

***Ocean Literacy Survey
Pre-Class, Spring, 2008***

Please respond to all questions. The attitude questions have no correct answers, and you will not be penalized for incorrect answers on the science questions.

Name:

Educational Demographics:

Year: a) Freshman b) Sophomore c) Junior d) Senior

Are you majoring in Science, Technology, Engineering or Math (STEM)?
a) STEM major b) not STEM major

Sources of Information:

Circle the two or three ways you have learned most about the ocean (before this class):

- a) formal education: a whole course in ocean science
- b) formal education: just touched on ocean science in other courses
- c) informal education: aquariums and museums
- d) informal education: a camp or the Ocean Science Bowl
- e) personal experience: actually going to the beach
- f) friends and family: in conversation
- g) media: TV and movies
- h) media: internet, magazines, newspapers
- i) other: _____

How many times each year do you watch a TV show that teaches about the science of the ocean?

<1 1-3 4-10 10-20 20-50 >50

How many times each year do you visit the ocean beach or shore?

<1 1-3 4-10 10-20 20-50 >50

How many times each year do you visit an aquarium, zoo or museum where you might learn about the ocean?

<1 1-3 4-10 10-20 20-50 >50

Ocean Science Questions

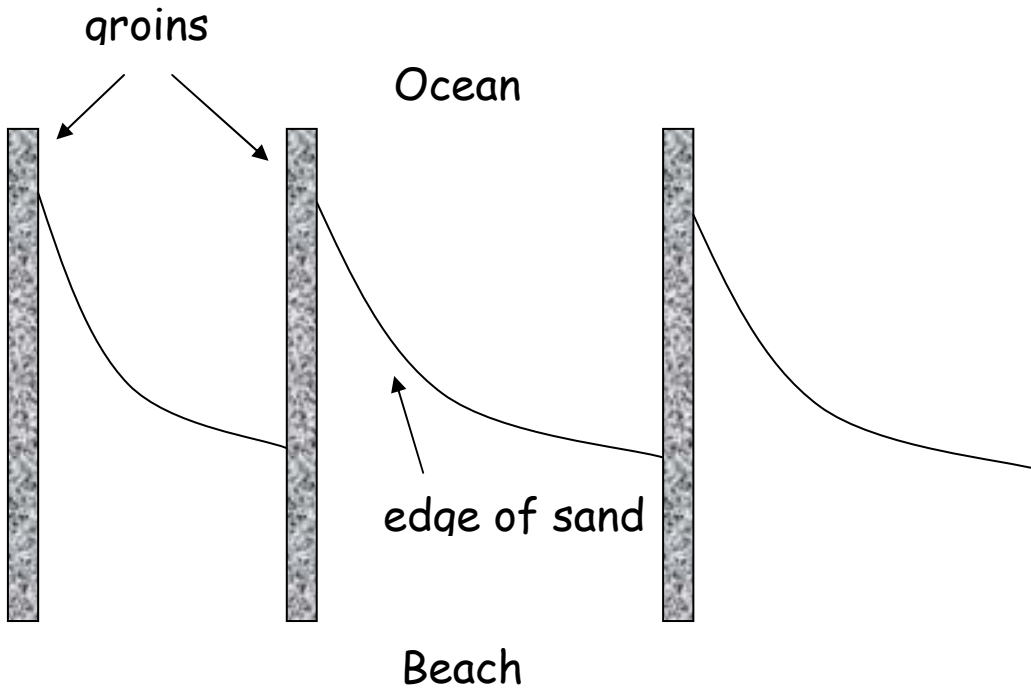
- 1) How deep is the ocean, on average?
- a) 100 yards b) 1 mile c) 4000 meters
 - e) 20,000 leagues f) 6000 kilometers

- 2) Which of these scales is closest to the depth of the ocean?
a) the length of a football field
b) halfway across town
c) the size of the USA
d) as far away as the moon
- 3) Which of these statements best describes the depth of the ocean?
a) the ocean is like a thin skin on the surface of the earth
b) the depth of the ocean is about 1/10 the diameter of the earth
c) the depth of the ocean is about 1/2 the diameter of the earth
- 4) Approximately how much of the Earth is covered with ocean?
a) 30% b) 50% c) 70% d) 90%
- 5) Approximately what fraction of the total water on earth is in the ocean?
a) 4% b) 34% c) 52% d) 67%
e) 72% f) 89% g) 97% h) 99.999 %
- 6) Approximately how much of the Earth's water is fresh and unfrozen (that is, neither ocean nor ice)?
a) > 50% b) 40-50% c) 20-30%
d) 10-20% e) 3% f) 1%
- 7) When your toilet flushes, the water swirls around. Would it swirl in the opposite direction in Australia?
a) yes b) no
- 8) What causes most of the waves in the ocean?
a) tides b) earthquakes c) wind d) tsunamis
- 9) If an earthquake in Chile causes a tsunami, and the tsunami causes coastal flooding in Japan, does that mean that water from Chile travels to Japan?
a) yes b) no
- 10) Where is a greater diversity of living organisms found?
a) on land b) in the ocean c) both equally
- 11) What produces most of the earth's oxygen?
a) forests b) plants in the ocean c) both equally

