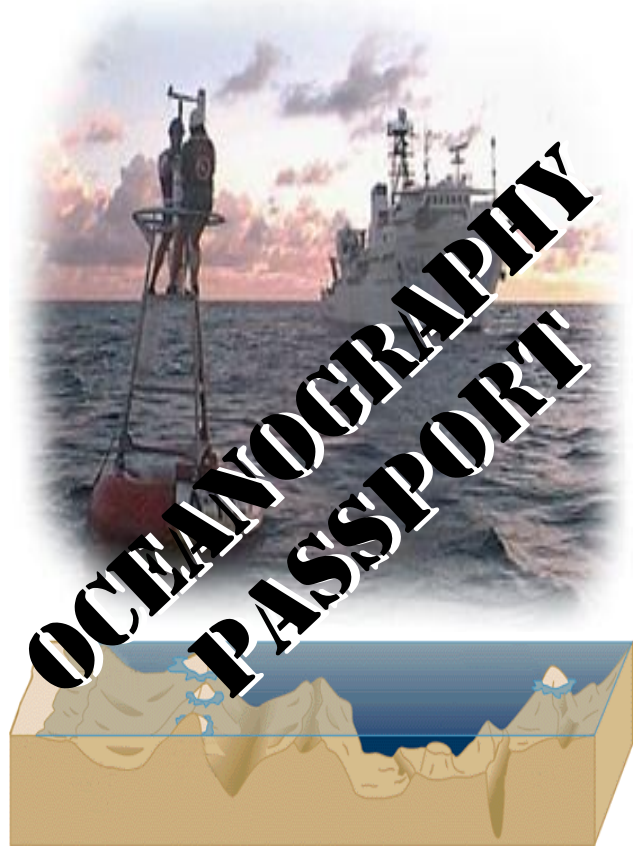


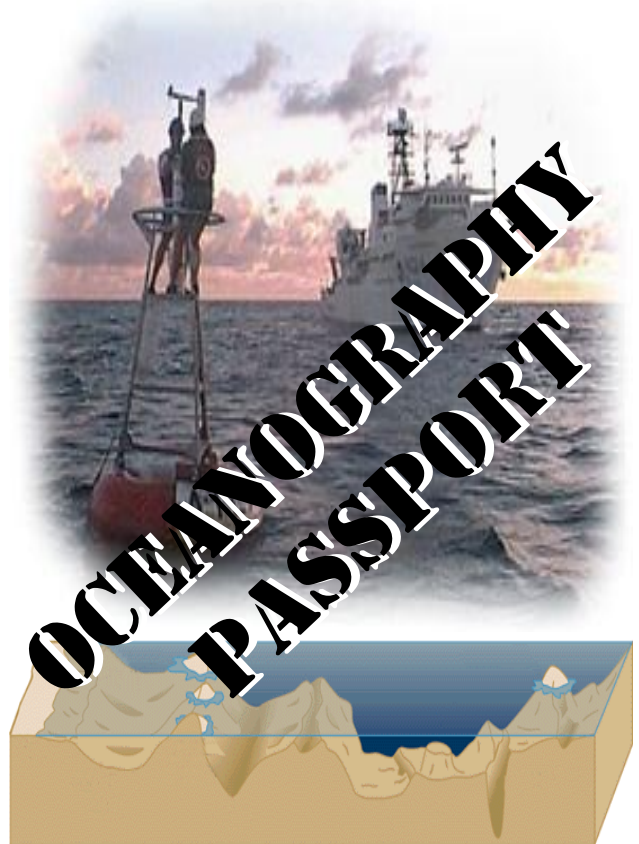
Visit the "Scouting with Mr. R." web site at [www.relia.net/~thedane/scouting.html](http://www.relia.net/~thedane/scouting.html)

- 1
- 4
- 2
- 3



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## BRANCHES (1)

List four (4) branches of oceanography:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_

Describe at least five (5) reasons why it is important for people to learn about the oceans.

- 1) \_\_\_\_\_  
\_\_\_\_\_
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_
- 4) \_\_\_\_\_  
\_\_\_\_\_
- 5) \_\_\_\_\_  
\_\_\_\_\_

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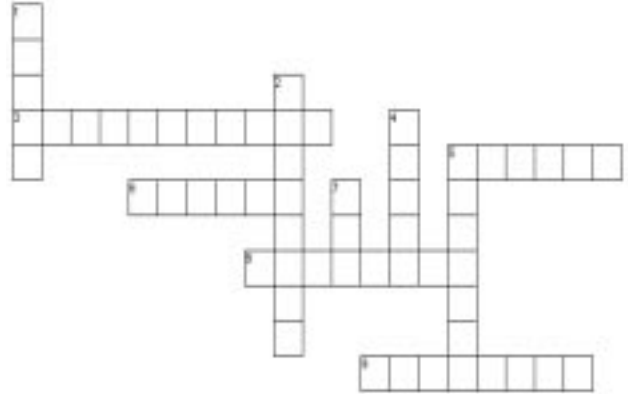
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\_\_\_\_\_

## OCEANOGRAPHY



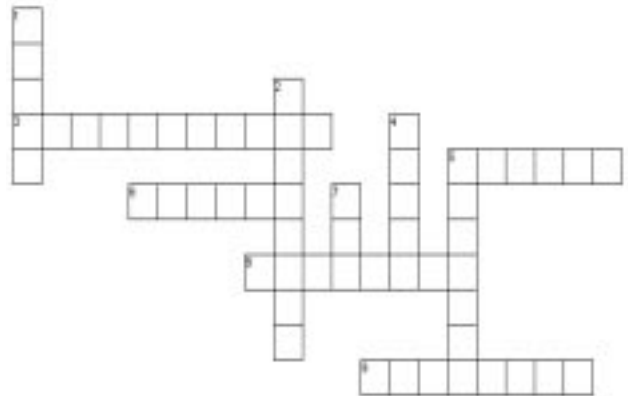
Across

3. When water changes from liquid to gaseous form.
5. Very deep cuts in the ocean floor.
6. A disk used to measure water's turbidity.
8. Small life forms that float on water currents.
9. A measure of how much salt is in water.

