

KidsBuddy

Grade 4 Ebook Science



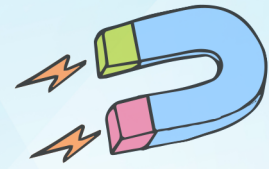
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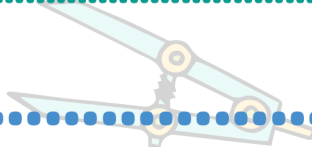
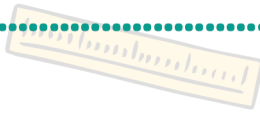
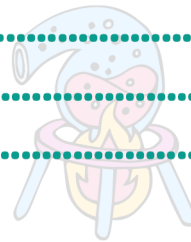
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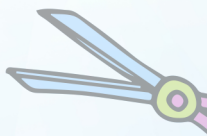
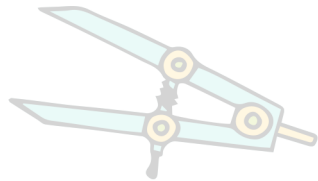
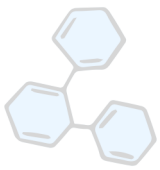
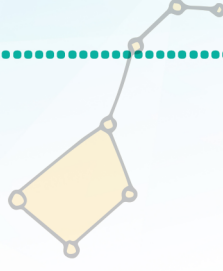
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KNOWLEDGE CARDS

Chapter- 1

Environment and Habitats

1 HABITAT - Different types



Habitat is the place where a plant or animal lives. Living things get water, food and shelter from their habitat.

1. Forest Habitat- Forest is a habitat for many plants and animals. Ex: Tiger, Neem

2. Aquatic Habitat- It is any place where water is the primary element. Ex: Ocean, ponds, lakes, and rivers

3. Grassland Habitat- It is made up of large open areas of grasses. Ex: North American prairies, and Argentine pampas

4. Desert Habitat- Deserts are areas that receive very little rainfall less than 25 cm annually. Ex: Cactii

5. Mountainous and Polar Habitat- Polar habitat covers the top and bottom of planet Earth at the North and South Poles. Ex: polar bear, penguin

Every organism has a unique ecosystem for its habitat. This ecosystem is its natural habitat. This is where the organism meets its basic need for its survival.

1.1

The place where plants and animals live is called?

Colony

Apartment

Habitat

House

1.2

Oceans, ponds, lakes are known as _____

Forest habitat

Aquatic habitat

Grassland habitat

Desert habitat

1.3

In which habitat you can find polar bear and penguin?

Forest habitat

Aquatic habitat

Grassland habitat

Polar habitat

2 AQUATIC ECOSYSTEM



An aquatic ecosystem is a unique environment where a wide variety of plants and animals coexist in and around water. It's like a big family where every member depends on each other for their survival.

There are two main types of aquatic ecosystems - marine and freshwater ecosystems. The first type is the marine ecosystem, which can be found in the sea or ocean. Important marine ecosystems for marine life include estuaries and coral reefs. The second type is freshwater ecosystems, which are found in rivers, lakes, and ponds. Freshwater ecosystems can be divided into three types: pools, ponds, and lakes, which are known as lentic ecosystems, and streams and rivers, which are called lotic ecosystems. These different types of freshwater ecosystems support a wide range of aquatic plants and animals. Wetlands are also special places that have a lot of water all year. These areas serve as important habitats for many aquatic species and also help to filter and purify water, making them crucial for maintaining the health of aquatic ecosystems.

In conclusion, aquatic ecosystems are complex and vital environments that support a wide range of plant and animal life. It's important to protect these ecosystems and the species that depend on them to maintain the balance of our planet's biodiversity.

2.1

The ecosystem formed by surrounding a water body is called?

Forest habitat

Aquatic ecosystem

Ecosystem

Desert habitat

2.2

What are the two main types of aquatic ecosystems?

Marine Ecosystem

Freshwater ecosystem

Both of them



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3 HABITAT



Animals are found in every corner of the Earth, adapting to their environments to survive. Their natural homes, which provide them with food, water, shelter, and the environment they need to thrive, are called habitats.

Habitats come in different types, including forests, deserts, grasslands, mountains, rivers, and oceans. Each type of habitat presents unique challenges and opportunities for the animals that live there. For instance, blackbucks are adapted to live in grasslands, while wild asses thrive in the arid conditions of the desert. Yaks are well-suited for life in cold, high-mountain regions, while polar bears are specifically adapted to the polar regions. Camels are known for their ability to survive in the harsh conditions of sandy deserts, while orangutans are perfectly at home in the rainforests.

Overall, habitats play a vital role in the survival of animals, providing them with the resources and conditions they need to survive and thrive in their respective environments. Understanding the diverse types of habitats on Earth and the animals that inhabit them is crucial to ensuring the conservation and preservation of our planet's precious ecosystems.

3.1 State True/False?

a habitat is a natural home of living things.

True

False

3.2 Wild ass live in the _____

Forests

Deserts

Grasslands

Mountains

3.3 Yak live in _____

Forests

Deserts

Grasslands

Mountains

4 Terrestrial animals



Terrestrial animals are creatures that reside on land, as opposed to aquatic or marine animals. They can be found in diverse habitats, including open grasslands, hot deserts, wet rainforests, cold polar regions, and high mountains. Many terrestrial animals have four legs and highly developed sensory systems, such as sight, smell, and hearing.

Some examples of terrestrial animals include Tigers, Lions, Elephants, Dogs, and Cats, among others.

Terrestrial animals exhibit a wide range of sizes, shapes, and colors. Some are tiny, like ants, while others, like elephants, can be enormous. Terrestrial animals play essential roles in maintaining balance within ecosystems and contribute to keeping our environment healthy.

Unfortunately, many terrestrial animals are facing threats to their survival due to human activities, such as habitat destruction, pollution, and hunting. It is crucial for us to learn about these animals and understand how we can help protect them.

Some terrestrial animals are domesticated, meaning they live with humans and are often kept as pets or used for work purposes, such as dogs, cats, horses, and cows. Domesticated animals have coexisted with humans for centuries and have become an integral part of our lives. Nonetheless, it is our responsibility to treat them with respect and care, and ensure that their well-being is a top priority.