- 12) Which of the following groups of organisms would be more closely related?
- a) fish, jellyfish, starfish, crayfish
 - b) spider, crab, insect, mouse
 - c) human, cat, dog, manatee
 - d) alligator, shark, bony fish, pelican
- 13) If our planet were without its ocean, but otherwise the same as it is today, would surface temperatures be *more* extreme than they are now (warmer summers and colder winters), or *less* extreme, or what?
- a) more extreme
 - b) less extreme
 - c) about the same as we know today
 - d) impossible to tell without more information
- 14) If all the floating sea-ice on earth melted, about how much would sea level rise?
- a) not at all
 - b) 10 meters
 - c) 100 meters
 - d) 1000 meters
 - d) more than 1000 meters
- 15) Which of these sources puts the *most* oil in the ocean?
- a) oil spills at sea
 - b) leaks from oil refineries and pipelines
 - c) used motor oil that runs into storm drains
- 16) What is the source of most trash on the beach?
- a) municipal garbage dumped at sea
 - b) people playing on the beach
 - c) people smoking on the beach
- 17) The feces of one dog, if left on the beach, has little or no effect on water quality at that beach.
- a) true
 - b) false
- 18) What is the essential nature of barrier islands?
- a) stasis and stability
 - b) motion and change
- 19) Imagine a seawall built to protect a beach house from storms. What is the effect of that wall on the areas at either end of the wall?
- a) increased erosion
 - b) no effect
 - c) decreased erosion

20) In the picture below, which direction is the sand moving?

- a) right to left
- b) left to right
- c) no idea



Essay Question: List 2-5 things you already do, or would be willing to do to protect the ocean. Try to describe the specific impact each action would have on the ocean.

Attitudes about Oceanography

Here are a number of statements that may or may not describe your beliefs about learning oceanography. You are asked to rate each statement by selecting a number between 1 and 5 where the numbers mean the following:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Choose one of the above five choices that best expresses your feeling about the statement. If you don't understand a statement, leave it blank. If you have no strong opinion, choose 3.

- ___ Thinking like a scientist helps me understand the ocean.
- ___ The topics I study in oceanography are not related to each other.
- ___ I cannot learn oceanography if the teacher does not explain things well in class.¹
- ___ I study oceanography to learn knowledge that will be useful in my life outside of school.¹
- ___ Nearly everyone is capable of understanding oceanography if they work at it. ¹
- ___ To understand oceanography I discuss it with friends and other students. ¹
- ___ The subject of oceanography has little relation to what I experience in the real world.
- ___ To understand oceanography, I sometimes think about my personal experiences and relate them to the topic being analyzed. ¹
- ___ When studying oceanography, I relate the important information to what I already know rather than just memorizing it the way it is presented. ¹
- ___ A significant problem in learning oceanography is being able to memorize all the information I need to know. ²
- ___ I can usually make sense of how the ocean works. ²
- ___ Spending a lot of time understanding why the ocean behaves and reacts the way it does is a waste of time. ²
- ___ Learning oceanography changes my ideas about how the world works. ²
- ___ Reasoning skills used to understand oceanography can be helpful to me in my everyday life. ²

¹ CLASS

² CLASS - Geosciences

Attitudes about Ocean Stewardship

Here are a number of statements that may or may not describe your beliefs about protecting the ocean. You are asked to rate each statement by selecting a number between 1 and 5 where the numbers mean the following:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Choose one of the above five choices that best expresses your feeling about the statement. If you don't understand a statement, leave it blank. If you have no strong opinion, choose 3.

- ___ My actions can have a significant effect on the health of oceans and coastal areas.
- ___ I have a personal responsibility to work for the health of the oceans and coastal areas.
- ___ I know some specific things I could do to help the ocean.
- ___ I am familiar with the environmental issues facing the coastal areas in my home state
- ___ I am familiar with the issues facing the global ocean.
- ___ I have enough background knowledge to write a substantive letter to my congressional representative about an issue affecting the ocean.
- ___ The oceans and coastal regions overall are so vast and healthy that they can continue to absorb pollution and other kinds of man-made stresses for the foreseeable future.³
- ___ Human-made stresses are endangering coastal regions and the ocean's ability to sustain itself and may well be leading to long-term damage and serious problems.³
- ___ The health of the oceans is essential to human survival.⁴
- ___ We do not need to worry about the health of the oceans, because we will develop new technologies to keep them clean.⁴
- ___ What I do in my life doesn't impact the ocean at all.⁴
- ___ Business and industry should be responsible for protecting marine environments.⁵
- ___ Government should be responsible for protecting marine environments.⁵
- ___ Individual citizens should be responsible for protecting marine environments.⁵
- ___ Agriculture and forestry should be responsible for protecting marine environments.⁵

³ AAAS Public Opinion Survey

⁴ Ocean Project Public Opinion Survey

⁵ Based on questions used for Minnesota Environmental Literacy Report Card

Listed below are statements about the relationship between humans and environment⁶. For each one, please indicate your agreement using the following scale: 5 = strongly agree, 4 = agree, 3 = neutral or unsure, 2 = disagree, 1 = strongly disagree

- ___ We are approaching the limit of the number of people the earth can support.
- ___ Humans have the right to modify the natural environment to suit their needs.
- ___ When humans interfere with nature, it often produces disastrous consequences.
- ___ Human ingenuity will ensure that we do NOT make the earth unlivable.
- ___ Humans are severely abusing the environment.
- ___ The earth has plenty of natural resources if we just learn how to develop them.
- ___ Plants and animals have as much right as humans to exist.
- ___ The balance of nature is strong enough to cope with the impact of modern industrial nations.
- ___ Despite our special abilities humans are still subject to the laws of nature.
- ___ The so-called "ecological crisis" facing humankind has been greatly exaggerated.
- ___ The earth is like a spaceship with very limited room and resources.
- ___ Humans were meant to rule over the rest of nature.
- ___ The balance of nature is very delicate and easily upset.
- ___ Humans will eventually learn enough about how nature works to be able to control it.
- ___ If things continue on their present course, we will soon experience a major ecological catastrophe.

⁶ New Ecological Paradigm: Dunlap *et al*, Journal of Social Issues, 56(3), 448-442, 2000.