

RESOURCE LIBRARY
ACTIVITY : 45 MINS

Size Me Up—to a Blue Whale!

Students measure and use measurement conversions to learn about the size of six ocean animals and compare the animals' sizes to their own.

GRADES

3 - 5

SUBJECTS

Earth Science, Oceanography, Mathematics

CONTENTS

7 Images, 2 PDFs

OVERVIEW

Students measure and use measurement conversions to learn about the size of six ocean animals and compare the animals' sizes to their own.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/size-me-up-to-a-blue-whale-/>

DIRECTIONS

1. Introduce the size and weight of a blue whale.

Project the graphic Extreme Measures on the board. Invite volunteers to describe what the graphic shows. Then read aloud the caption. Ask: *How does comparing a blue whale to an everyday object like a bus help you understand its size?*

2. Have students research and record the length of six ocean organisms.

Distribute a copy of the worksheet *Size Me Up—to Ocean Animals!* to each student. Divide the class into six small groups. Scroll through the organisms in the Marine Organisms photo gallery. Have each group use library resources to research the size (length) and interesting facts about one of the animals on their charts. Then have groups fill in column 2 in the worksheet (metric measurements) and share their findings with the class.

3. Ask students to convert measurements and compare their bodies to the length of marine organisms.

Tell the class that since they have one measurement for each organism's length, they can convert their findings into English, metric system, and/or "Unifix" units using conversions listed in the worksheet key. Explain that a "Unifix" is an unconventional unit of measurement. One Unifix Cube equals one inch; therefore, one foot equals twelve Unifix Cubes. For example, 94 feet is the equivalent of 1,128 Unifix Cubes (94×12). After students have completed their conversions and written them in their charts, have them collect data on themselves. Ask students to use measuring tape to find parts of their bodies that are comparable in length to the length of the organisms they just researched. For example, a student could measure his or her pinky finger at two inches long and note that it is a similar size to an Antarctic krill.

4. Discuss students' discoveries about the marine organisms' lengths.

Ask: How many gulper eels does it take to equal the length of one African pompano? How many viperfish to equal a blue whale? Which animal was about the same length as your body? Encourage students to share facts they have learned about these ocean animals and their sizes. Record the data on the board. Discuss students' findings and results.

5. Have students compare their combined lengths to the length of a blue whale.

Instruct students to lay head to foot in a straight line across the length of the classroom floor. Use a tape measure to determine the length of the group. Write the length on the board. Then ask: *Is our class longer or shorter than a blue whale? What are some other things that compare in size to a blue whale? A particular vehicle? A part of the school building?* Wrap up the activity with a discussion of the following questions: *How does your body compare in size to ocean animals? What does that tell you about the size of the ocean?*

Modification

If you do not have the time or resources for students to complete the research, you can use the provided answer key to provide the organisms' sizes.

Informal Assessment

Use the provided answer key to assess the accuracy of students' conversion calculations.

Assess students' contributions to the class discussion as well.

Extending the Learning

Have students use library resources to research how much krill a blue whale consumes in one day. Discuss the correlation between krill, zooplankton, whales, and ocean oxygen production.

OBJECTIVES

Subjects & Disciplines

Earth Science

- [Oceanography](#)
- Mathematics

Learning Objectives

Students will:

- identify Antarctic krill, deep-sea jellyfish, viperfish, blue whale, gulper eel, and African pompano
- measure animals using standard and non-standard units of measurement
- perform mathematic conversions
- compare the length of marine organisms to the length of their own bodies

Teaching Approach

- Learning-for-use

Teaching Methods

- Cooperative learning
- Discussions
- Experiential learning
- Research

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Learning and Innovation Skills
 - Communication and Collaboration
- Critical Thinking Skills
 - Analyzing
 - Understanding

National Standards, Principles, and Practices

NCTM PRINCIPLES AND STANDARDS FOR SCHOOL MATHEMATICS

- Data Analysis & Probability (3-5) Standard 1:

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them

- Measurement (3-5) Standard 1:

Understand measurable attributes of objects and the units, systems, and processes of measurement

- Measurement (3-5) Standard 2:

Apply appropriate techniques, tools, and formulas to determine measurements

NATIONAL SCIENCE EDUCATION STANDARDS

- (K-4) Standard C-1:

The characteristics of organisms

OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Principle 5a:**

Ocean life ranges in size from the smallest virus to the largest animal that has lived on Earth, the blue whale.

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Measuring tape
- Meter sticks
- Pencils
- Rulers
- Unifix® Cubes

REQUIRED TECHNOLOGY

- Internet Access: Optional
- Tech Setup: 1 computer per classroom, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction
- Small-group instruction

OTHER NOTES

Before starting this activity, gather appropriate library resources on each of the six ocean animals for students to use during Step 3.

BACKGROUND & VOCABULARY

Background Information

Ocean life ranges in size from the smallest microbe to the largest animal that has lived on Earth, the blue whale. You can use standard and non-standard units of measurement to compare animal lengths.

Prior Knowledge

["unit conversions (length)"]

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
animal	<i>noun</i>	organisms that have a well-defined shape and limited growth, can move voluntarily, acquire food and digest it internally, and can respond rapidly to stimuli.
blue whale	<i>noun</i>	species of marine mammal that is the largest animal to have ever lived.
data	<i>plural noun</i>	(singular: datum) information collected during a scientific study.
marine	<i>adjective</i>	having to do with the ocean.
marine organism	<i>noun</i>	living creature with an ocean habitat.
measurement	<i>noun</i>	process of determining length, width, mass (weight), volume, distance or some other quality or size.
metric system	<i>noun</i>	series of standard weights and measurements used by most countries (except the United States, Liberia, and Burma) and throughout the scientific world. Also called the International System of Units or SI.
microbe	<i>noun</i>	tiny organism, usually a bacterium.
ocean	<i>noun</i>	large body of salt water that covers most of the Earth.
organism	<i>noun</i>	living or once-living thing.
relative size	<i>noun</i>	rough measurement using depth perception, as how something far from the viewer looks smaller.

For Further Exploration

Websites

- [National Geographic Animals: Blue Whale](#)
- [Monterey Bay Aquarium: Bloodybelly Comb Jelly](#)
- [National Geographic Animals: Krill](#)
- [Sea and Sky: Creatures of the Deep Sea—Gulper Eel](#)
- [Fishbase: African Pompano](#)

FUNDER

ORACLE



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