4.1 **State True/False?**

Animals that live on land are called terrestrial animals..

True

False

4.2 **Terrestrial animals can be seen in**

grassland

hot dessert

all of these

rainforest

4.3 **State True/False?**

Terrestrial animals play important roles in our ecosystems.

True

False

5 AQUATIC ANIMALS



Aquatic animals are creatures that live in water, including oceans, lakes, rivers, and ponds. Fish, starfish, corals, shrimps, sea snakes, whales, dolphins, and water birds are examples of aquatic animals. Unlike land animals, aquatic animals have adaptations that enable them to live and thrive in their watery environments. Fish are the most common type of aquatic animal, with over 30,000 known species. They have gills that allow them to extract oxygen from water and fins that help them swim and manoeuvre.

Marine mammals such as whales and dolphins are warm-blooded and breathe air, just like land mammals. They nurse their young with milk and use their fins and tails to swim. Unlike fish, which have scales, marine mammals have smooth skin or blubber to help them stay warm in cold water. Sharks are a type of fish, but they are different from other fish in several ways. For example, they have cartilage instead of bones, which makes them lighter and more flexible. They also have several rows of teeth that they use to catch and eat their prey. It's important to note that not all bodies of water support the same species of marine animals. Some animals, such as whales and dolphins, live primarily in oceans, while others, like freshwater fish, live in rivers and lakes. Coral reefs are also home to a diverse range of aquatic animals, including fish, sea turtles, and molluscs.

Overall, aquatic animals are fascinating creatures that have adapted to survive in a wide range of watery environments.

5.1 Identify the aquatic animals from the image?



Cow

Dolphin

Lion

Elephant

5.2 Find the odd one out?

Starfish

Shrimps

Tiger

Whales

5.3 Identify the aquatic animals from the image?



Starfish

Shrimps

Tiger

Whales



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Answer key

1.1 Habitat

1.2 Aquatic habitat

1.3 Polar habitat

2.1 Aquatic
ecosystem

2.2 Both of them

3.1 True

3.2 Deserts

3.3 Mountains

4.1 True

4.2 all of these

4.3 True

5.1 Dolphin

5.2 Tiger

5.3 Shark

KIDS CHALLENGES

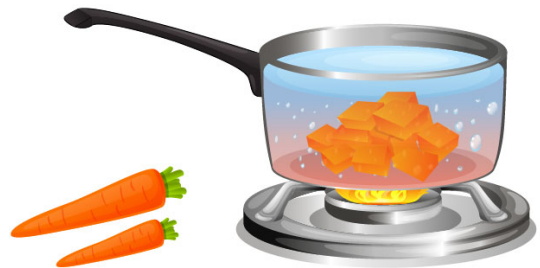
Chapter- 1

Environment and Habitats

1 Colorful carrot

Aim:

To understand the properties of the coloring matter in carrots.



Materials used :

Peeled and sliced carrots, a pot of water.

Procedure:

Step 1 : With the help of a parent, take a cup of water and boil it well.

Step 2 : Add some carrot slices into the pot of boiling water.

Step 3 : Cook the carrots for 15 to 20 minutes.

Expected result:

The carrots will remain orange.

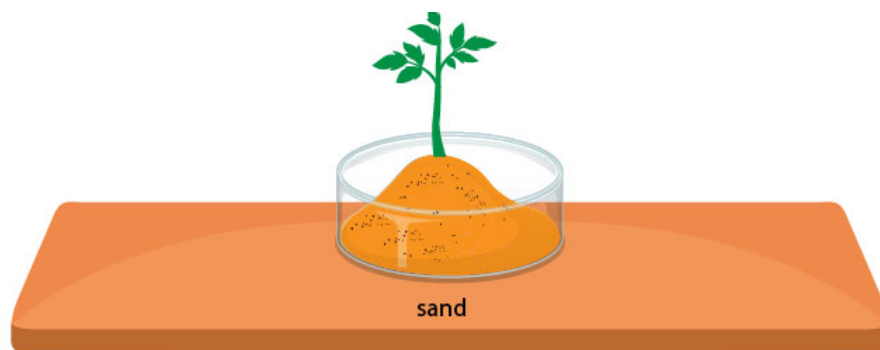
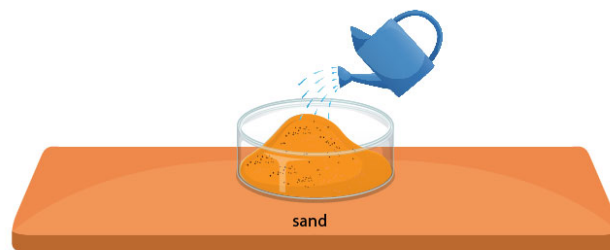
Principle:

The coloring matter in carrots, known as carotenes, do not dissolve in water and are not affected by the normal heat of cooking. This is why carrots retain their orange color even after being cooked.

2 Cutting and growing

Aim:

The aim of this activity is to help understand the process of growing a plant without using seeds.



Materials used :

To carry out this experiment, you will need an indoor plant, scissors, a container, and sand.

Procedure:

Step 1 : Fill the container with sand and wet it with water.

Step 2: Cut off a stem with leaves from the plant. Be sure to cut at an angle.

Step 3: Place the cut end of the stem in the container with the wet sand.

Step 4: Keep the container in a well-lit area, but not in direct sunlight.

Step 5: Observe the bottom of the stem after one week to see if roots have started to grow.

Expected result:

With proper care and maintenance, roots should begin to grow from the bottom of the stem.

Principle:

Providing adequate moisture and sunlight are essential for triggering plant growth.

