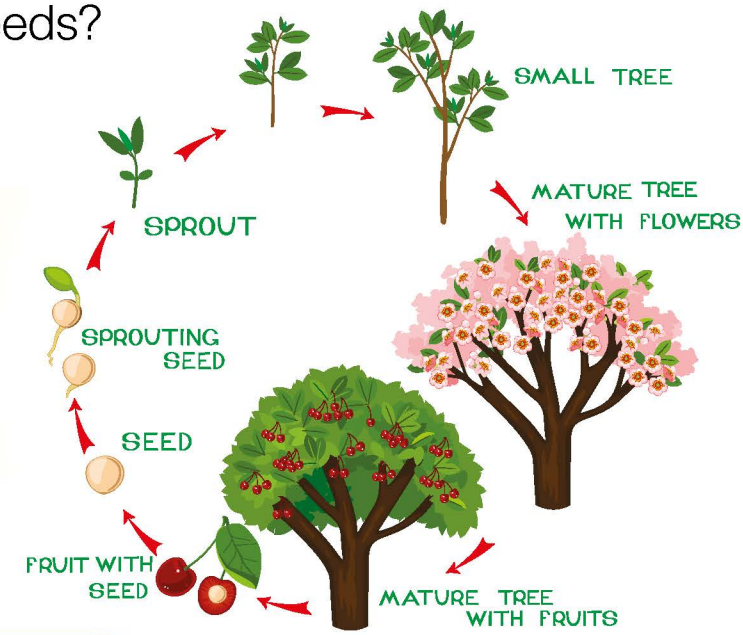


Seeds in the fruit



- What is the importance of seeds?

Most plants begin their lives as seeds, so they reproduce by seeds.



The life cycle of a cherry tree.

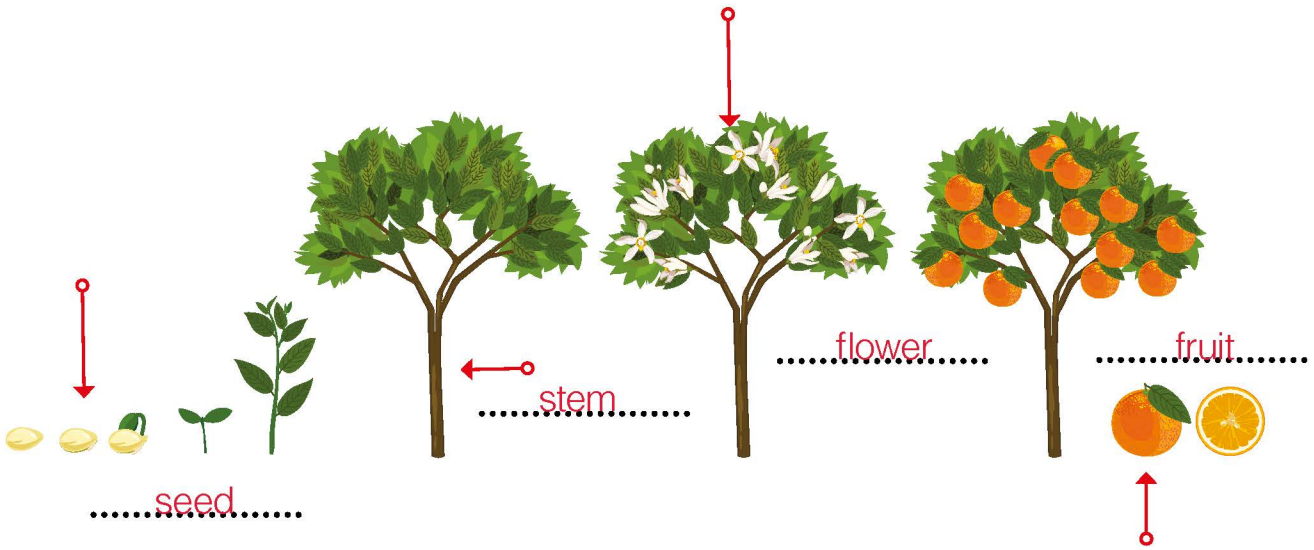
What I have learned

- Flowering plants have flowers. Flowers produce fruits.
- Fruits contain seeds. Most plants reproduce by seeds.
- Seeds sprout begin to grow and continue growing to form a new plant.
- The stages of a living thing are called the life cycle.

LEARN MORE

- Some plants do not produce flowers; they are called non flowering plants.
- Do you know one of these plants? Students' own answers

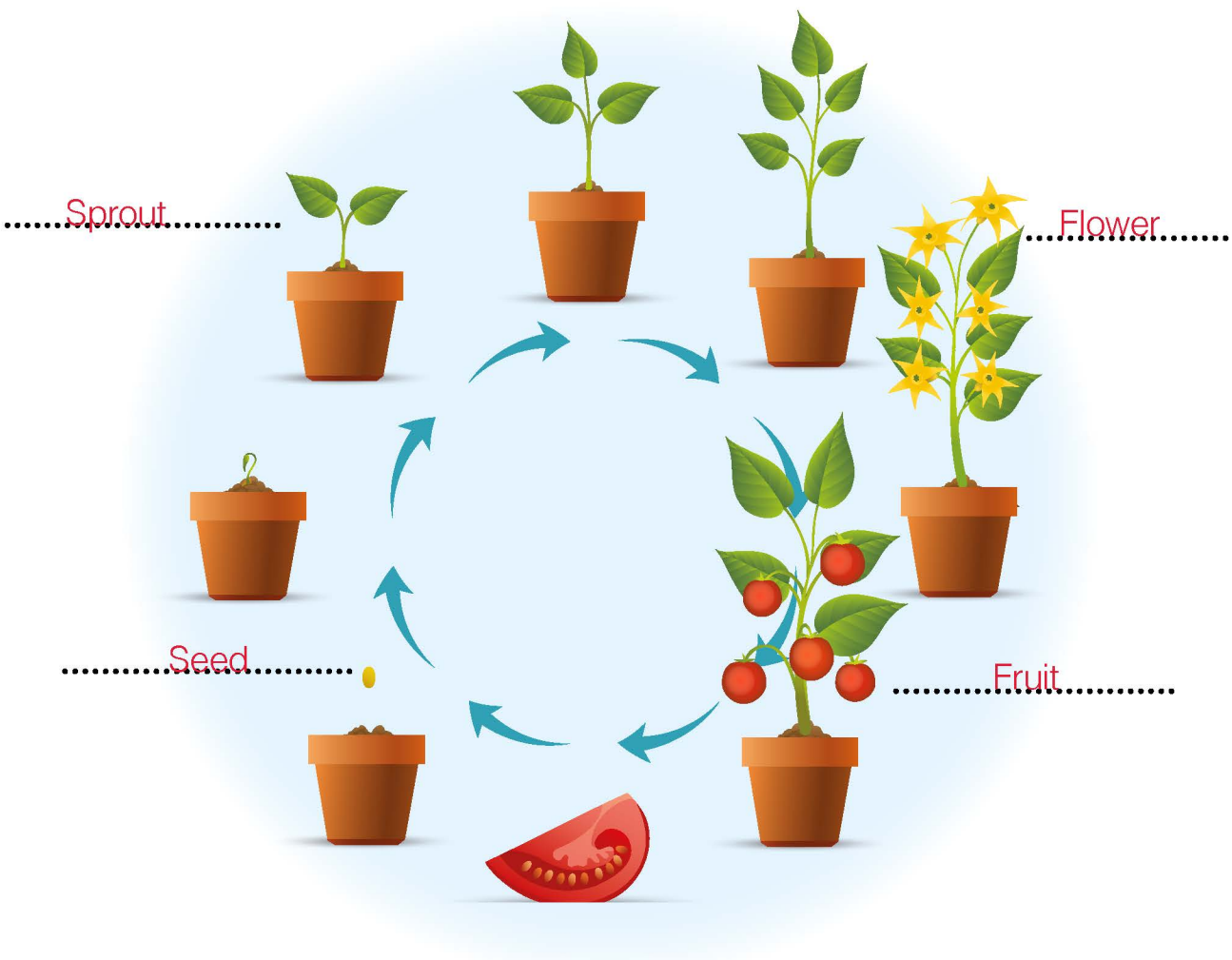
Fill in the blanks using the suitable word.
(fruit, seed, stem, flower).



