

Name _____



Hands-On Activity

Explore Online

Engineer It • Design Shade

Materials



Ask a Question

Step 1



Design and build a shelter.

Step 2

Put the shelter in a sunny place. Place one rock under the shelter. Place the other rock in the sun.

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Lesson 1 • Engineer It • How Can I Protect Myself from the Sun? 173

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Connection to Life Science

Patterns (CCC 1) Provide books and Internet resources with pictures of desert and forest animals using the environment to stay cool. Key-word Internet searches such as “animal adaptations to stay cool” may yield useful results. Provide books and Internet resources with media of desert and forest animals. Have children use the images to investigate how an animal stays cool during hot, sunny weather. Have children describe patterns they observe. For example, some animals seek shelter under rocks, in mud, or in burrows or caves. Children should use these patterns as evidence to explain why animals use certain things to protect themselves.

Hands-On Activity

small groups 60 min

Engineer It • Design Shade



Have children watch the video of the steps for this activity. Pause the video after each step.

3D Learning Objective

SEP Asking Questions and Defining Problems

Read the title of the activity aloud with children. Ask them to share ideas about what “Design Shade” might mean. Have children generate questions and discuss them as a group. Then organize the questions according to their relevance to the activity. **Sample question: How can I protect Earth’s surface from the sun?**

Suggested Materials tape, glue, safety scissors, paper, crayons, two rocks, craft sticks



Materials Alert Collect rocks that are about the same size, shape, and color from the local area. After completing the activity, return the rocks to their original location.

Preparation

You may also choose to complete this activity as a whole group. Place the materials in the center of the table so children can share.

Activity

STEP 1 Discuss with children why it is important to have a sketch before starting to build. Children should explain that they can easily change a sketch if they find an idea does not work, or if they have a better idea.

STEP 2 Ask children to predict how the rock in the sun and the rock in the shelter will feel after one hour.

Hands-On Activity, continued

SEP **Planning and Carrying Out Investigations**

STEP 3 Children should observe that the rock in the sun is warmer because there was nothing to protect it from the sun’s heat. Have children use their observations from the investigation to evaluate their solution. **Ask: What caused your design to be successful? The design protected the rock from the sun’s heat.** Invite children to brainstorm ideas that could make their design even better. To promote a growth mindset, praise their efforts for doing so.

Claims, Evidence, and Reasoning

SEP **Analyzing and Interpreting Data**

Children should make a claim that shade can protect things on Earth’s surface. They should cite evidence that the rock in the shelter was cooler than the rock in the sun. **Ask: What could you do that would make the rock that was in the sun feel cooler? You could put it in the shelter.**

Step 3

Touch each rock and compare.
Record your observations.

Drawings may vary but should show the rock in the sun is warm and the rock covered by shade is cool.

Make a claim.

Sample answer: Shade can protect Earth’s surface.

What is your evidence?

Drawings may vary but should show that the rock covered by shade was cooler than the rock placed in the sun.

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Scoring Rubric for Hands-On Activity

3	States a claim supported with evidence that the sun warms Earth
2	States a claim somewhat supported with evidence that the sun warms Earth
1	States a claim that is not supported by evidence
0	Does not state a claim and does not provide evidence