WARM AND BRIGHT

STUDENT WORKBOOK

ACCELERATE

ACTIVITY 1

BURSTING BALLOONS

Fire will pop a balloon, right? But what if it doesn't?

1 WILL IT BURST?

WHAT YOU NEED:

FROM THE KIT:

- ■ 2 balloons
- ■ Beaker
- ■ Candle
- ■ Matches

OTHER ITEMS:

- ■ Water

BALLOON 1

SAFETY:

WARNING! CHOKING HAZARD - Children under 8 years can choke or suffocate on underinflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

WARNING! Be careful with fire and flame. Don't use in windy areas or near objects that can catch fire.

WHAT TO DO:

Get an adult to help you with the steps in this activity.

STEP 1

Blow up one balloon and tie it off.

STEP 2

Light the candle using a match.

STEP 3

Hold the balloon where it is tied.

STEP 4

Slowly bring the bottom of the balloon towards the candle.

Note: The tied piece of the balloon, where your hand is, should be furthest away from the candle.

Back to the Balloon

Water has the ability to absorb and transfer a lot of heat. Some materials, like aluminum foil, are also good at this. Because the balloon is made of a thin material, it allows heat to pass through it to the water. The water absorbs and transfers the heat throughout the inside of the balloon. This means that the side of the balloon doesn't get too hot at any point. As a result, the balloon doesn't pop.

Because there wasn't water in the first balloon, it popped when brought close to the flame. Just like with the balloon with water in it, energy is transferred from the flame to the balloon. However, air is not good at absorbing and distributing the heat like water is.

The heat stays close to the balloon rather than moving into the air, melting the side of the balloon. This causes the balloon to pop. Popping a balloon happens faster than we can see, but we can hear it. The sound is energy from the balloon.

DID YOU KNOW?

Fire produces two types of energy – thermal energy (heat) and radiant energy (light). Color the fire.

THINK ABOUT IT!

All three types of thermal energy transfer are going to be important for the next section where you will be making the best insulator for a cup. First, let's see if you can label each type of energy transfer correctly.

1. What sort of heat transfer was happening in the experiment in Activity 1? Explain. _____

2. Match the picture to the correct type of energy transfer. Explain why you made each choice.

Conduction

Convection

Radiation

3. Draw an example not already given for each type of energy transfer.

a. Conduction

b. Convection

c. Radiation

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Kit	SU-WRMBRI
Instructions	IN-WRMBRIS
Revision Date	9/2021