QUIZ

Chapter- 1

Environment and Habitats

1 There are how many stages in the lifecycle of a butterfly's life?

10

5

8

4

2 Which part of the plant absorbs water and nutrients?

Roots

Stem

Leaves

Flower

3 Which is a Kharif crop among these?

Wheat

Gram

Flaxseed

4 Plants need which gas to perform photosynthesis?

Carbondioxide

Carbon monoxide

Oxygen

Hydrogen

5 Which of the following are called food factory of plant?

Roots

Stem

Leaves

Flower

6 Which of the following has a fibrous root system?

Mango

Beans

Potato

Rice

7 What is the young plant found inside the seed ?

Embryo

Seed layer

8 Which of the following is an insectivorous plant?

Rose

Marigold

Venus flytrap

Shoeflower

9 Bulbs are underground leaves stores food. Which of the following plants grow from bulbs ?

Onion

Potato

Tomato

Radish

10 How should non-decaying waste be disposed of ?

By composting

Recycling

By throwing

By burning

11 What do we call the scientist that studies soil ?

Meteorologist

Pedologist

Geologist

Astronomer

12 What does the structure of the coronavirus look like viewed with a microscope?

Crown

Ring

Fish

Lung

13 Which of the following plant have parallel venation?

Bamboo

China Rose

Tulsi

Coriander

14 A habitat provides _____, _____ and _____

Food

Water

Shelter

All of these

15 A tiger has sharp ____

Food

Skin

Claw

Duck

16

Do you know the name of this flower?



Rafflesia

Watermeal (Wolffia)

Water lily

Poppy

17

What is Phycology?

Study of soil

Study of Mountain

Study of Algae

Study of animals

18

Determination of age of a tree by counting annual rings is?

Dendrochronology

Dendrology

Chronology

Demecology

19

Hibiscus and rose plants are examples of?

Herb

Climber

Creepers

Shrub

19

What type of leaf venation is seen in papaya leaf?

Reticulate venation

Parallel venation

Pinnate venation

Simple leaf



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Answer key

1 4

2 Roots

3 Rice

4 Carbondioxide

5 Leaves

6 Rice

7 Embryo

8 Venus flytrap

9 Onion

10 Recycling

11 Pedologist

12 Crown

13 Bamboo

14 All of these

15 Claw

16 Watermeal (Wolffia)

17 Study of Algae

18 Dendrochronology

19 Shrub

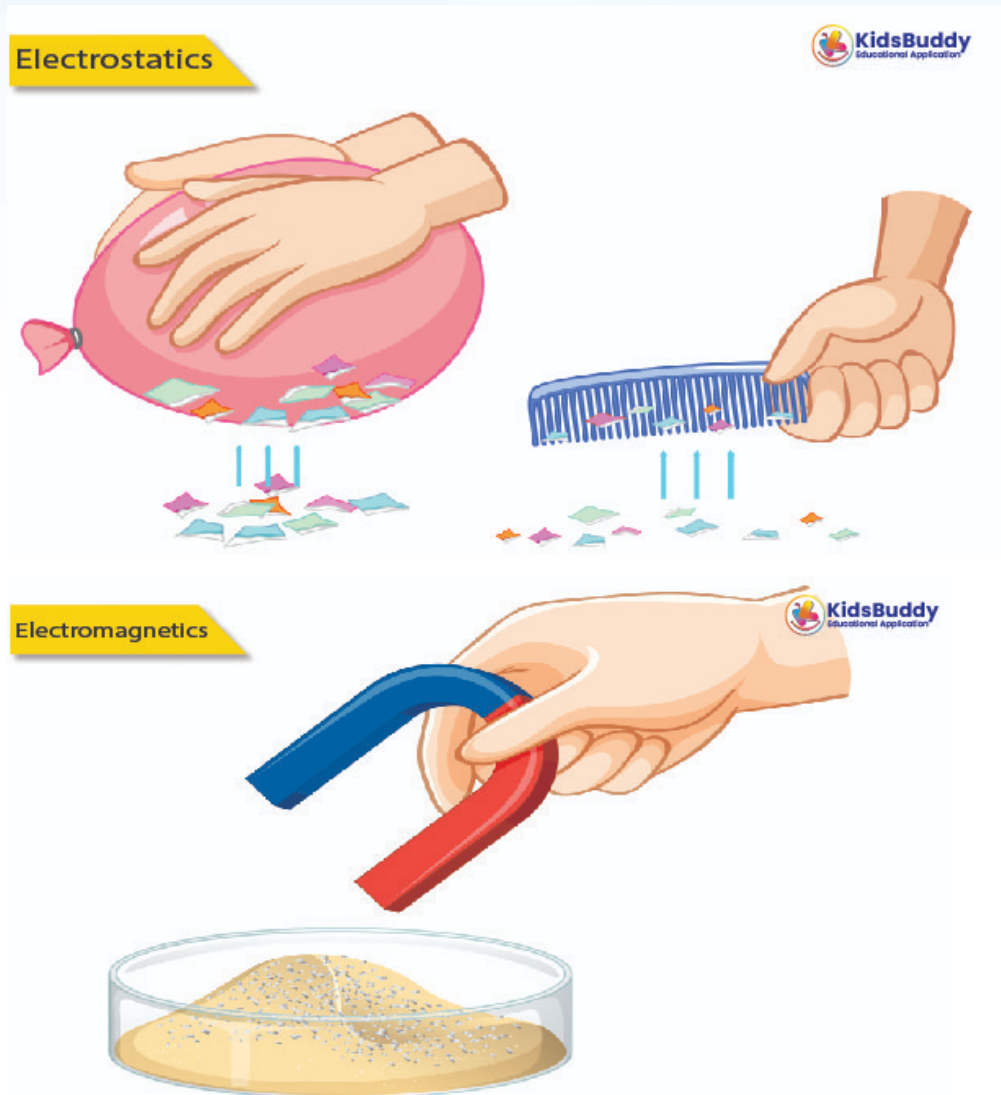
20 Reticulate venation

KNOWLEDGE CARDS

Chapter- 2

Forces and Movement

1 ELECTROSTATIC FORCE



The interaction between two charged particles is governed by the electrostatic force, which can either be attractive or repulsive depending on the nature of the charges. Charged particles can be categorized as positive, negative, or neutral. The universe always seeks to maintain a state of charge neutrality.

The branch of physics that deals with the behavior and properties of stationary electric charges is known as electrostatics. If the charges are in motion, their behaviour and properties are studied in the field of electrodynamics.

Electrostatics and electrodynamics collectively explore almost all aspects related to electric charges and their properties. The fundamental forces of nature include electrostatic forces, which play a crucial role in the behaviour and interactions of charged particles.

In summary, electrostatics is the study of electric charges at rest, and electrodynamics is the study of moving charges. Together, they form a comprehensive understanding of the properties and applications of electric charges.