Activity

1. Write the words in the suitable blanks.

(Seed, Flower, Fruit, Sprout).



2. Trace the following words.

Life Cycle

Sprout

What do plants need to grow?

Lesson 3

Plants need many things to stay alive.

1

Plants need water.

2

Plants need soil.

3

Plants need air and sunlight.

- **Plants need many things to stay alive.**
- **Plants need: water, soil, air and sunlight.**

The best time to water a plant is in the morning.

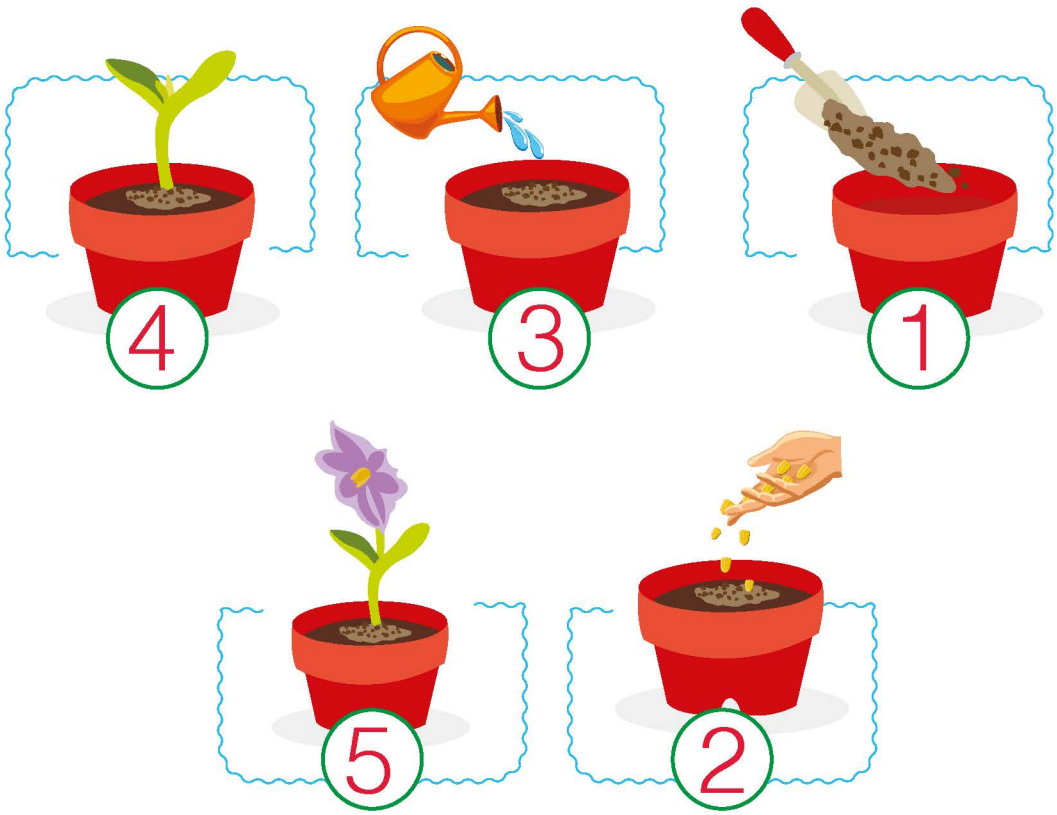
- What would happen if you put a plant in a dark room?

The plant will not grow. It will die.

.....

Activity

1. Arrange the following steps in the correct order, using numbers (1-5).



2. Trace the following words.

water soil air sunlight

Lesson 4 Domestic and wild animals

Animals need water, air, food and shelter to stay alive.

Some animals can stay with us and live in or around our house; these animals are called domestic animals.

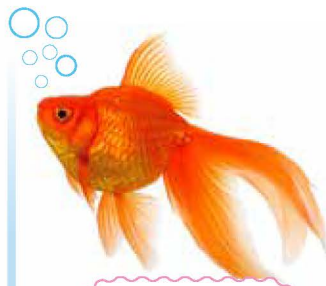
Here are some of these animals:

Chicken

Dog

Cat

Rabbit



Goldfish

Give extra examples of domestic animals.

Turtle

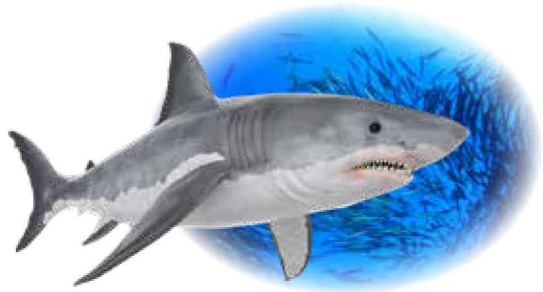
Hamster

Duck

LEARN MORE

We call house animals "pets".

Some animals live in different places, but not in our houses. Most of them are dangerous; they are called wild animals.



Shark

Crocodile

Eagle

Lion

What I have learned

- Domestic animals can stay with us and live in or around our house.
- Wild animals live in different places, but not in our houses. Most of them are dangerous.

LEARN MORE

When our pets get sick, we must take them to the animal doctor (the vet).

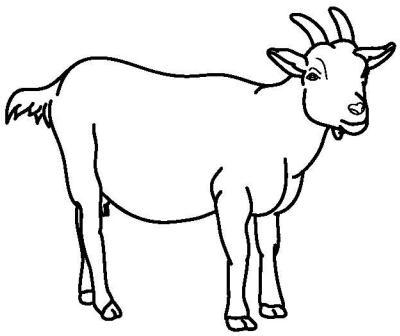
Give extra examples of wild animals.

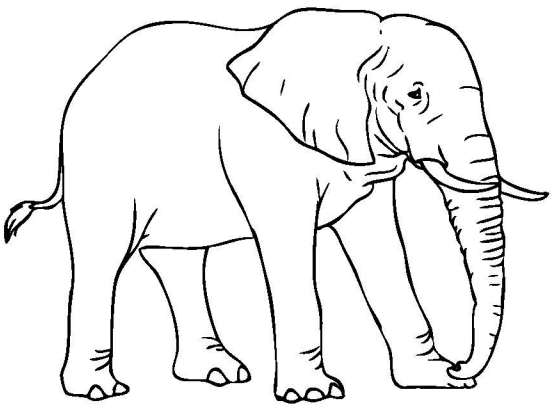
Bear.....

