

# Hibernation station

# STEM



**LOW PREP  
WINTER STEM  
CHALLENGE**

K-5<sup>TH</sup> GRADE

CREATED BY BROOKE BROWN

- ✓ SIMPLE SUPPLIES
- ✓ INTERACTIVE ANCHOR CHARTS
- ✓ VISUAL VOCABULARY
- ✓ QR CODE RESEARCH
- ✓ REFLECTION QUESTIONS

## Hibernation Station

The animals need a shelter to keep them safe and warm in the winter.

Construct the warmest shelter possible that will protect at least 3 animals.



### MATERIALS:

- Aluminum foil
- Paper plates for base
- Variety of insulation scraps such as fleece, flannel, wool, batting, foam, cotton balls, or foam board
- Scotch tape
- Mini cups with paper animals taped to the front

## EXPLORE ANIMALS IN WINTER

### HIBERNATION



### HIBERNATING ANIMALS



### ANIMALS WITH WINTER COATS



### INSULATING HOMES



## WORDS TO KNOW



### shelter



a dwelling or home designed for protection

### hibernate



to spend the winter in an inactive or dormant state

### insulate



to cover with a material that prevents heat from escaping

### adapt



to adjust to living conditions

## Hibernation Station

### REAL WORLD EXAMPLES

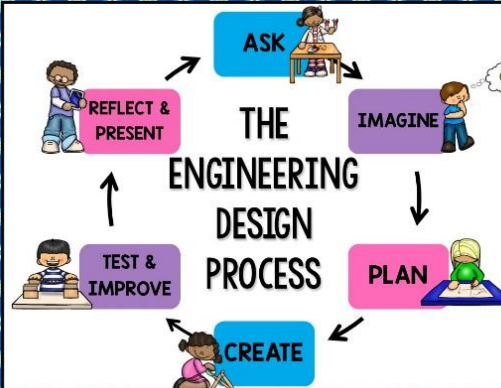


What is similar? What is different?  
Ways that Animals Adapt to Winter Conditions

### Animals that Hibernate

Ways that Humans Adapt to Winter Conditions

## THE ENGINEERING DESIGN PROCESS



## LET'S REFLECT!



What was most difficult about this challenge?  
What are some different ways that animals adapt to winter conditions?  
How are some natural animal shelters insulated?  
How did you insulate your shelter?  
How do humans adapt to winter conditions?  
What types of things need to be insulated (buildings/shelters, people, food/drinks) and why?  
If we completed this challenge again, what would you do differently next time?

# DIFFERENTIATED RECORDING SHEETS FOR K-5<sup>TH</sup> GRADE

## LOWER GRADES



### Hibernation Station

Name: \_\_\_\_\_

#### MY BLUEPRINT



Draw a picture of your shelter.

Draw your materials.

How many animals fit inside your shelter?  
\_\_\_\_\_

Color the animals that are in your shelter.









## UPPER GRADES



### Hibernation Station

Name: \_\_\_\_\_

| BLUEPRINT                                        | MATERIALS                                             |
|--------------------------------------------------|-------------------------------------------------------|
| <p>How many animals fit inside your shelter?</p> | <p>How does your shelter keep your animals WARM?</p>  |
|                                                  | <p>How does your shelter PROTECT your animals?</p>    |
|                                                  | <p>What improvements can be made to your shelter?</p> |

## DIGITAL GOOGLE SLIDES NOTEBOOK

### Hibernation Station

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### STEM Challenge Assessment Rubric

Challenge: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Student Name: \_\_\_\_\_

| 3                                                                   | 2                                                                       | 1                                                                              |
|---------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Student followed all instructions for challenge.                    | Student followed some instructions for challenge.                       | Student did not follow instructions for challenge.                             |
| Student used best effort and perseverance on challenge.             | Student used some effort and perseverance on challenge.                 | Student did not show effort or perseverance on challenge.                      |
| Student completed assigned blueprint and reflection sheet.          | Student partially completed assigned blueprint and reflection sheet.    | Student did not complete assigned blueprint and recording sheet.               |
| Student showed accuracy in testing, calculating, and measuring.     | Student showed some accuracy in testing, calculating, and measuring.    | Student did not show accuracy in testing, calculating, or measuring.           |
| Student fully cooperated with group members and contributed fairly. | Student partially cooperated with group members and contributed fairly. | Student struggled to cooperate with group members and/or failed to contribute. |
| Student fully participated in class discussions.                    | Student somewhat participated in class discussions.                     | Student did not participate in class discussions.                              |
| TOTAL POINTS: _____ /18                                             |                                                                         |                                                                                |
| Comments: _____                                                     |                                                                         |                                                                                |

### We Need STEM Supplies!

Dear Families,

We are learning all about Science, Technology, Engineering, and Math through STEM lessons, and we need your help! If you are able to donate any of the following supplies for our STEM Challenge, please detach and return the form below and send back to school with your child. We greatly appreciate your support and generosity!