1.1 State True/False?

The universe always tries to remain in a charge-neutral state.

True

False

1.2 Similar charged _____ and opposite attracts each other.

Attract

Repel

Both of them

None of these

1.3 What is the branch of science that study the properties and application of charges at rest?

Electricity

Electrostatics

None of these

Electromagnetics

2 FORCE

change in direction



Force is a special power that can make things move or stop moving. When something is pushed or pulled, it feels like a force. This force can make an object go faster or slower or change the direction it's moving in.

When things spin around, like a spinning top, a new word is used to describe the power that makes them turn. This word is called torque. Torque is what makes things rotate or turn around a fixed point.

A very smart man named Sir Isaac Newton made some important rules about force a long time ago. These rules help us understand how force works and how to measure it. They are called Newton's Laws of Motion. They have been around for over 300 years!

2.1 The capacity that can move an object or stop a moving object is known as what?

Energy

Force

Matter

Materials

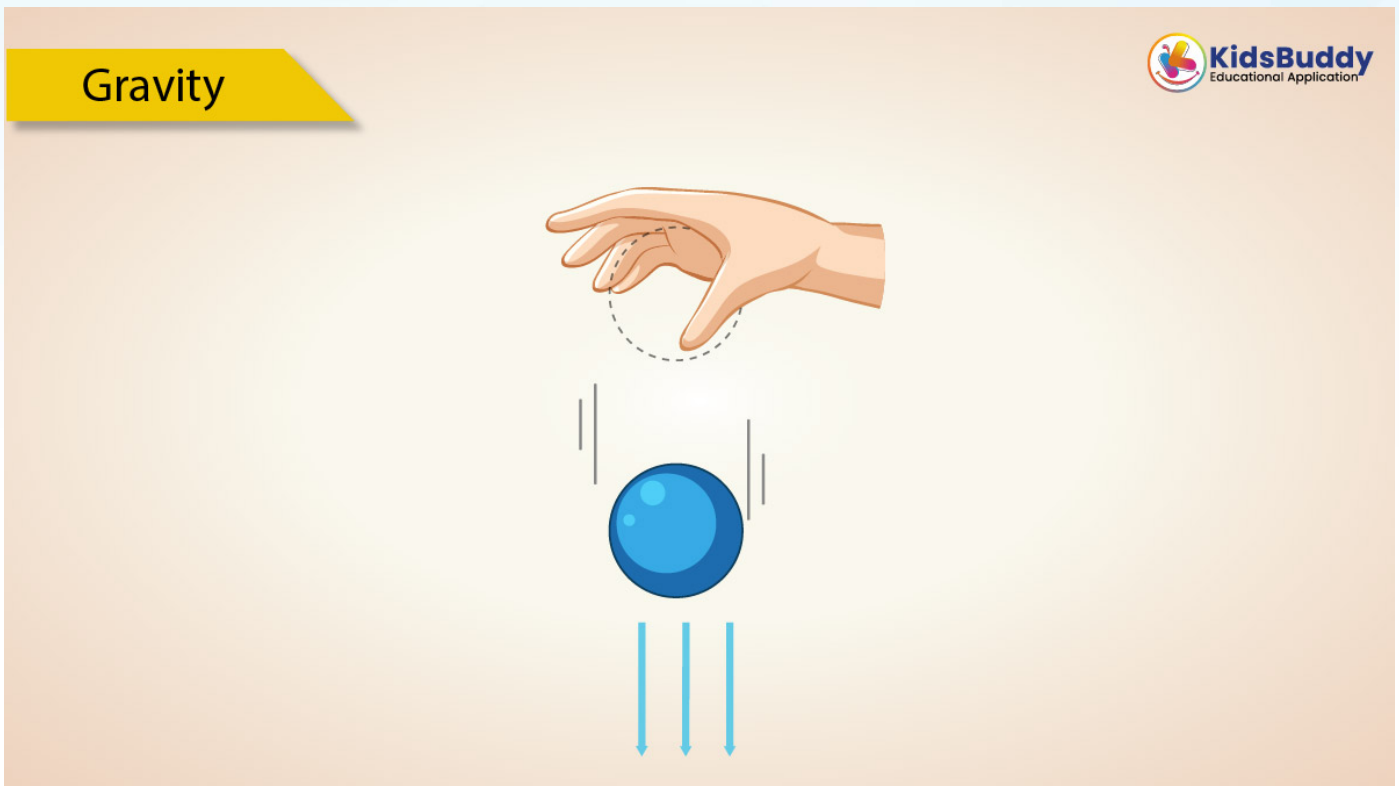
2.2 What is the effect of the force?

Change in the direction of motion

Change in velocity

Both of them

3 GRAVITY



Gravity is a fundamental force of nature that affects all objects with mass. Every mass exerts a gravitational force on every other mass in the universe. The strength of this force depends on the mass of the objects involved and the distance between them. The greater the mass of an object, the stronger its gravitational pull. The distance between objects also affects the gravitational force, as the force decreases as the distance between objects increases.

The gravitational force is responsible for many phenomena in the universe, including the motion of planets and other celestial bodies. For example, the moon revolves around the Earth because of the

gravitational force between the two objects. Similarly, the planets in our solar system remain in orbit around the sun due to the gravitational force between them and the sun.

Gravity can be described as a force that pulls objects towards the center of the Earth or any other massive object. This force is proportional to the mass of the objects involved and the distance between them. In other words, the larger the mass of an object, the stronger its gravitational pull, and the closer objects are to each other, the stronger their gravitational attraction.

3.1 State True/False?

Gravity is a force that pulls objects toward the centre of the earth or any other large physical object.

