ZOOM into Engineering

Keep-a-Cube

What You Need

- 2 ice cubes
- cardboard box
- wax paper
- masking tape
- newspaper
- aluminum foil
- rubber bands
- paper plate

Engineering Scoop

Engineers design ways to **solve problems**. In this activity you designed a way to keep an ice cube from **melting** in 30 minutes. What makes ice melt? **Heat!** The air around the ice cube is **warmer** than the ice. So you need to **keep the warm air away** from the ice cube. To do this, you use **insulation,** a material that slows heat energy from passing through it. When we tried this on ZOOM, Caroline and Frances **wrapped their ice cube** in wax paper and **sealed the box** to keep warm air out. Eric and Rachel **covered their box** with aluminum foil to keep the warm air out. How did **you** keep your ice cube from melting?

Can you keep an ice cube from completely melting in 30 minutes?

1 Use the materials to make a **Keep-a-Cube box** that will keep an ice cube from **melting**. Think about what makes ice melt as you design your box. You can wrap up the ice cube, cover the box, or do anything else you can think of.

2 Put a second ice cube on a **plate.** This is your **"control"** cube. Don't make any changes to this ice cube.

3 Wait 30 minutes.

4 Compare the ice cube in your Keep-a-Cube box to the ice cube on the plate. Which ice cube is **bigger?** Why?

Sent in by Becky R. of Greenfield, WI, and Billy M. of Reno, NV

ZOOM on

How can you **change** the container so the ice cube melts more slowly? What happens if you use a **smaller box?** Or, what happens if you use **different materials,** like foam packing peanuts or cotton balls? Choose one thing to change (that's the **variable**), and make a **prediction.** Then **test it** and **send** your results to ZOOM.

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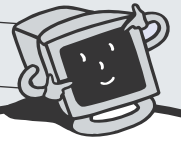
Engineer's Notebook

My Prediction

What Happened

Engineers Wanted!

Have you ever been in a room that's too hot or too cold? Imagine if you could control the temperature so that it's just right for you. Engineers are designing homes for the future called **"smart" houses**. When you enter a room, sensors will detect who you are. Then a computer will make the room temperature warmer or colder, depending on what you like. Engineers like **you** could design new kinds of "smart" houses.



Send It to ZOOM™!

Tell us about your results at

pbskids.org/zoom/sendit