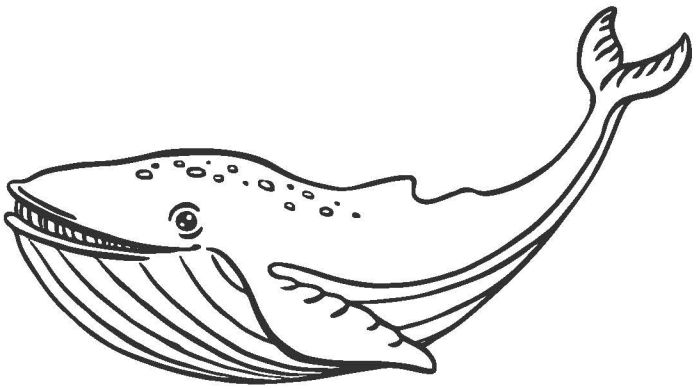
Tiger.....

Activity

1. Colour the pictures of domestic animals.







2. Rearrange the letters of the following words:

odemsitc .domestic..... iwdl .wild.....

3. Making a card:

- Use the crayons and the coloured paper to make your card.
- Draw your favourite animal on the card.

Domestic animals are useful

Lesson 5

Domestic animals are useful and we keep them on a farm.

Some animals give us milk and meat.

Cow

Goat

Some animals give us eggs.

Hen

Some animals give us wool.

Sheep

Wool

Some domestic animals help us in farming and other work.

Horse

Donkey

What I have learned

- **Domestic animals are useful and we keep them on a farm.**
- **Some of the domestic animals give us meat, milk, and wool.**
- **Some of the domestic animals help us in farming and other work.**

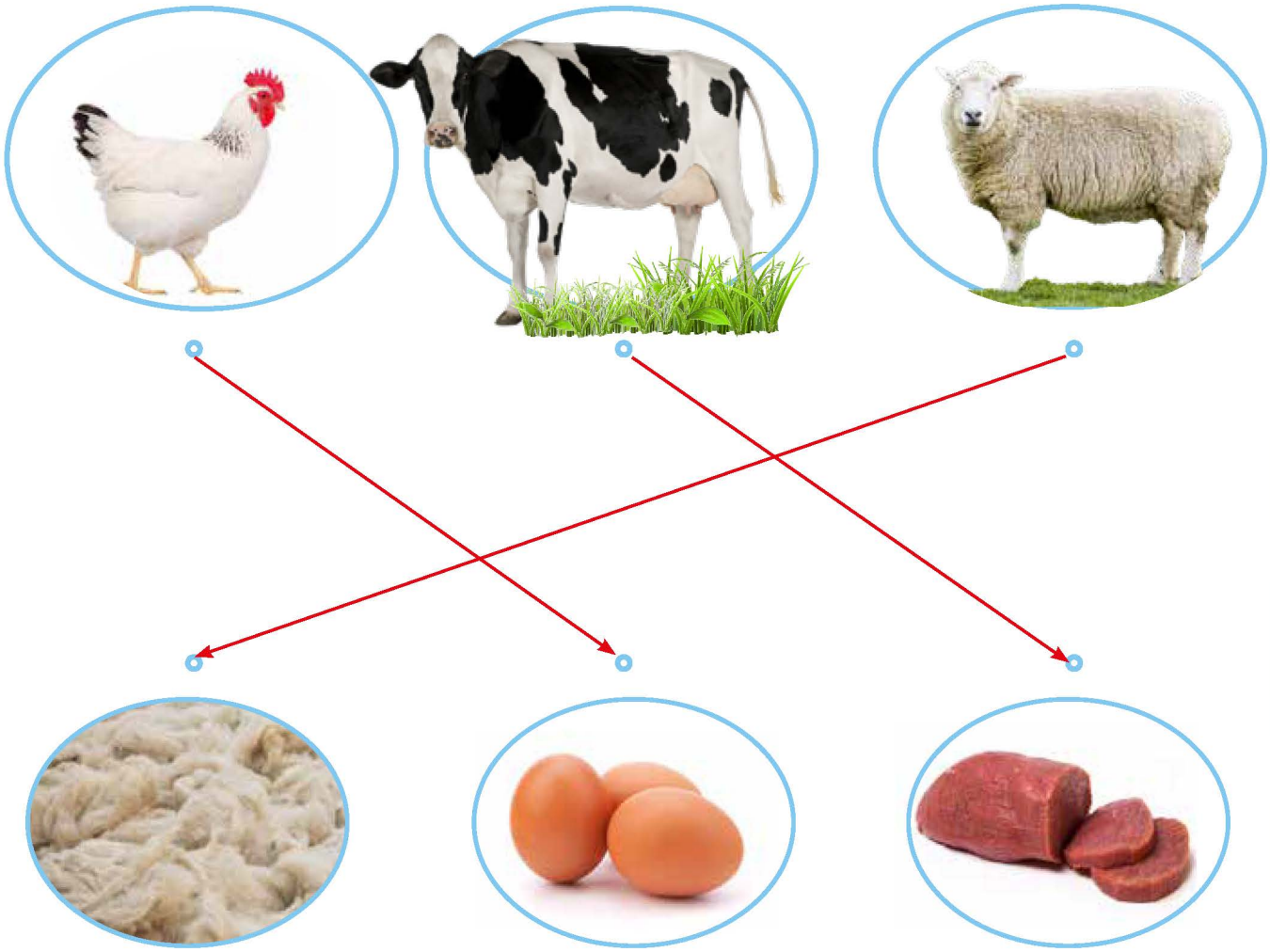
LEARN MORE

Dogs are used to guard sheep and other animals on the farm.

Suppose you are a farmer. Talk to your classmates about the animals that live on your farm. Students' own answers

Activity

1. Match between the animal and the suitable picture.



2. Trace the following words.

meat eggs milk wool

Lesson 6 Where do animals live?

Animals live in different places.

Some animals live in the polar regions.

Polar regions are very cold. The lands are covered with ice.

Polar Bear

Penguin

Some animals live in the desert.

A desert is very hot and dry.

Camel

Lizard

Some animals live in water: rivers, seas, and oceans.

Fish

Whale

Some animals live in the forest.

A forest is a place where many trees grow close together.

Squirrel

Deer

Some animals live in grasslands.

Grassland is a land covered with grass.

Lion

Zebra

What I have learned

- Animals live in different places; some animals live in the polar regions, such as the polar bears and penguins.
- Some animals live in the desert, such as camels and lizards.
- Some animals live in water, such as fish and whales.
- Some animals live in forests, such as deer and squirrels.
- Some animals live in grasslands, such as lions and zebras.

LEARN MORE

A habitat is the place where a living thing finds the food, water, and shelter it needs to live.

Name two animals that live in water and two animals that live in grasslands.

Dolphin..... Squirrel.....

Shark..... Snake.....

Activity

1. Sort animals in the following table:

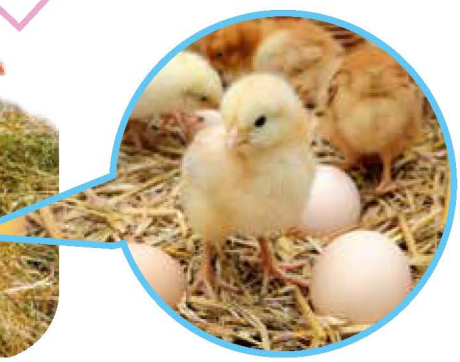
Polar regions	Grasslands	Desert	Forest	Water
4	2	3	5	1/4

Lesson 7 Animals and their babies

Animals reproduce and increase in number.