True

False

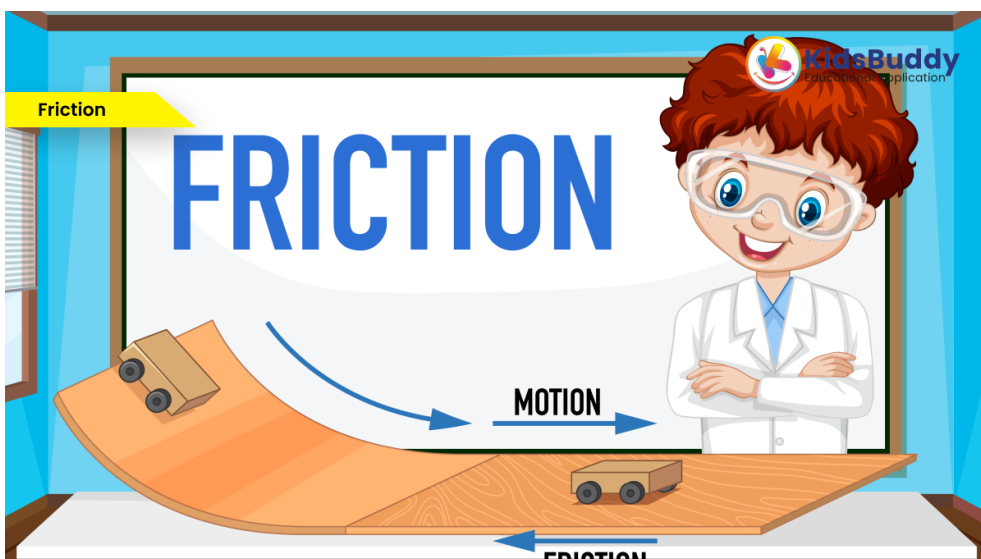
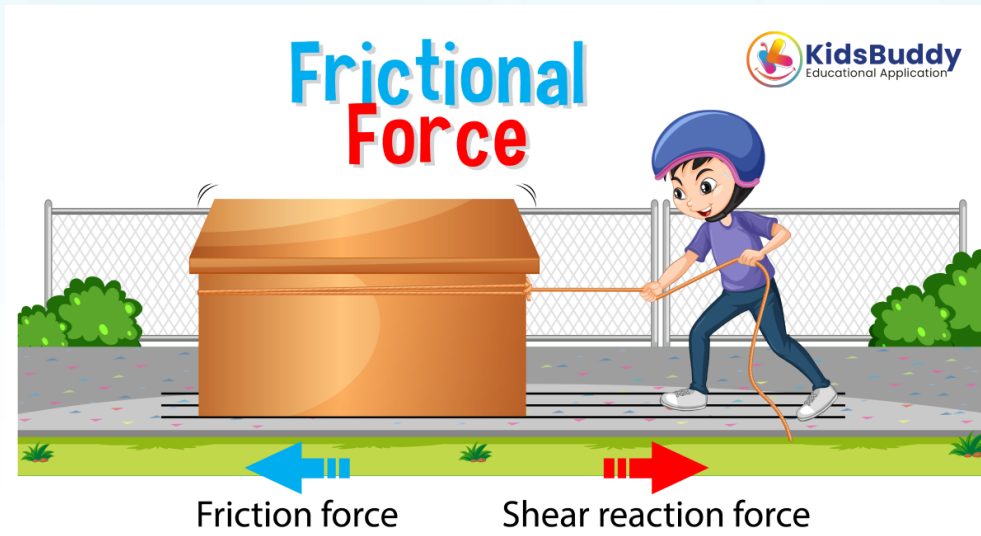
3.2 State True/False?

The moon revolves around the Earth and the planets remain in orbit around the sun due to gravity.

True

False

4 FRICTION



Friction is a force that arises when two surfaces come into contact with one another. It is a fundamental force that affects objects in motion and is essential for many everyday activities. Whenever an object moves, the force of friction opposes its motion and slows it down. There are four main types of friction: static friction, sliding friction, rolling friction, and fluid friction. Static friction occurs when two surfaces are in contact but not moving relative to each other. Sliding friction occurs when two surfaces are moving relative to each other, and rolling friction occurs when an object rolls over a surface. Fluid friction occurs when an object moves through a fluid, such as air or water. Friction plays a crucial role in our daily lives, and we experience it in various activities. For example, when we skate, friction acts as a force that helps us slow down or stop. Walking on a road also involves friction between the soles of our shoes and the ground. When we write on a notebook or a blackboard, friction between the pen or chalk and the writing surface allows us to make marks. Flying aeroplanes involves overcoming air resistance or fluid friction. When we drill a nail into the wall, friction between the nail and the wall allows it to stay in place. In summary, friction is a force that affects many aspects of our daily lives and is essential for various activities.

Understanding the different types of friction and how they apply to different situations can help us better appreciate the role that friction plays in our world.

4.1 When two surfaces come into touch with one another is called _____

Magnetism

Force

Gravity

Friction

4.2 What are the different types of friction?

Static friction

Sliding friction

Rolling friction

All of the above

Answer key

1.1 True

4.1 Friction

1.2 Repel

4.2 All of the above

1.3 Electrostatics

2.1 Force

2.2 Both of them

3.1 True

3.2 True

KIDS CHALLENGES

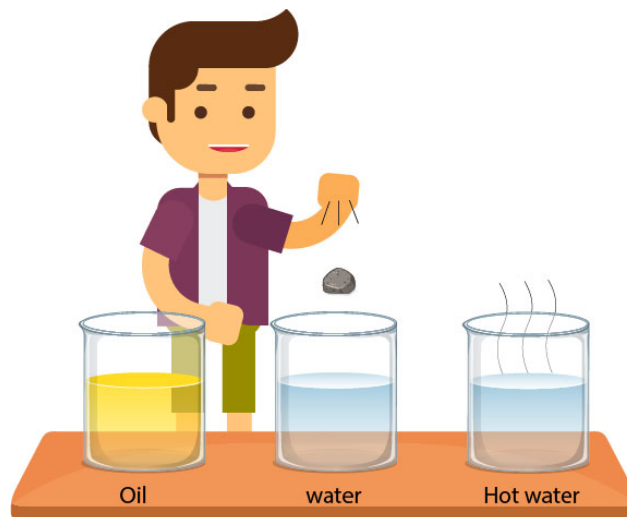
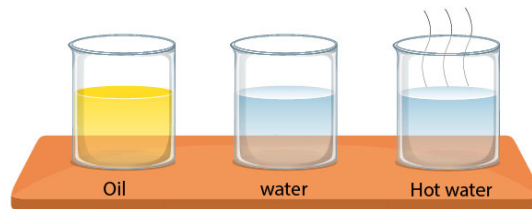
Chapter- 2

Forces and Movement

1 Friction of liquid

Aim:

To understand how different liquids affect the flow of materials passing through them.



