

PROJECT REFERENCE

UNIT 3

MELTING ICE EXPERIMENT

You can make colorful ice with this experiment.

Materials:



- STEP**
- Fill two or three bowls of different sizes with water. Let them freeze all night.
 - Loosen the ice from the bowls with a little warm water. Set the ice blocks in the tray.
 - Sprinkle some salt over the top of each piece of ice. What happens?
 - Now, use the spoon to pour food coloring on the ice.

When you sprinkle salt on ice, it makes the ice melt faster. This is because salt lowers the ice's freezing point. When you put food coloring on the ice, you will see the ways the salt melts ice. Make your own colorful ice by lowering the freezing point!

UNIT 4

WHAT MELTS IN THE SUN?

Let's see what melts in the sun and what doesn't.

Materials:



a muffin tin



an ice cube



a rock



butter



a cheese cube



a chocolate square



a soap cube



a coin



pieces of crayons

STEP

- Put each object in one of the holes of the muffin tin.
- Place the tin in the sun. Wait 10 minutes. Check what melted and what didn't.
- Now, wait 40 minutes. Check what melted and what didn't.

Each material has its own melting point. The lower the melting point is, the faster the object melts. See the chart below.

Melting Point	
ice cube	0°C
butter	32°C
chocolate	32°C
crayon	48°C
cheese	60°C
rock	from 300°C to 700°C
coin	1082°C

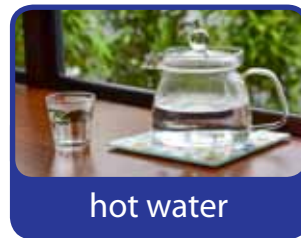
PROJECT REFERENCE

UNIT 7

GOOD AND BAD CONDUCTORS

Let's find out which material is the best heat conductor.

Materials:



STEP

- Place one stick in each bowl. Place a small cube of butter at the top end of each stick.
- Fill each bowl with hot water. See what happens.

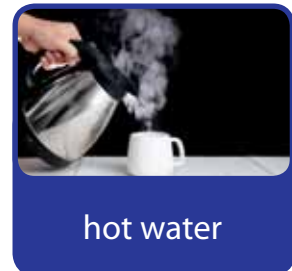
Copper and aluminum melt butter well, but wood and plastic don't. It means copper and aluminum are good heat conductors, and wood and plastic are bad conductors. Among these, the aluminum stick conducts heat the fastest. Even though it is not one of the materials used in the experiment, steel is the poorest heat conductor among metals.

UNIT 8

WHICH IS THE BEST INSULATING MATERIAL?

Some materials are good at transferring heat, but some are good at insulating it. Let's find out which of these materials are good insulators.

Materials:



- STEP**
- Place the four mugs in a row. Pour the same volume of hot water in each mug.
 - Cover the top of each mug with one of the materials: a wool sock, tin foil, a newspaper, and a cotton cloth.
 - Hold each cover with a rubber band.
 - Leave the mugs for half an hour.
 - Remove the covers. Feel the water in each mug. Which is the warmest?

A material that stops heat and electricity from escaping is called an insulator. In our daily life, it is essential because this protects us from cold and electric shock.

PROJECT REFERENCE

UNIT 9

WHAT DISSOLVES IN WATER?

Not all substances dissolve in water like sugar does.

Let's see what dissolves and what doesn't with a simple experiment.

Materials:



- STEP**
- Put a spoonful of each substance into each jar.
 - Add one cup of warm water to each jar. Make sure you pour the same volume of water in each jar.
 - Stir each jar. Wait for one minute.
 - Which materials dissolved? Which didn't?

In this experiment, brown sugar, black pepper powder, and flour dissolved. Pepper grains and sprinkles didn't. Powdered substances dissolve better than grained substances. To make something dissolve faster, you can break up the substance, stir the mixture, or heat the mixture.

UNIT 11

MAKE A CONSTELLATION

You can see beautiful constellations in your room. Let's make one together!

Materials:



STEP

- Choose a constellation that you want to make and draw it.
- Now, sprinkle some white watercolor on the black plate to make the stars.
- Draw the constellation on the plate. Glue each star in its place in the constellation.
- Use your white felt tip pen to join the stars to look like a constellation.
- Write the name of your constellation at the top of the plate.

There are eighty-eight officially recognized constellations in our universe. There are five major constellations. See the images below.



Ursa Minor (The Little Dipper)



Ursa Major (The Big Dipper)



Orion (The Hunter)



Taurus (The Bull)



Gemini (The Twins)

PROJECT REFERENCE

UNIT 15

MAKE A FLYING SAUCER

Do you want to own a vehicle that flies? Let's make a flying saucer together!

Materials:



STEP

- Design your flying saucer on a piece of paper.
- Draw twelve sections on the back of the plate.
- Color each section with a different color. Use your favorite colors!
- Add shiny stickers to make it nice.
- Cut the sections from the middle to the outside of the circle, but do not cut all the way across. Leave the outer area of the plate in a complete ring. Be very careful!
- Flip one section up and flip the next section down.

People have created different types of aircraft, such as airplanes, helicopters, hot air balloons, rockets, and satellites. Since we continue to learn more about space, an aerospace engineer is a potential job for the present and the future. Do you want to design and test things for the space industry?