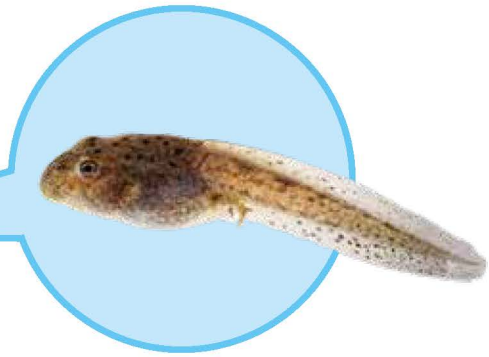
Some animals reproduce by laying eggs.

A hen with eggs



Chicks

A frog with eggs



Tadpole

Some animals have babies that grow inside the mother until they are born.

A cat with a kitten

A dog with a puppy

A cow with a calf

A horse with a foal

What I have learned

- Some animals reproduce by laying eggs, such as hens, frogs, and fish.
- Some animals have babies grow inside the mother until they are born, such as cats, dogs, cows, and horses.
- A chick, kitten, foal, puppy, and calf are baby animals.

LEARN MORE

- Some baby animals do not look like their parents.
- A tadpole does not look like a frog, and a caterpillar does not look like a butterfly.

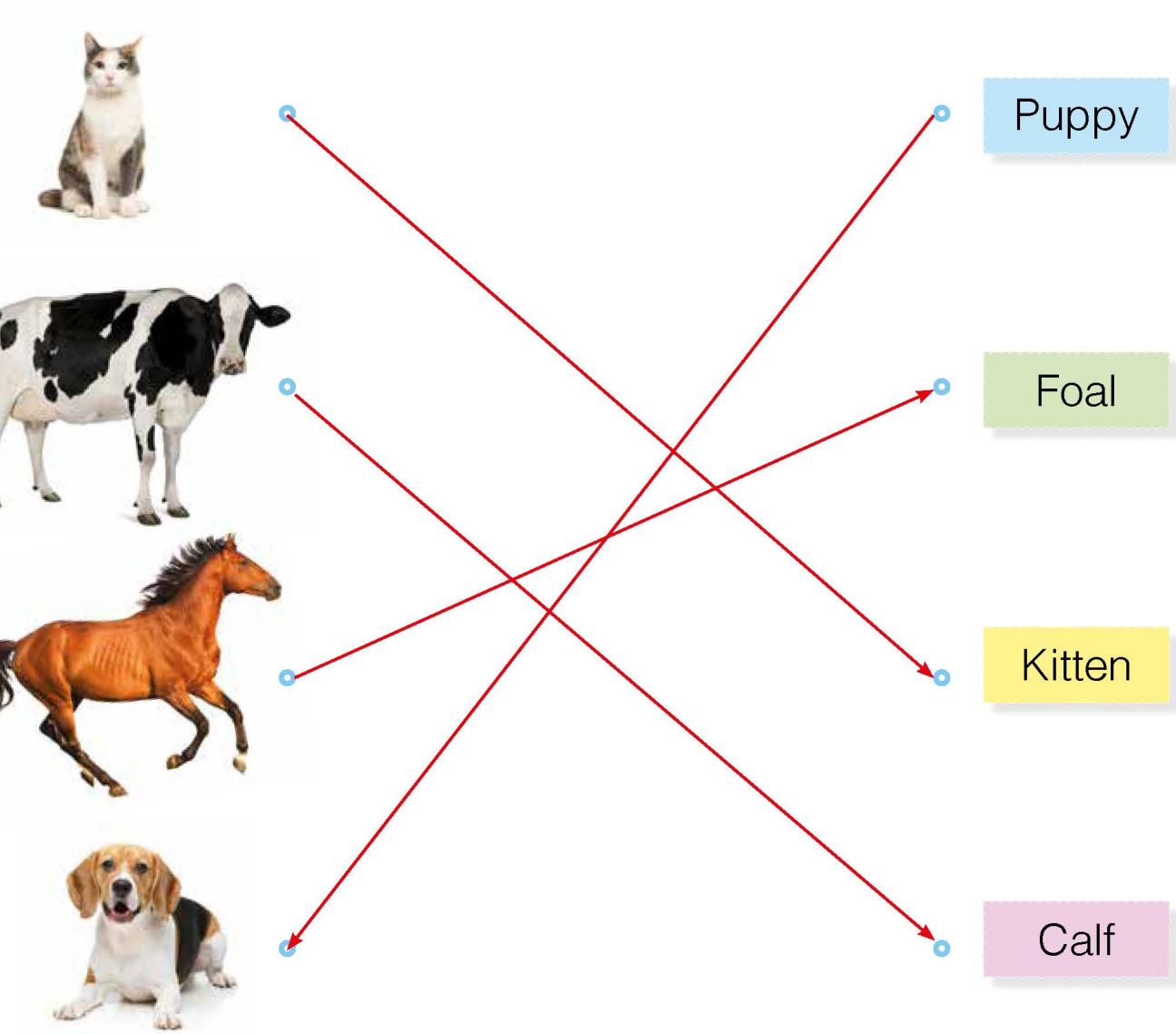
How do fish and cats reproduce?

Fish lay eggs.

Cats give birth to kittens.

Activity

1. Match the animals with their babies.



2. Trace the following words:

puppy calf kitten

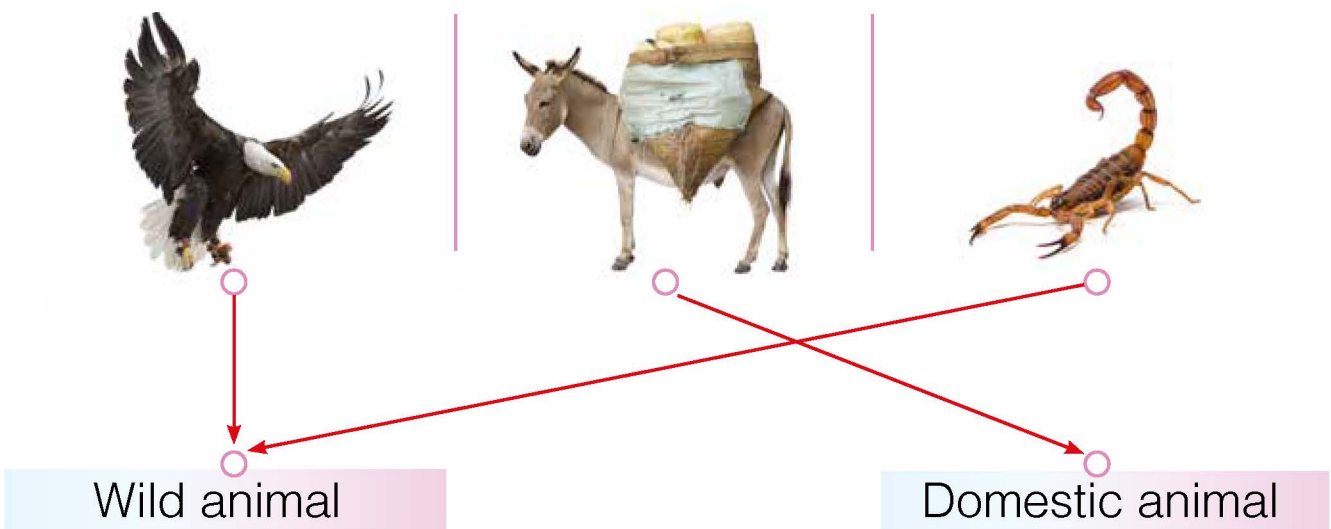
foal chick

REVISION

1. Mark the correct sentences with ✓.

- All animal babies look like their parents. ✗
- All plants have roots, a stem and leaves. ✓
- Lions live in grasslands. ✓
- Sheep lay eggs. ✗
- All plants have flowers. ✗

2. Match with the suitable word.



3. Put a circle around the correct answer.

It guards sheep It lays egg

It gives us milk It gives us wool

Unit 2 Heat

Could we continue living without heat?