Materials used :

3 beakers, equal sized marbles (3), cold water, warm water, oil, and labels.

Procedure:

Step 1: Label three beakers as water, warm water, and oil and place them on a table.

Step 2: Fill each beaker with the corresponding liquid and allow them to settle to minimize turbulence.

Step 3: Drop the marbles, one by one, into each beaker and observe the time taken for them to reach the bottom.

Expected result:

The marble will move quickly through warm water, slowly through cold water, and very slowly through oil. This is due to the different flow resistances offered by different liquids. As the temperature of the liquid increases, the resistance decreases.

Principle:

Different liquids offer different levels of resistance to the flow of materials passing through them.

2 Friction on hand

Aim:

To understand the role of friction and the impact of lubricants on friction.



Materials used :

Oil, Water

Procedure:

Step 1: Rub your hands together forcefully to produce some heat.

Step 2: Wet your hands with water and repeat the same activity.

Step 3: Apply a small amount of oil to your hands and rub them together. Observe the three situations carefully.

Expected result:

The rubbing of bare hands produces more heat due to the higher friction between the hands. Wetting the hands reduces friction, resulting in less heat production. The application of oil to the hands further reduces friction, resulting in even less heat production.

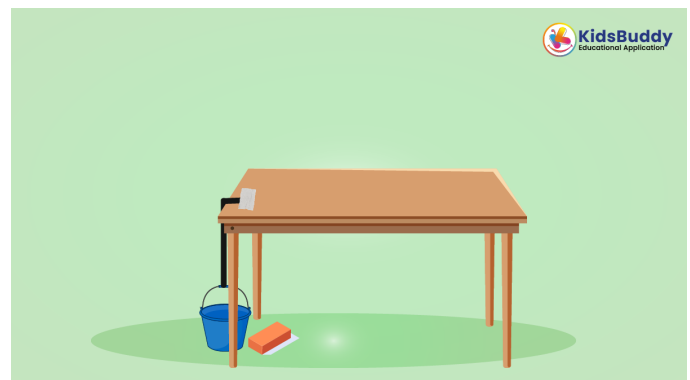
Principle:

Friction is the force that opposes motion between two surfaces in contact. Lubricants such as oil reduce friction between surfaces in contact, resulting in less heat production and less wear and tear.

3 MASS AND MOTION

Aim:

Does mass has any effect on kinetic energy on any object?



Materials used :

Table, Small pail, Tape, Paper, Pencil, Wooden block, String, Scissors, Clay.

Procedure:

Step 1: Attach the string to the pail. Secure the opposite end of the string to the edge of the table.

Step 2: The string needs to be long enough to allow the pail to swing about 2.5 cm above the floor.

Step 3: Place the paper on the floor under the hanging pail.

Step 4: Position the wooden block on the floor in front of the hanging pail.

Step 5: Position the wooden block on the floor under the hanging pail.

Step 6: Pull the pail back and allow it to swing into the block.

Step 7: Mark the position that the block has moved to on the paper.

Step 8: Again position the wooden block on the floor in front of the hanging pail. Place large pieces of clay in the pail to increase its weight.

Step 9: Pull the pail back to the same position as before, then allow the pail to swing into the wooden block.

Step 10: Mark the position of the block on the paper.

4 FORCE

Aim:

How do forces affect inertia?



Materials used :

A drinking glass, Index card, and Clothespin.

Procedure:

Step 1: Place the index card over the mouth of the glass.

Step 2: Place the clothespin on top of the card so that it is centred over the glass.

Step 3: Quickly and forcefully thump the card straight forward with your finger.

Step 4: Repeat the experiment several times.

Expected result:

Your finger applies force to the card, moving it forward. The card moves so quickly that it translates very little force to the clothespin. The pin falls straight down due to the pull of gravity when the card no longer supports it. If you do not hit the card straight forward with enough force, it pulls the bottom of the pin forward and gravity pulls the top of the pin down, causing the pin to flip before it lands.

