

OIMB GK12 CURRICULUM

2nd grade

1 hour (or broken into two lessons)

Beach Hopper Introduction and Jumping Experiment

Oregon Science Content Standards:

- 2.1 Structure and Function: Living and non-living things vary throughout the natural world.
- 2.1L.1 Compare and contrast characteristics and behaviors of plants and animals and the environments where they live.
- 2.3 Scientific Inquiry: Scientific inquiry is a process used to explore the natural world using evidence from observations.
- 2.3S.1 Observe, measure, and record properties of objects and substances using simple tools to gather data and extend the senses.
- 2.3S.2 Make predictions about living and non-living things and events in the environment based on observed patterns.
- 2.3S.3 Make, describe, and compare observations, and organize recorded data.

Ocean Literacy Essential Principles:

- 5. The ocean supports a great diversity of life and ecosystems

Goals:

- Review the special characteristics of crustaceans.
- Learn about beach hoppers.
- Conduct an experiment.

Concepts:

- Beach hoppers belong to the group crustaceans.
- Crustaceans have a hard exoskeleton and jointed arms and legs.
- Beach hoppers' long back legs are adaptations for living at the beach.
- To run an experiment, scientists come up with a question, design a way to find the answer to the question, make a hypothesis, run the experiment, record results, and decide if they have answered their question.

Materials:

- Live beach hoppers (one per student, or small group of students)
- Small, clear containers to hold the beach hoppers while the students are making observations.
- Sheet of butcher paper with circular target rings drawn at 3 in intervals
- A black and a red marker
- Ruler and tape measure
- Worksheet – Beach Hopper Jump Experiment
- Worksheet - Can You Jump Like a Beach Hopper

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Lesson Plan:

1. Review what it means to be a crustacean (hard exoskeleton and jointed arms and legs).
2. Introduce beach hoppers as a crustacean that lives on sandy beaches. Ask the students what they think beach hoppers eat (they are scavengers, rotting seaweed). Tell the students where beach hoppers live at the beach (in burrows in the sand). Ask the class why beach hoppers would hide in burrows (escape waves and predators, stay cool under the sand). Ask how beach hoppers could escape from predators if they are outside of their burrows (camouflage - same color as the sand, escape - jump).
3. Pass out containers of beach hoppers to students and have the students identify the beach hoppers' eyes, antennae, and long, jumping, jointed legs. Tell the students to look only, not to touch the beach hoppers.
4. Have the students leave their beach hoppers (in the containers) at their seats, and sit on the carpet. We have two kinds of beach hoppers at our beaches. One is small and gray the other is big with long pink antennae. Ask the students which type they think would be able to jump the farthest. Have them tell you their hypotheses, making sure they give reasons for them. Then ask how we could figure out the answer. Usually the students will come up with a jumping contest.
5. Have a large piece of butcher paper and draw a black dot in the middle. Have the class get their containers of beach hoppers, and have them sit around the butcher paper. When it is their turn, have them put their beach hopper on the dot, tell the class what kind of beach hopper they have (gray or pink antennae), and then mark where their beach hopper jumped with a black (for the gray) or red (for the pink) marker. Gently return the beach hopper to its container. After everyone has had their turn, look at the paper and decide as a class which type of beach hopper usually jumped the farthest. Measure how far the beach hoppers jumped. Ask if your experiment answered the question and discuss what else you could have done. Have them fill out the Beach Hopper Jump Experiment Worksheet.
6. This next part can be done as a separate lesson. Ask the students if they think they can jump as far as a beach hopper. Tell them that beach hoppers can jump over 10 times the length of their bodies (from the previous experiment). Have the students fill in the first part of the Can You Jump like a Beach Hopper Worksheet. Line students up and have them jump. Measure how far they jump and how tall they are and have them record this on the board. Calculate how many body lengths they jumped. Fill out the rest of the worksheet and discuss if anyone jumped as many body lengths as a beach hopper. Show the students how far they would jump if they were a beach hopper.
7. Talk about the results and why it would be important for a beach hopper to be able to jump this far.

