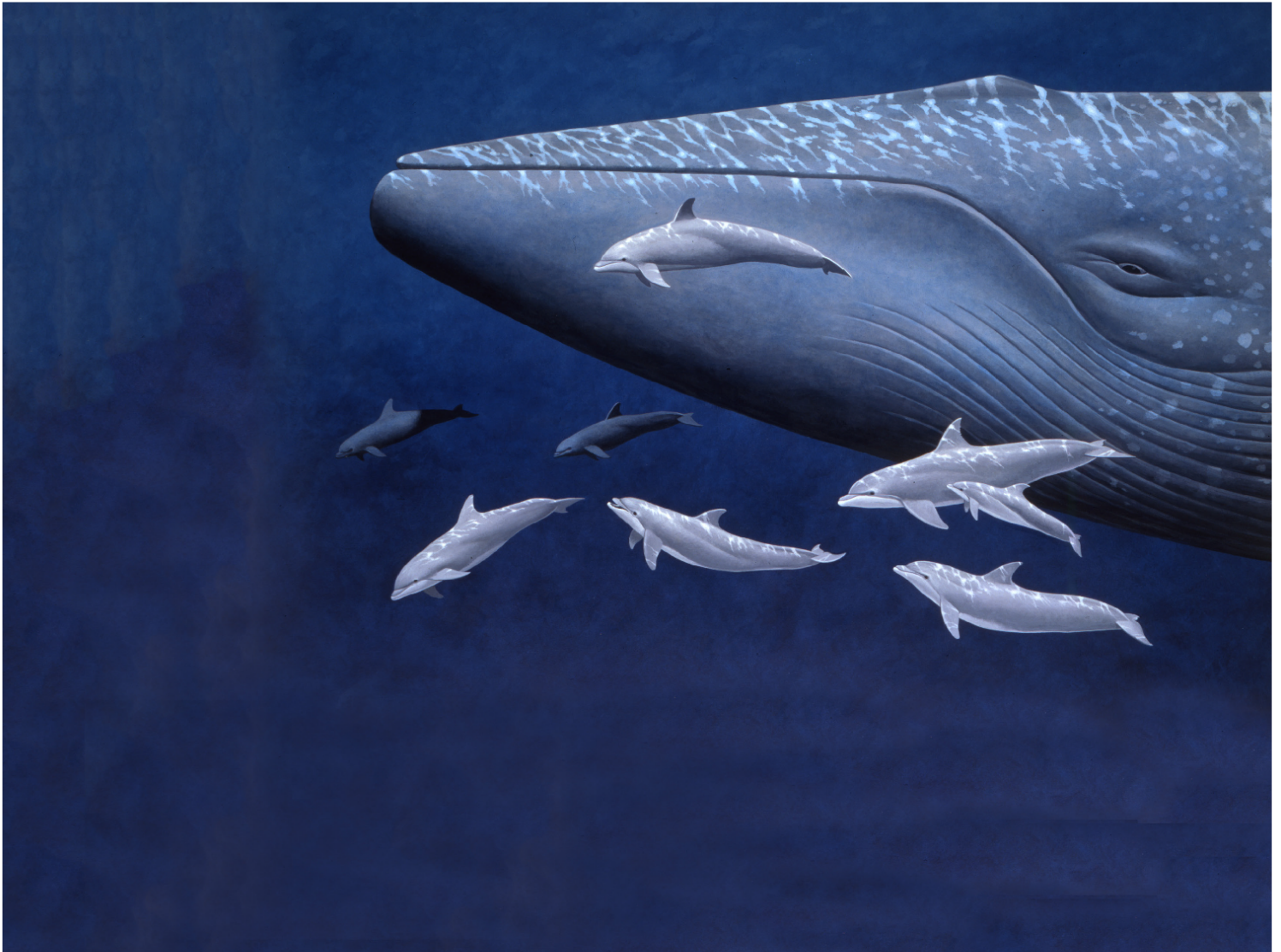


NEW BEDFORD WHALING MUSEUM

WHALES GIANTS OF THE OCEAN

Facilitator's Guide - Lesson 2 How Much Water is on Earth?

Lesson time: 30 minutes



The majority of the surface of our planet is covered by ocean water. In this lesson, students will estimate how much water covers the planet Earth and then compare their results to estimates made by scientists.

WELCOME!

This facilitator's guide will assist you as you lead *Whales: Giants of the Ocean* lesson **How Much Water on Earth?** It includes links to resources that can be used to present the material to students. The guide can be used with the [How Much Water Presentation](#) or on its own. All resources listed can also be found on the New Bedford Whaling Museum website.

GUIDING QUESTION

How much of Earth's surface is covered by water?

BY THE END OF THIS LESSON, STUDENTS WILL BE ABLE TO:

- Explain how much of the Earth's surface is covered by water
- Make and record a prediction using fractions or percentages
- Understand where whales, dolphins, and porpoises live



KEY TERMS

Ocean, Percentage, Estimate



BACKGROUND INFORMATION

The surface of the planet Earth is covered mostly by water. Scientists estimate that approximately 71% of the earth's surface is covered by ocean water. These activities will help students visualize what 71% looks like and provide a way for students to collect data and learn about fractions.