QUIZ

Chapter- 2

Forces and Movement

1 What is the SI unit of force?

Newton

Kilogram

Mass

Ampere

2 What causes an object to move?

Weight

Force

Gravity

Magnets

3 How many poles a magnet has?

1

2

5

4

4 Which of the following energy types is created due to motion?

Electrical energy

Potential energy

Gravitational energy

Kinetic energy

5 Who was the famous scientist to discover Gravity?

Albert Einstein

Issac Newton

Charles darwin

Erwin Schrödinger

6 Which lever has a fulcrum in between effort and resistance?

First lever

Third lever

Fourth lever

Second lever

7 When you push something, you apply

Force

Distance

Mass

Length

8 The energy that helps in burning of wood is :

Chemical

Physical

Potential

Muscular

9 The energy stored in a torch cell is :

Kinetic energy

Potential energy

Mechanical energy

Chemical energy

10 The standard unit of measurement for energy is ___

Newton

Watt

Ampere

Joule

11 Which Instrument is Used for Measuring Wind Speed?

Thermometer

Speedometer

Anemometer

Pressure Gauge

12 The capacity to do work is called?

Energy

Force

Machine

Movement

13 How is heat produced in the sun?

Nuclear fission

Nuclear fusion

Exothermic reaction

Endothermic reaction

14 If Ravi is able to move the table through a distance, then _____ is said to be done.

Energy

Force

Muscles

Work

15 Which device is used for converting alternating current (AC) to direct current (DC) ?

Rectifier

Dynamo

Anemometer

Induction coil

16 What is the principle by which a cooling system (radiator) in a motor car works:

Conduction

Convection

Radiation

Lightening

17 Why a man sitting in a moving bus suddenly moves forward when the bus suddenly stops?

Due to inertia

Due to brakes

18 Why does an apple fall down when it gets detached from the tree?

Due to gravitational force

Tree is pushing the apple

Because it likes the ground

Throwing stone

19 When a bus stops suddenly, passengers tend to fall forward- Which law of Newton is present in this situation?

Newton's First law

Newton's second law

Newton's third law

20 A nutcracker is an example of _____ lever.

Class I Lever

Class II Lever

Class III lever

All of these

Answer key

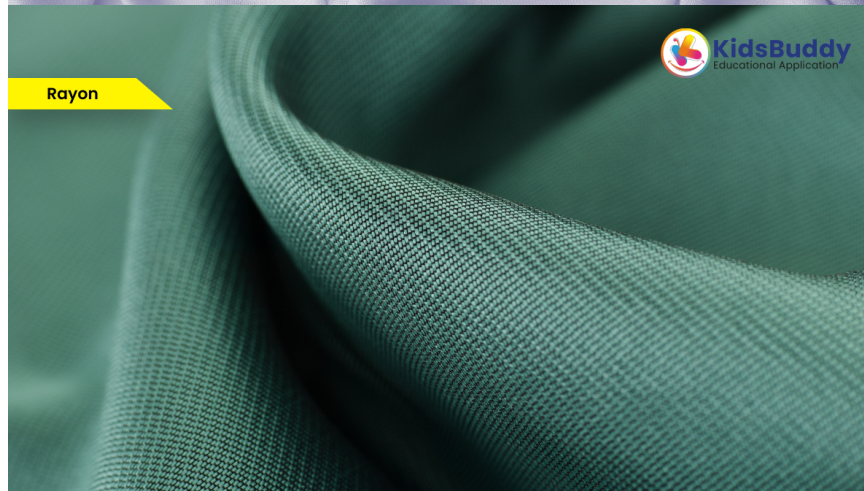
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|----|-----------------|----|----------------------------|
| 1 | Newton | 11 | Anemometer |
| 2 | Force | 12 | Energy |
| 3 | 2 | 13 | Nuclear fusion |
| 4 | Kinetic energy | 14 | work |
| 5 | Issac Newton | 15 | Rectifier |
| 6 | First lever | 16 | Convection |
| 7 | Force | 17 | Due to inertia |
| 8 | Chemical | 18 | Due to gravitational force |
| 9 | Chemical energy | 19 | Newton's First law |
| 10 | Joule | 20 | Class II Lever |

KNOWLEDGE CARDS

Chapter- 3

Getting Materials right

1 SYNTHETIC FIBRES



Synthetic fibres are man-made threads that are created in factories. These fibres are usually made from a material called petrochemicals, which comes from petroleum.

There are different types of synthetic fibres, like Rayon, Nylon, and Polyester.

Each type is used to make different things. For example, Rayon is often mixed with cotton to make soft bedsheets.

Nylon is very strong, so it is used to make things like seat belts, socks, and even ropes.

Polyester is a common material used in making things like jackets, raincoats, and nets.

One way to tell synthetic fibres apart from natural fibres is by looking at their cross-section.

Synthetic fibres have a smooth appearance that looks different from natural fibres like cotton or wool

1.1

What is the man-made fiber from the list?

Cotton

Jute

Synthetic fibers

All of them

1.2

What are the features of fibers?

Long

Thin

Flexible

All of these

1.3

Identify the synthetic fibers from the list?

Rayon

Nylon

Polyester

All of them

2 ADVANTAGES AND DISADVANTAGES OF SYNTHETIC FIBER



Synthetic fibres are man-made threads that are created in factories. These fibres are usually made from a material called petrochemicals, which comes from petroleum. There are many advantages to using synthetic fibres.

Firstly, they are very stretchy and can be made to be very strong.

They are also usually cheaper than natural fibres like cotton or wool.

Additionally, synthetic fibres can be very soft and last a long time without wearing out. However, there are also some disadvantages to synthetic fibres.

One is that they can catch fire easily, so it's important to be careful when around heat or flames. Another is that they don't absorb moisture very well, which means that they can feel sweaty or uncomfortable to wear.

Finally, some synthetic fibres can be damaged if they are washed in very hot water.

2.1 What is the raw materials used to make synthetic fibers?

Plastic

Petrochemicals

Chemicals

Fiber

2.2 What are the advantages of synthetic fibers?

Elastic

Strong

Soft

All of these

2.3 What are the disadvantages of synthetic fibers?

Catches fire

Do not absorb

Moisture

Both of them

3 PAPER



Materials are the building blocks of everything in the world. From chalk to plastic to leather, everything is made up of some kind of material. One such material is paper, which is a thin sheet made of fibres. Paper was invented by the Chinese in AD 105, and since then, it has become an essential part of our daily lives.

To make paper, wood from subabul, eucalyptus, and bamboo trees is commonly used in paper mills. Of these, subabul wood has become the most popular in recent years due to its fast growth rate and ability to produce high-quality pulp. However, wood is not the only raw material used in papermaking. A variety of chemicals, including caustic soda, common salt, and others, are also used at various stages of the paper-making process to enhance the quality and durability of the paper. In addition to using wood and chemicals, paper mills also recycle scrap paper to produce new paper. Recycling not only helps conserve natural resources but also reduces waste and saves energy. The paper recycling process involves collecting used paper, sorting it based on its quality, and then processing it to create new paper.

Overall, papermaking is a complex process that involves multiple raw materials and various stages. However, it is a critical industry that plays an essential role in our daily lives. From writing to packaging to printing, paper is a versatile material that has countless uses and applications.

3.1 Any substance with a name constitutes

Paper

Materials

Iron

Plastic

3.2 Paper introduced in which year?

AD 751

AD 105

AD 501

AD 432

3.3 Which trees are used for making paper?

Subabul

Eucalyptus

Bamboo trees

All of the above

4 IRON



Iron is a versatile metal that is commonly used in a variety of applications due to its unique properties. It is primarily obtained from iron ore and is commonly used in the production of steel, which is an alloy composed of iron and carbon.

Steel is extensively used in construction for girders, reinforced concrete, and other structural components. Alloy steels, which are created by adding other elements such as nickel, chromium, vanadium, tungsten, and manganese to the iron-carbon mixture, are used in the construction of bridges, power poles, bicycle chains, cutting tools, and rifle barrels. Cast iron, which contains 3-5% carbon, is used to make pumps, valves, and pipes due to its excellent resistance to wear and corrosion. Iron is also used as a catalyst in the Haber process, which is used to produce ammonia. Iron catalysts are used to increase the rate of the chemical reaction and improve the efficiency of the process.

In addition to its practical applications, iron is also used to make magnets due to its magnetic properties. Various alloys and compounds of iron are utilized in the creation of permanent magnets for a variety of industries, including electronics, healthcare, and renewable energy. Overall, iron plays an important role in a wide range of industries due to its unique physical and chemical properties.