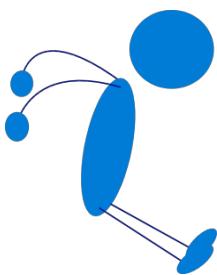
Assessment: worksheets

GK12 Fellows: Ben Groupe, Erin Morgan

Name: _____

2nd Grade Marine Science

JUMP! Experiment



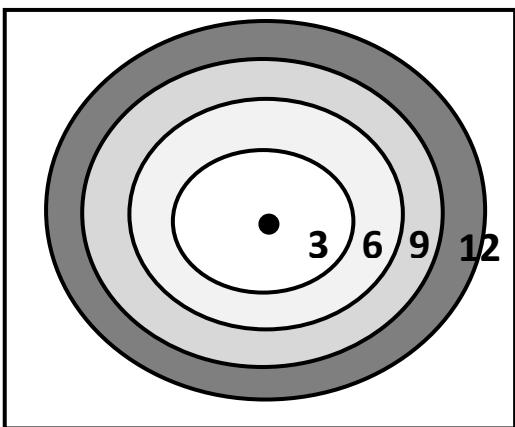
Question

Do large or small beach hoppers jump farther?

Prediction

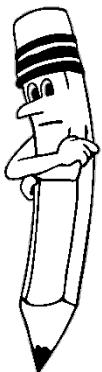
I predict the _____ beach hopper will jump farther.

Our experiment



1. Hold the beach hopper on your finger over the dot in the center.
2. Let the beach hopper jump. How far does it go?
3. Measure (in inches) using the targets. If the hopper is in between two rings, estimate.
4. Repeat with each group member.