We are in need of the following items by \_\_\_\_\_:

Thank you so much for helping to make our STEM lessons possible!  
Please contact me at \_\_\_\_\_ with any questions.

Sincerely, \_\_\_\_\_

---

If you are able to donate, please detach and return the form below:

Parent Name(s): \_\_\_\_\_  
 Child's Name: \_\_\_\_\_  
 I am able to donate: \_\_\_\_\_

# SAY Hello TO STRESS-FREE STEM!

| SUPPLIES CHECKLIST  |                                                                                                                                                                    |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                   |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STEM CHALLENGE      | ITEM                                                                                                                                                               | NUMBER PER GROUP                                                                                                                                                                                                             | I HAVE IT                                                                                                                                                                                                                                         |
| Hibernation Station | aluminum foil                                                                                                                                                      | 2 ft.                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                   |
|                     | paper plate                                                                                                                                                        | 1                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                   |
|                     | insulation scraps such as fleece, flannel, wool, batting, foam, cotton balls, or foam board                                                                        | small tub                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                   |
|                     | scotch tape                                                                                                                                                        | 1 roll                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                   |
|                     | mini cups with paper animals taped to the front                                                                                                                    | 1 set                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                   |
| STANDARDS ALIGNMENT |                                                                                                                                                                    |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                   |
| CHALLENGE           | ENGINEERING                                                                                                                                                        | SCIENCE                                                                                                                                                                                                                      | MATH                                                                                                                                                                                                                                              |
| Hibernation Station | <a href="#">K-2-ETS1 Engineering Design: K-2-ETS1-4, 3-5-ETS1-2, 3-5-ETS1-3</a><br><a href="#">3-5-ETS1 Engineering Design: 3-5-ETS1-4, 3-5-ETS1-2, 3-5-ETS1-3</a> | K-LS1 From Molecules to Organisms: Structures and Processes<br>K-ESS2 Earth's Systems: Structure, Function, and Information Processing<br>3-LS4 Biological Evolution: Unity and Diversity<br>3-ESS3 Earth and Human Activity | <a href="#">MP4: Make sense of problems and persevere in solving them</a><br><a href="#">MP2: Reason abstractly and quantitatively</a><br><a href="#">MP4: Model with mathematics</a><br><a href="#">MP5: Use appropriate tools strategically</a> |

## SUPPLIES CHECKLIST & STANDARDS ALIGNMENT

### CHALLENGE OVERVIEW

### STEM CHALLENGE: Hibernation Station



**OVERVIEW:** This challenge allows students to explore animal adaptations and experiment with various forms of insulation. Students must design a shelter that will hold at least three hibernating "animals" and use the materials provided to make it as insulated as possible. Ensure that you discuss each material that you allow as you introduce the challenge, asking them to share how/where that material might be used. Students may choose to insulate just the outside of the shelter or fill the space inside as well.

**KEY SKILLS:** Animal behaviors/adaptations, Human adaptations, insulating materials and properties

**SUGGESTED READ ALOUDS:** [Hibernation Station by Michelle Meadows](#), [Bear Snores On by Karma Wilson](#), [Animals in Winter by Henrietta Bancroft](#)

**MATERIALS PER GROUP:** 2 ft. of aluminum foil, 1 paper plate, various insulation scraps such as fleece, flannel, wool, batting, foam, foam board, or cotton balls, scotch tape, mini cups with paper animals taped to the front

### KEY SKILLS

### MATERIALS

### SUGGESTED READ ALOUDS

### STEP BY STEP INSTRUCTIONS

### LESSON PLAN

1. Activate students' prior knowledge by asking them to share what they already know about hibernating animals and animals that adapt in different ways during the winter (hibernate, migrate, gather). Ask them to brainstorm different ways that humans adapt to winter conditions (heated/insulated homes, warm clothing, etc.)
2. Share and discuss the videos on "Explore Animals in Winter."
3. Hold a class discussion, using the teacher chart and real world examples to guide student thinking. (You can project the chart on an interactive whiteboard or document camera.) Record their ideas on the teacher chart.
4. Introduce the STEM challenge and permitted materials.
5. Introduce and discuss key vocabulary cards related to the challenge.
6. Have students sketch blueprints of their designs on their recording sheets.
7. Distribute materials and allow students 30-45 minutes with partners or small groups to construct their hibernation shelters and fit animals inside.
8. Hold a whole class closing discussion and reflection, allowing students to share their shelter designs. Use the "Let's Reflect" poster to guide the discussion.