Vocabulary

gas	wood
charcoal	friction
sun	
insulator	
conductor	

Objectives

- Identify some heat sources.
- Describe some of the ways we use heat.
- Classify materials as heat conductors or heat insulators.
- Identify the dangers of heat.

Heat sources and benefits

Lesson 1

The Sun is the main source of heat.

We can get heat from other sources; what are these sources?

Heat sources:

- **Burning of gas**, charcoal and firewood.

Gas

Charcoal

Firewood

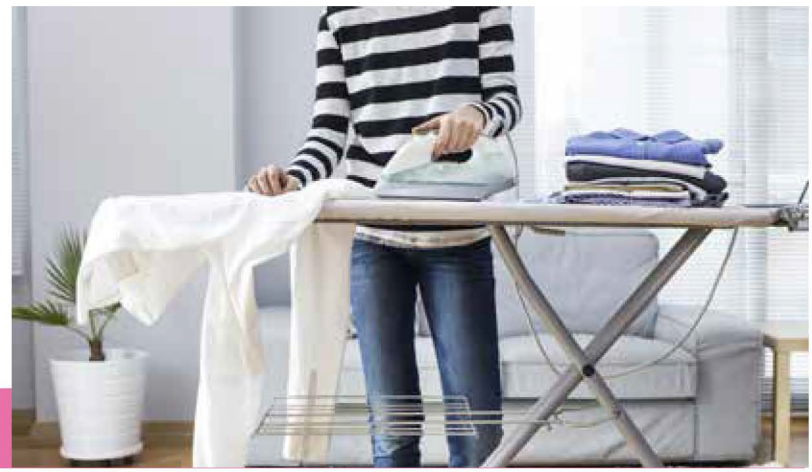
- **Electricity**

- **Friction**

  Objects get warmer when they rub against each other.

What are the benefits of heat?

Cooking food



Ironing

Drying clothes

Warming houses

What I have learned

- The Sun is the main source of heat.
- We can get heat from other sources, such as gas, charcoal, firewood and electricity.
- Heat has many benefits; we use it for cooking food, ironing, drying clothes, and warming houses.

LEARN MORE

- A thermometre is a tool used to measure the temperature of an object. Temperature is the degree of hotness or coldness of an object.
- When we feel sick, the doctor uses the thermometre to know the temperature of the body.

We must be careful on sunny days and while using any source of heat.

Why do we put our laundry outside the house?
Discuss with your teacher. Students' own answers

Activity

1. Melting ice race

Get ice cubes in a bag, and your classmate gets the same number of ice cubes in a bag.

Who will melt the ice cubes first?

We must think critically, to melt the ice.

2. Trace the following words:

gas charcoal wood sun

electricity warming houses drying

clothes ironing cooking food

Heat conductors and insulators

Lesson 2

What are heat conductors and insulators?

Conducting materials (Conductors) allow heat to pass through them.

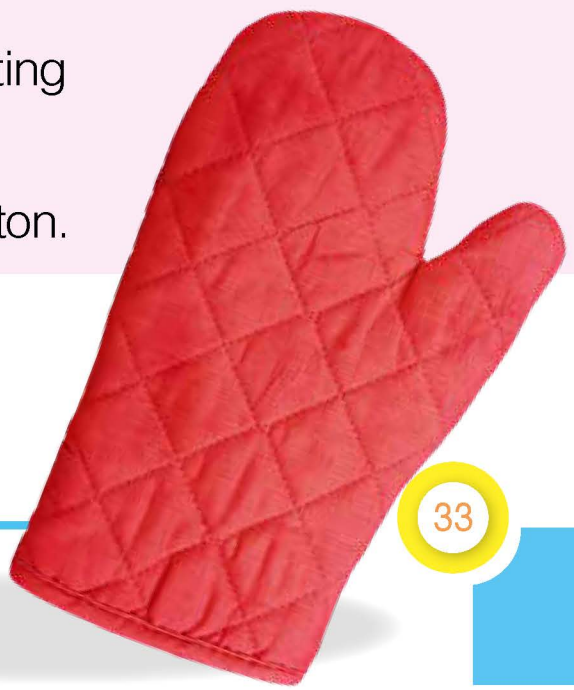
Metals such as iron and aluminium are conducting materials.

Cooking pots and pans are made of metals.

Insulating materials (Insulators) do not allow heat to pass through them.

Plastic, wood and cotton are insulating materials.

Some oven gloves are made of cotton.



Cooking spoons are made of wood or have plastic handles.

What I have learned

- Conducting materials allow heat to pass through them. Metals such as iron and aluminium are conducting materials.
- Insulating materials do not allow heat to pass through them.
- Plastic, wood and cotton are insulating materials.
- Cooking pots and pans are made of metals.

LEARN MORE

Clothes that we wear in winter are mainly made of insulating materials such as wool or leather, so we do not lose our body heat.

Name two heat conducting materials and two heat insulating materials.

Insulating: wood, plastic Conducting: iron, aluminum

.....

.....

Activity

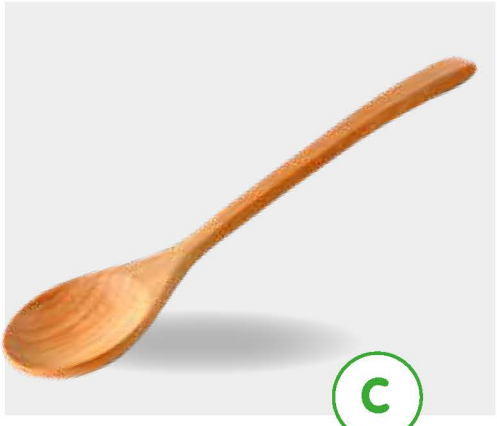
1. Rearrange the letters of the following words.

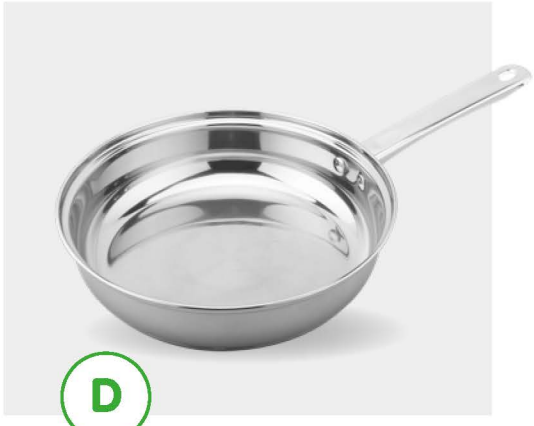
nisultaor insulator

ocndcuotr conductor

2. Sort the objects in the following table:

Heat conductors	Heat insulators
B	C
D	A





REVISION

1. Mark The Correct Sentences With ✓.

- Gas is the main source of heat. ✗
- Charcoal is a source of heat. ✓
- Heat from the sun can dry our laundry. ✓
- Conducting materials do not allow heat to pass through them. ✗

2. Give the reason for each of the following:

- When our hands are cold, we rub them against each other.