4.1 A metal called _____ is used for its magnetic field.

Paper

Materials

Iron

Plastic

4.2 _____ is a metal that is recovered from iron ore.

Paper

Materials

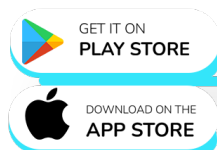
Iron

Plastic



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Answer key

1.1 Synthetic fibers

1.2 All of them

1.3 All of them

2.1 Petrochemicals

2.2 All of these

2.3 Both of them

3.1 Materials

3.2 AD 105

3.3 All of the above

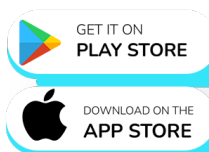
4.1 Iron

4.2 Iron



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KIDS CHALLENGES

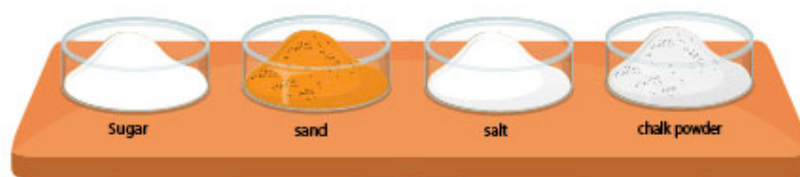
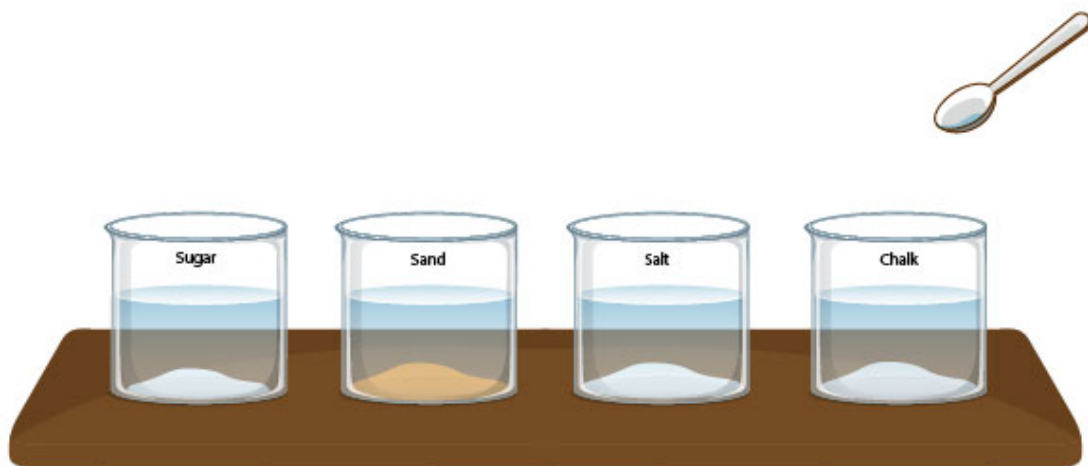
Chapter- 3

Getting Materials right

1 Solubility of Materials

Aim:

To observe the solubility of different materials in water and understand their properties



Materials used :

4 beakers, spoons, salt, sugar, sand, chalk powder, labels.

Procedure:

Step 1: Label each beaker as Salt, Sugar, Sand, and Chalk. Fill each beaker halfway with water.

Step 2: Add equal amounts of each material to their respective beakers.

Step 3: Stir the materials in each beaker 5 times in one direction and observe.

Step 4: Some materials will dissolve quickly, some slowly, some will not dissolve but settle quickly, and some will settle slowly. Identify each material and its properties.

Step 5: Salt dissolves quickly, Sugar dissolves slowly, sand does not dissolve but settles quickly, and chalk powder does not dissolve but settles slowly.

2 Water v/s oil

Aim:

To observe the solubility of oil in water and understand the reason behind it.



Materials used :

Glass, Water, Vegetable oil

Procedure:

Step 1: Take a glass and pour water into it.

Step 2: Pour some vegetable oil into the glass.

Step 3: Observe what happens and try to understand the reason behind it.

Expected result:

The oil and water will not mix and a layer will be formed due to the difference in density between the two substances.

QUIZ

Chapter- 3

Getting Materials right

1 Which is the First Element on the Periodic Table of Elements?

Oxygen

Hydrogen

Helium

Sulphur

2 Which phase of matter will change shape but NOT size?

Gas

Liquid

Solid

Oxygen

3 During the desalination process, what is removed from the water?

Juice

Salts and Minerals

Vinegar

Muds

4 Fractional distillation is a type of distillation which involves the separation of:

Solid and liquid

Miscible liquids

Immiscible liquids

Mixtures

5 A common example of fractional distillation in industries is the separation of various components of:

Coal

Crude oil

Petrol

Diesel

6 What test is used to detect the presence of hydrogen?

Biuret test

Litmus paper

Burning splint test

Emulsion test

7 Which is a chemical change?

Wood being burned.

Wood being chopped up

8 Which technique is used to separate the substances from a mixture?

Only changes the physical appearance of a substance

Does not alter the way the substance is made

Forms a completely different new material from the original material

9

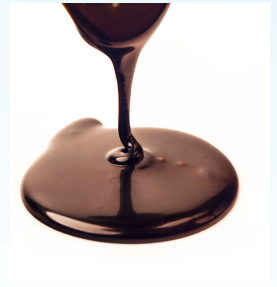
What is this picture all about?

Melting

Freezing

Sublimation

Neither A nor B



10

Spoon is made from?

Metal

Wool

Cotton

11

Which of these is an example of an irreversible change?

Melting of wax

Boiling water

Melting ice

12

Which of these materials are solid.

Ice

Steam

Water

Answer key

- 1 Hydrogen
- 2 Liquid
- 3 Salts and Minerals
- 4 Miscible liquids
- 5 Crude oil
- 6 Burning splint test
- 7 Wood being burned.
- 8 Forms a completely different new material from the original material
- 9 Melting
- 10 Metal
- 11 Cooking an egg
- 12 Ice



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Educational Application

KidsBuddy is an educational application platform designed for schools, teachers, and students to improve student learning outcomes in a measurable and visible way.

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