MATERIALS NEEDED

- Inflatable Earth or [paper Earth printout](#)
- Wall map or visual image of the world
- [Globe toss data table](#) or a piece of paper with two columns - one column labeled *water*, one column labeled *land*



ACADEMIC STANDARDS

- NGSS| Cross-Cutting Concepts: Scale, Proportion, and Quantity; Analyzing and Interpreting Data; Using Mathematics and Computational Thinking
- COMMON CORE| **ELA** Literacy.RI.4.4, Literacy SL.4.1, SL.4.2 | **MATH** 4.OA.A.3, 4.NBT.A.2, 4.NBT.A.3, 4.NBT.A.4, 4.NF.A.1, 4.NF.B.3.D, 4.NF.C.5, 4.NF.C.6, 4.NF.C.7
- Mathematical Practices | Make sense of problems and persevere in solving them; Reason abstractly and quantitatively; Construct viable arguments and critique the reasoning of others; Use appropriate tools strategically; Attend to precision

LESSON DIRECTIONS



INTRODUCTION

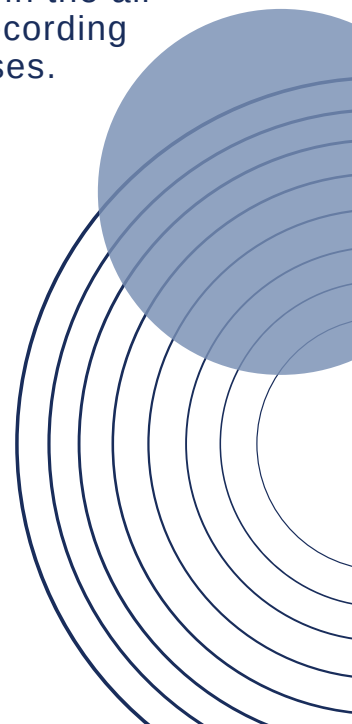
Direct students to look at the shapes and colors on an inflatable globe, the graphics provided in the presentation, or on a wall map. **Ask:**

- What does the blue represent?
- What is represented by the other colors?
- Is there more blue? More of the other colors?



ACTIVITY - GLOBE TOSS ([INSTRUCTIONAL VIDEO](#))

- Have students stand in a small circle. If you are facilitating remotely, students can do the activity with another person in their household or toss the globe up in the air and catch it themselves. If a student does not have access to an inflatable globe, they can create a globe using the paper globe provided.
- Toss the globe to a student (or ask the students to toss the globe in the air) and have them catch it with both hands.
- Have students look at their thumbs on both hands. Are their thumbs touching land? water?
- Ask students to mark where each thumb is touching in the data table. Note: students may report that their thumb is on both Land and Water. Ask them which one it appears to be touching the most. If they insist it is equal, simply mark both Land and Water.
- Have the student toss the globe to another student or up in the air again and repeat the process of tossing, catching, and recording results in the data table for a minimum total of 15-20 tosses.





MAKING CALCULATIONS

Ask students to:

- Total up the number of times their thumbs touched water
- Total up the number of times their thumbs touched land
- Total sum of touches

It's time to make fractions!

- Ask students to write out the number of land touches over the total touches
- Ask students to write out the number of water touches over total touches

Ask:

- Which fraction is bigger?
- Is the bigger fraction greater than one half?
- What if we made 50 tosses for 100 thumb touches, would the bigger fraction be greater than 50%, that is greater than 50/100?



WRAPPING UP

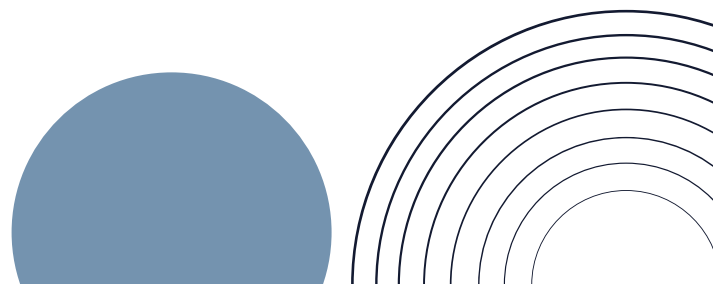
Now that students have estimated how much of Earth's surface is covered by water in fractions, calculate the percentage the land covers. You can also ask the students to express the percentages in decimal notation.

Ask students to compare the estimate they made at the beginning of the activity to the actual percentage.

- Who is closest?
- Why might their estimate have been off?

If students need help visualizing 70%:

- Ask students to hold up 10 fingers.
- Let them know that their 10 fingers represent the whole surface of the planet Earth.
- Next, ask students to fold down 3 fingers.
- Let them know that their 3 fingers represent how much of the Earth is covered by land
- Finally, let students know that their 7 remaining fingers represent the percentage of ocean that covers the surface of the planet Earth.





Have more time?

Try these additional activities to help students think about and visualize how much of the Earth's surface is made up of ocean.

- [Color the world](#)
- [How many oceans are there?](#)

Need Additional Resources? Try These:

- [Jet Propulsion Lab Ocean Lesson](#)
- [Mystery Science - Roles of Water](#)
- [Distribution of Water on Earth](#)



Ready for the next lesson?

[Lesson 3 | What Are Cetaceans?](#)