Objects get warmer when they rub against each other (friction).

- The handles of the spoons that are used in cooking are made of wood or plastic.

Wood and plastic do not allow heat to go through (insulators).

Light and sound

Unit 3

Have you ever visited an amusement park?

Describe what you heard and saw there.

Objectives

- Identify light sources.
- Classify objects as transparent or opaque objects.
- Explain how a shadow is formed.
- Explain how sound is created.
- Classify different types of sounds.
- Recognise the importance of sound.

Vocabulary

light	sound
dark	vibrate
transparent	
opaque	noisy
shadow	soft

Lesson 1 The importance of light and its sources

Light is very important. We cannot see without light.

The sun is the main source of light and heat.

Other light sources:

flashlight

lamp

candle

light bulb

What I have learned

- **Light is very important because it allows us to see things.**
- **The Sun is the main light source.**
- **The light bulb, flashight, lamp and candle are sources of light.**

LEARN MORE

Many sources of light are also considered sources of heat.

Looking directly at the sun or bright lights may hurt your eyes.

Mention three light sources in your home.

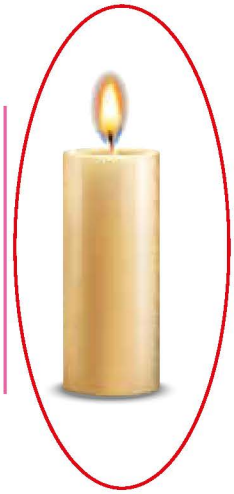
Students' own answers

....

Activity

1. Circle the light sources.



2. Do the crossword puzzle with the following words:

sun, candle, light bulb, flashlight

							c		
	f	l	a	s	h	l	i	g	h	t
	s	u	n						
			d						
l	i	g	h	t	b	u	l	b	
							e		

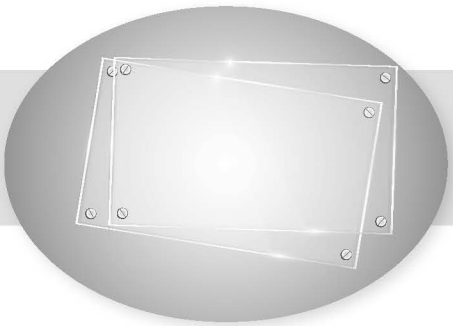
Transparent and opaque objects

Lesson 2

Does light pass through all objects?

Transparent Objects

Transparent objects allow light to travel through them, so we can see through these objects.
Clear glass, clean water, and clear plastic are transparent materials.



Clear glass

Clean water

Clear plastic

Opaque Objects

Opaque objects block light from traveling through them, so we cannot see through these objects.
Wood, stone and metals are opaque materials.

Wood

Stone

Metal

What I have learned

- Transparent objects allow light to travel through them, so we can see through these objects.
- Clear glass, clean water, and clear plastic are transparent materials.
- Opaque objects block light from traveling through them, so we cannot see through these objects.
- Wood, stone and metals are opaque materials.

LEARN MORE

Translucent objects allow some light to travel through them, so we cannot see through them clearly. Some kinds of plastic and frosted glass are translucent materials.

What would you do to convert a piece of transparent glass to an opaque piece?

1- Paint the glass with black paint.

2- Cover the glass with wood.

Activity

1. Sort the objects in the following table:

Transparent	Opaque
1	2
5	3
6	4

2. Predict which of the following objects allow light to pass through and which do not allow light to pass through.

A paper towel	A paper	A cardboard piece
allow	allow	do not allow

Use a flashlight to check if your predictions are correct.

Finally, classify these objects. Students' own answers.

Lesson 3 Shadow

What is a shadow? How it is formed?

When an opaque object blocks the path of the light, a shadow is formed.

A shadow is the dark region where light cannot reach.

A shadow is formed on the opposite side of the light.

What I have learned

- **A shadow is formed when an opaque object blocks the path of the light.**
- **A shadow is the dark region where light cannot reach. It is formed on the opposite side of the light.**