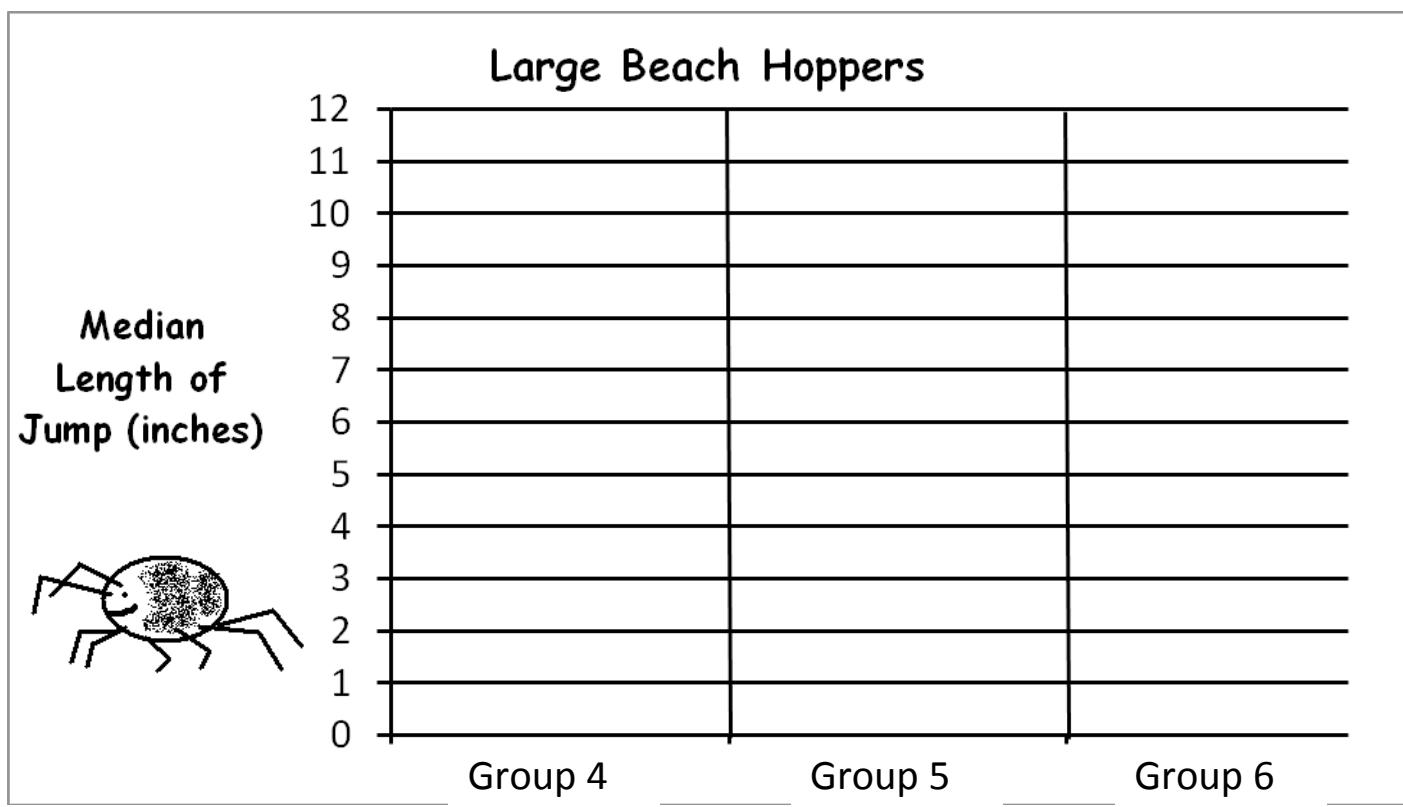
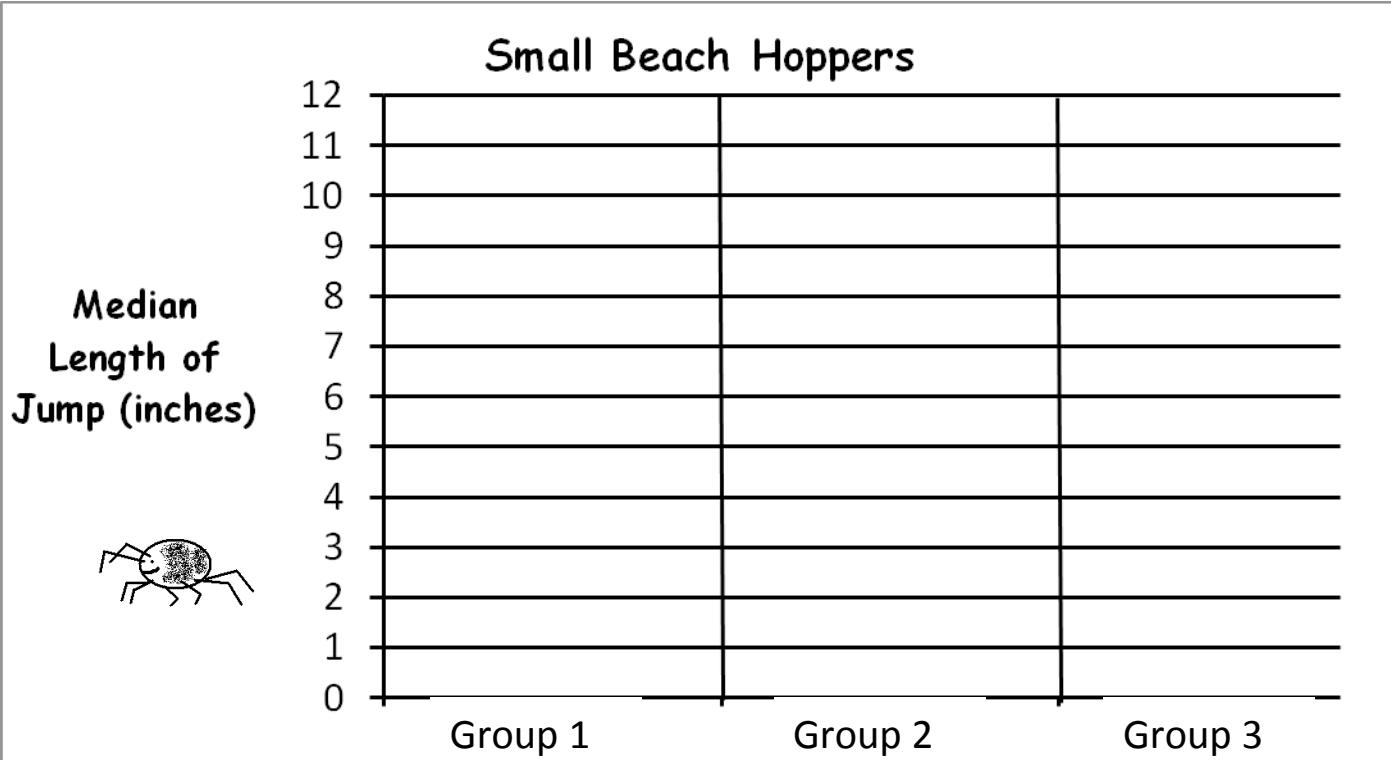
Data (Record here)



Jump Number	Length (inches)
1	
2	
3	
4	
5	

Write your measurements from smallest to largest. Circle the number in the middle (median): _____

Graph



Results and Conclusion

The _____ beach hoppers jumped farthest (_____ inches).

Can you jump like a beach hopper?

Today we are going to try to find out how far you could jump if you jumped like a beach hopper.

If I could jump like a beach hopper, I think I could jump ____ feet.

1. To answer this problem, we need to know how big a beach hopper is. A beach hopper is _____.
2. Now we need to find out how far a beach hopper can jump. A beach hopper can jump _____.
3. A beach hopper can jump _____ times longer than the length of its body.
4. How tall are you? I am _____.
5. If you could jump _____ times the length of your body, just like a beach hopper, how far would that be?
6. How far can you really jump? I can jump _____.
7. Who is a better jumper, you or a beach hopper?

On the back of the page, draw a picture of yourself with a beach hopper's jumping legs!