

NARWHAL

1. **What do you know about narwhals? What is so specific about them?**
2. **See the first picture and describe the narwhal's body. Focus on shapes. Then report to your partner.**
3. **Which words describing shapes have you used? Make a list.**
4. **Read the text on narwhals. Compare with your answers. Remember the new items.**

The whales have rounded heads and a roughly sausage-shaped profile that tapers at the tail end. Females grow to about 4 meters in length. Males tend to grow about half a meter longer, excluding the length of their tusks. The animals can weigh as much as 1.5 tons.

Narwhals have only two fully developed teeth, and often just the left one is visible. In males and a few females, that tooth grows into the remarkable tusk. It often becomes more than half as long as the rest of the narwhal's body. The other tooth usually stays embedded within the bone.

The elongating tooth spirals to the left, from a whale's-eye view. In the rare cases of double-tusked narwhals, perhaps 1 out of 500 males, the right tooth doesn't grow in a mirror image. Disdaining the symmetry of other animals' teeth, the narwhal grows another left-handed spiral.

<http://www.sciencenews.org/articles/20060325/bob9.asp>

5. **Enlarge your list of 'shapes'.**

6. Put the text aside and formulate answers to the following questions.

- a. If the body tapers at the tail what does it mean?
- b. What is the usual length of narwhal males?
- c. How many teeth do narwhals have?
- d. Do males and females have the same teeth?
- e. What is the shape of the tusk?
- f. Are the teeth of the double-tusked narwhals symmetrical?

7. Scan the article from Science Daily *Scientists solve mystery of the 'unicorn' whale* and decide whether the following statements are true or false.

- a. The narwhal's tusk has a shape like a spiral.
- b. The research was done by a team of researchers from Harvard University.
- c. The tusk is crossed by more than 10 million nerve pathways.
- d. Tusks were studied with ultrasound microspectroscopy.
- e. The researchers believe that the softer inner layers of the tusk may act like a shock absorber.

8. Language in use

- a. In the article find the underlined words and explain what they have in common.

- b. Say in English:

the tusk measures → 2.7 meters

$2 = 2$

$2 \neq 3$

$1 < 2$

$2 > 1$

$1.99999999 \sim 2.0$

9. Look at the picture of a rhinoceros and compare its horn with a narwhal's tusk.



<http://www.ruhooked.com/artman/uploads/narwhal.jpg>



http://www.sciencenews.org/articles/20060325/a7118_3459.jpg

Scientists Solve Mystery Of The 'Unicorn' Whale

<http://www.sciencedaily.com/releases/2005/12/051223120904.htm>

Once the subject of mythical accounts of magical power, the helix-shaped tusk of the narwhal, or “unicorn” whale has proved to be an extraordinary sensory organ, according to a team of researchers from Harvard University, the Smithsonian Institution, and the Paffenbarger Research Center of the American Dental Association Foundation (ADAF) at the National Institute of Standards and Technology (NIST). The team's results were presented Dec. 13 at a technical conference in San Diego.*



Measuring up to 2.7 meters or about 9 feet long, the tusk is traversed by up to 10 million nerve pathways. These pathways connect the outside of the tusk to a central core of nerves leading to the animal's brain. Based on experiments with samples of the tusk as well as with a captured narwhal whale, the research team found that the tusk's sensory system may be capable of detecting changes in

temperature, pressure, salinity and other factors that may help a narwhal survive its Arctic environment.

Working at NIST, Naomi Eidelman, Anthony Giuseppetti and Frederick Eichmiller of the ADAF examined samples of narwhal tusk with both infrared microspectroscopy and scanning electron microscopy. Their work revealed the tusk's unusual structure.

While most mammalian teeth are softer on the inside and harder on the outside, narwhal tusk appears to be made “inside out,” says Eichmiller. The researchers believe the softer outer layers of the tusk may act like a shock absorber to help prevent breaks.

The project was funded by NIST, ADAF, Harvard School of Dental Medicine, National Geographic Society, Sunstar Butler, Smithsonian Institution Center for Arctic Studies, Astro-Med Inc., and the Federal Department of Fisheries and Oceans, Canada.

*M.T. Nweeia, N. Eidelman, F.C. Eichmiller, A.A. Giuseppetti, Y.G. Jung, Y. Zhang, "Hydrodynamic sensor capabilities and structural resilience of the male narwhal tusk," 16th Biennial Conference on the Biology of Marine Mammals, Dec. 13, 2005, San Diego, CA.



The most obvious distinguishing characteristic of the rhinos is a large horn above the nose. The word *rhinoceros* comes from the Greek words *rhino* (nose) and *keros* (horn). Rhinoceros horns, unlike those of other horned mammals, consist of keratin only and lacks a bony core, such as bovine horns.

A rhino has thick, folded skin which looks like heavy armour plating, and a prominent horn which grows over middle of the nose. While most horns have a bony structure, rhino horn is made of a substance rather like human fingernails which grows directly from the skin. Sumatran and black rhinos have two horns.

Sources :

<http://www.mozilla.org/rhino/rhino50.jpg>

http://www.panda.org/news_facts/education/middle_school/species_home/herbivores/rhinoceros_intro/index.cfm