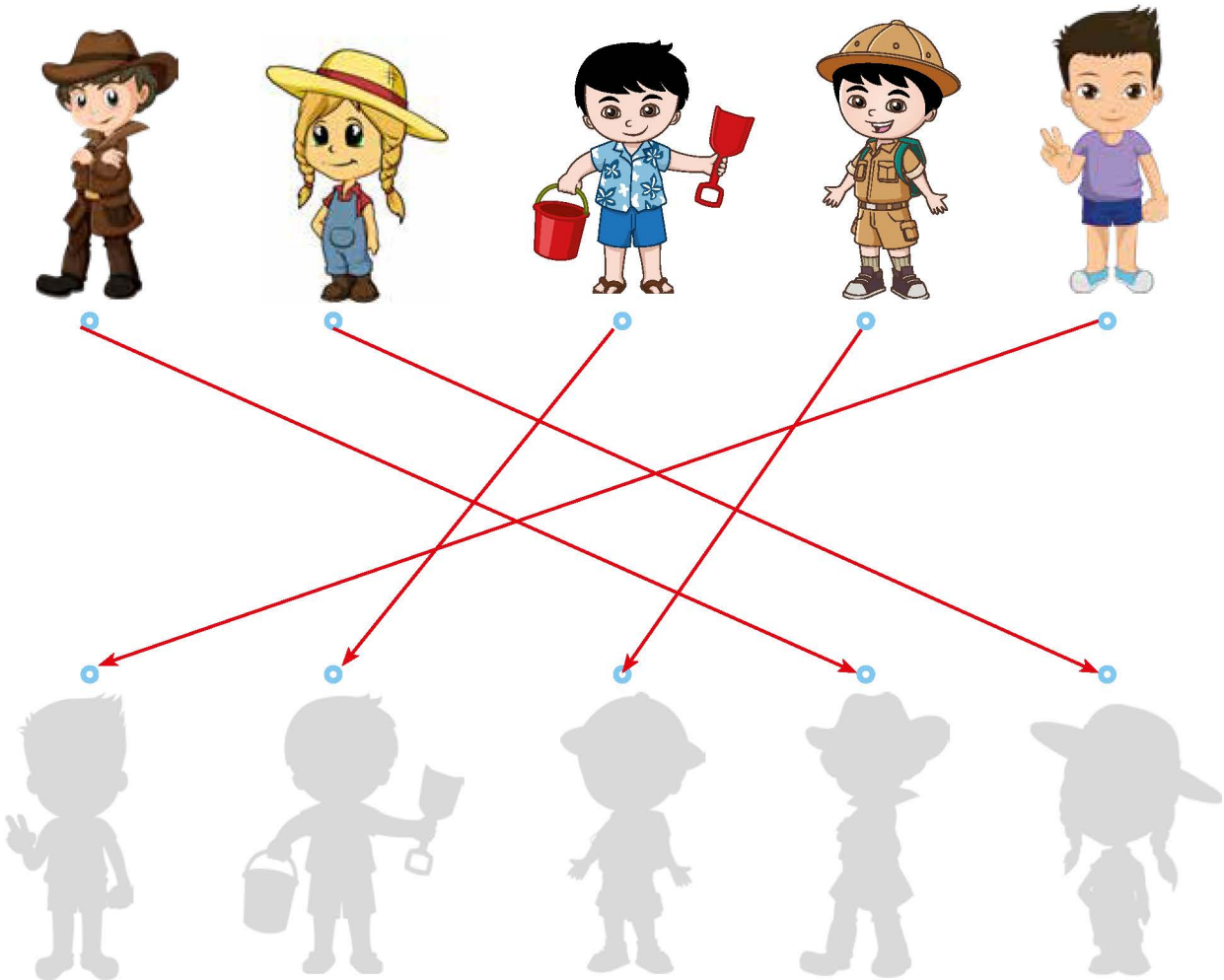
LEARN MORE

A shadow length depends on the position of the light source. My shadow is the longest in the early morning and the shortest around noon time.

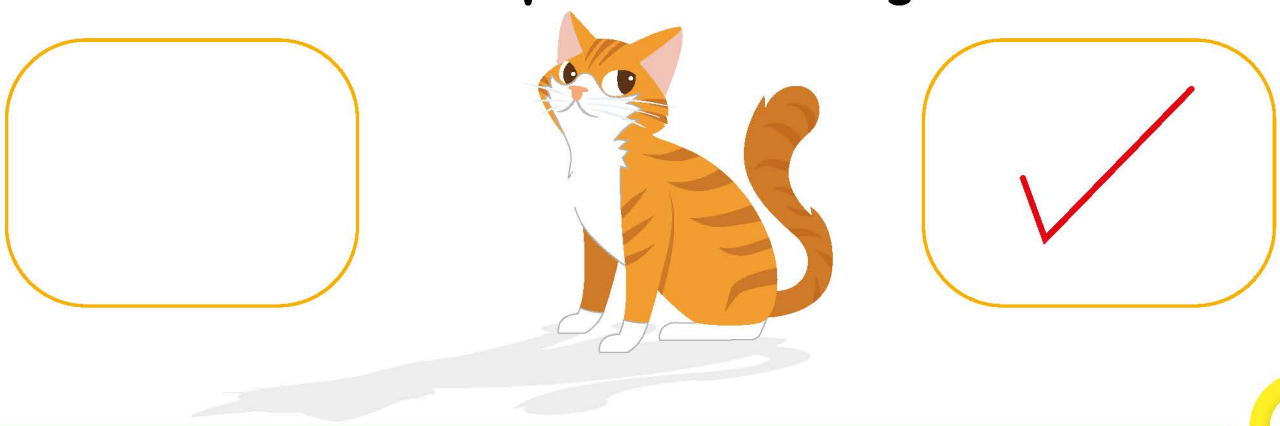
Draw a light source and an object with its shadow in your drawing book.

Activity

1. Draw a line from each child to his or her shadow.



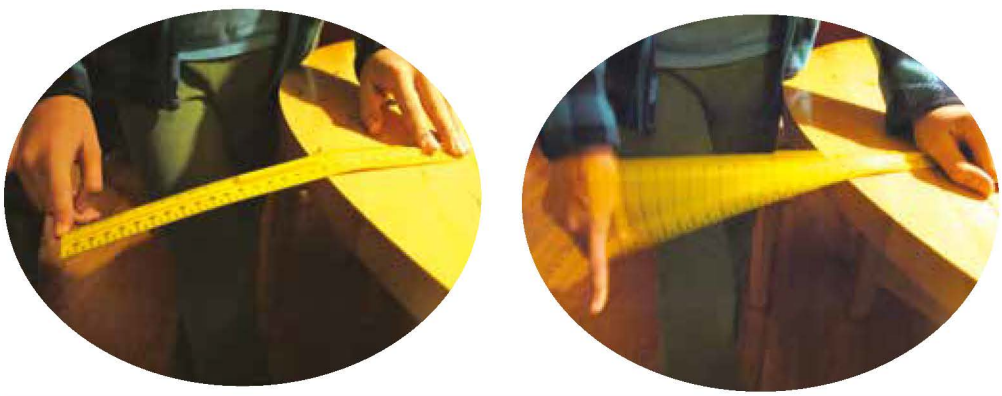
2. Where is the correct position of the light source?



Lesson 4 What is sound?

We can hear sounds all around us.

- Sound is created when an object vibrates.
- Vibrating is shaking back and forth.



There are different types of sounds.

Some sounds are soft.

Some sounds are noisy.

Sound is important in communication.

A sound may signal us to wake up.

A sound may signal us to leave an area.

What I have learned

- **A sound is created when an object vibrates.**
- **Vibrating is shaking back and forth.**
- **There are different types of sounds.**
- **Some sounds are soft.**
- **Sound is important in communication. A sound can signal us to wake up or leave an area.**

LEARN MORE

When we hear the sound of an ambulance, it means there is a patient in an emergency who needs to get to a hospital quickly.

Avoid loud voices to keep your hearing safe.

- Give extra examples of noisy sounds and soft sounds.

Noisy: plane and TV..... Soft: birds and running water.

....

- Could you know who is speaking just from his voice? Close your eyes and play this game with your classmates.

Activity

1. Exploring vibrations

you will need:




Procedure:

- Stretch a piece of plastic wrap tightly across the top of the bowl.
- Sprinkle some salt over the plastic wrap.
- Ask your classmate to blow the whistle as close to the salt and the plastic wrap as possible.

What will happen to the salt?

Students' own answers

Activity

2. Write under each picture the suitable word:

soft or noisy.

This sound is .....noisy.....

This sound is .....soft.....

This sound is .....soft.....

This sound is .....noisy.....

3. Trace the following words.

alarm clock fire alarm

REVISION

1. Put a circle around the correct answer.

- Which of the following gives us light?
  - Candle.
  - Chair.
  - Table.
- Where can the shadow be formed?
  - On the ground.
  - Above the ground.
  - In the sky.
- Which of the following is a transparent material?
  - Stone.
  - Wood.
  - Glass.
- Sound is very important in:
  - Communication.
  - Alarming.
  - All of the above.

2. Fill in the blanks with the correct word.

- A shadow is formed on the ..... side of light.
  - Same.
  - Opposite.
  - Non of these.
- Sound is created when an object .....
  - Stops.
  - Vibrates.
  - Non of these.

Unit 4 Matter

What do you see in this picture?

Vocabulary

- matter
- freezing
- melting
- evaporation
- condensation
- mass

Objectives

- Define what matter is.
- Recognise the three states of matter.
- Explain how we can change the state of matter.

The definition of matter

Lesson 1

What is matter?

A matter is anything that takes up space and has a mass.

Mass is the amount of matter in an object.

the soccer ball is lighter than 1 kg.

Matter occupies a certain space; it has a volume.

Which ball occupies a larger space?

The bigger ball occupies a larger space.

Matter is classified according to its state; the three states of matter are:

Solid: a solid has a definite shape and volume.



The shape of a solid can be changed by breaking or cutting.



Liquid: a liquid has no definite shape.

When we pour a liquid into a container, the liquid flows to takes the shape of that container.

Gas: a gas has no definite shape.

It fills up a container and takes the shape of that container.

Gas inside the balloons

What I have learned

- **A matter is anything that takes up space and has a mass.**
- **Matter is classified according to its state. The three states of matter are solid, liquid and gas.**
- **A solid has a definite shape and volume.**
- **A liquid has no definite shape; it flows to take the shape of the container.**
- **A gas has no definite shape it fills up a container and takes its shape.**

LEARN MORE

All matters have mass and volume even the matters in a gaseous state.

Give extra examples of matters and mention the state of each.

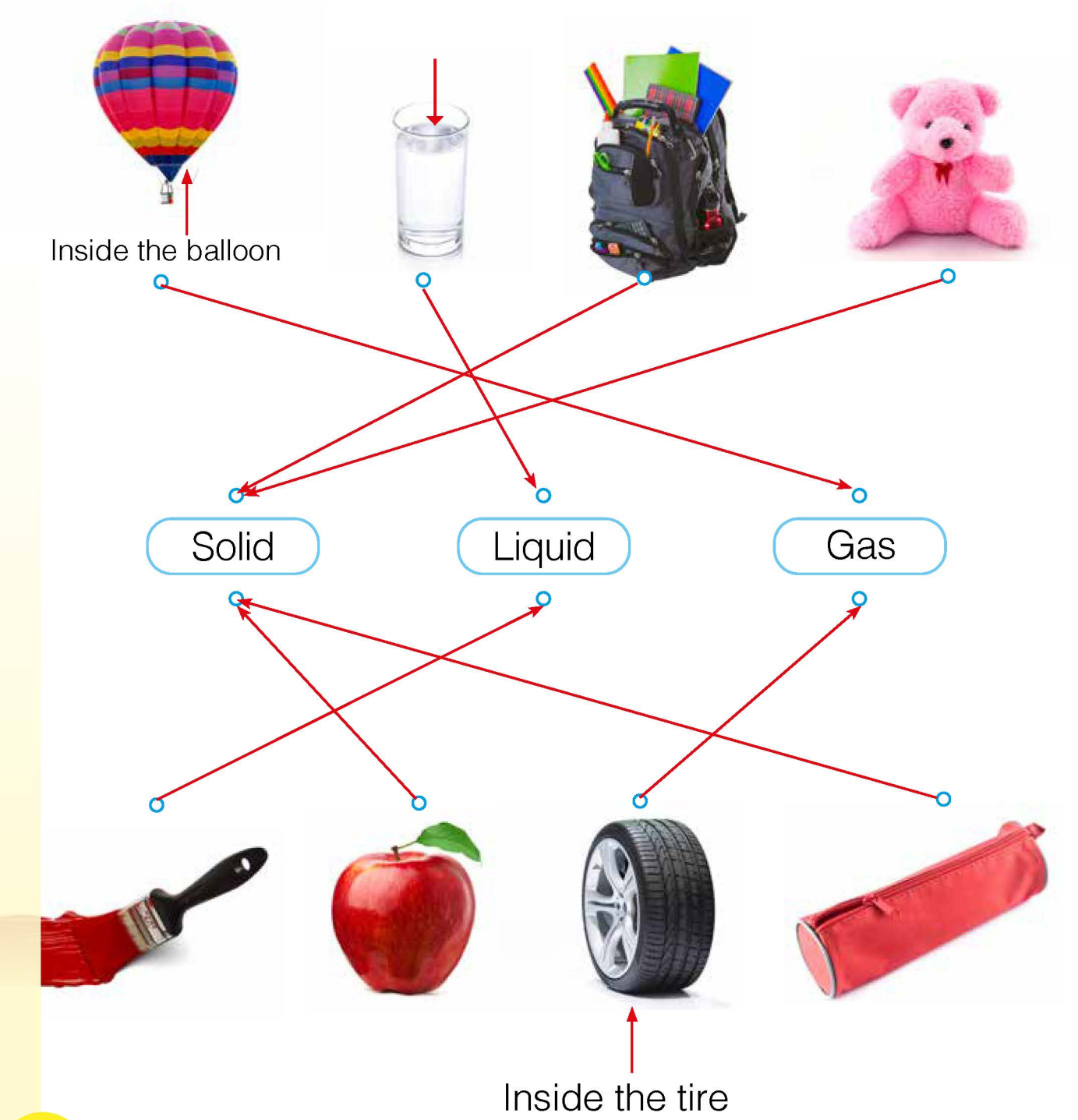
Hot air balloon: gas.....

Water bottle: liquid.....

Cake: solid.....

Activity

1. Draw a line to match the objects and their state of matter.



States of matter can be changed

Lesson 2

How can we change the state of matter?

States of matter can be changed by:

• Freezing

In the summer, we like to drink cold juice; ice cubes can be added to prepare cold juice. How can we get ice?
When we leave some water in the freezer, water freezes and changes into ice.

Freezing is the change of a liquid into a solid.

• Melting

When we leave the ice cubes outside the freezer, the ice melts and becomes a liquid.

Melting is the change of a solid into a liquid.

• Evaporation

When we heat water, it evaporates and becomes a vapour.

Evaporation is the change of a liquid into a gas.

• Condensation

When a vapour reaches a cold area, it condenses and becomes a liquid. When you bathe, water condenses on the mirror of the bathroom.

Condensation is the change of a gas into a liquid.

What I have learned

States of matter can be changed by freezing, melting, evaporation and condensation.

LEARN MORE

When water evaporates from rivers and seas, it condenses and returns back to earth as rain.

Define condensation and melting.

Condensation is the change of gas into a liquid.

Melting is the change of solid into a liquid.

Activity

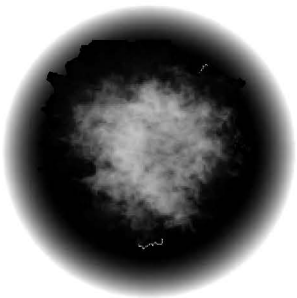
1. Work with your classmates under the supervision of your teacher to convert water from a state into another.
2. Trace the following words:

condensation freezing

melting evaporation

3. Write the following words in the suitable blank.

condensation | freezing | melting | evaporation

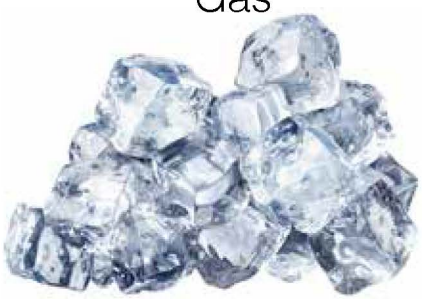


Gas

condensation →

← evaporation

Liquid



Solid

melting →

← freezing

Liquid

REVISION

1. Mark the correct sentences with ✓.

- If a liquid becomes a solid, then the solid will not be a liquid again. ✗
- Everything around us is solid. ✗
- Water can be all three states of matter. ✓
- A solid can take the shape of a cup. ✗

2. Circle the correct answer.

▸ Which of the following is a state of matter:

- Gas.
- Melts.
- Freeze.

▸ Which states of matter do not have a definite shape:

- Solid.
- Colour.
- Liquid.

▸ When a vapour reaches a cold area it:

- Evaporates.
- Melts.
- Condenses.