Down

1. 71% of the earth is covered by this.
2. This effect causes the currents to curve.
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**UNDERWATER SEARCH (9)**

Describe four methods that marine scientists use to investigate the ocean, underlying geology, and organisms living in the water.

- 1) \_\_\_\_\_  
\_\_\_\_\_
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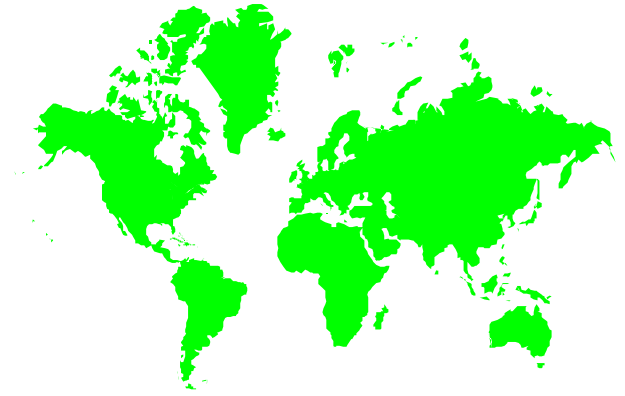
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\_\_\_\_\_
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\_\_\_\_\_
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\_\_\_\_\_

**SEAWATER & CURRENTS (2)**

Define and describe how the following properties of seawater are measured by a physical oceanographer:

- salinity \_\_\_\_\_  
\_\_\_\_\_
- temperature \_\_\_\_\_  
\_\_\_\_\_
- density \_\_\_\_\_  
\_\_\_\_\_

Draw arrows to represent circulation in the ocean.

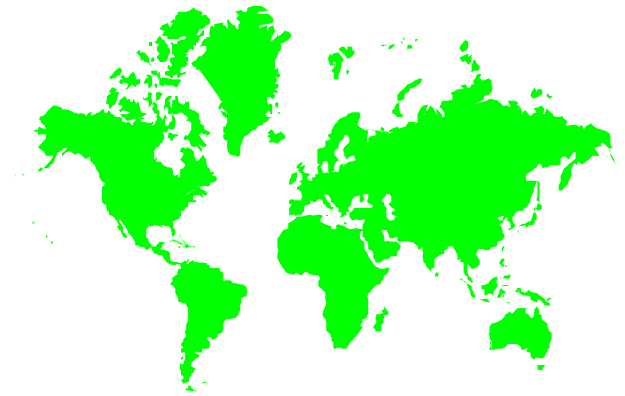


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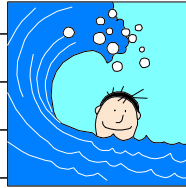
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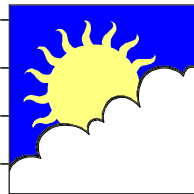
Discuss the circulation of the ocean (currents, Coriolis effect, Sun's energy, winds, etc.).

Handwriting lines for the first section.



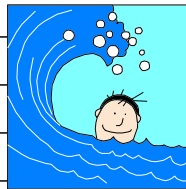
Describe the effects of the oceans on weather and climate.

Handwriting lines for the second section.



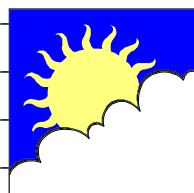
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Handwriting lines for the second section.



## REPORT (8)

Do **ONE** of the following:

- a. Write a 500-word report on a book about oceanography approved by your counselor.
- b. Visit one of the following: (1) an oceanographic research ship, or (2) an oceanographic institute. Write a 500-word report about your visit.
- c. Explain to your troop in a five minute prepared speech "Why Oceanography Is Important" or describe "Career Opportunities in Oceanography." (Before making your speech, show your speech outline to your counselor for approval.)



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□ d. Make a model showing the inshore sediment movement by littoral currents, tidal movement, and wave action. Include such formations as high and low waterlines, low tide terrace, berm, and coastal cliffs. Show how the offshore bars are built up and torn down.

□ e. Make a wave generator. Show reflection and refraction of waves. Show how groins, jetties, and breakwaters affect these patterns.

□ f. Track and monitor satellite images available on the Internet for a specific location for three weeks. Describe what you have learned to your counselor.



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## OCEAN WAVES (3)

A \_\_\_\_\_ is a solitary wave, formed when a rising tide enters a shallow, gently sloping and narrowing river from a broad estuary.

A \_\_\_\_\_ is a swell or crest of surface ocean water (often destructive) created by the tides.

A \_\_\_\_\_ is a series of waves generated by an impulsive disturbance (underwater seismic event) in the ocean.

A \_\_\_\_\_ happens when the center of a hurricane approaches the coastline, the winds really pick up and push the ocean onto the coastline.

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- 2-tsunami
- 3-storm surge
- 4-tidal wave



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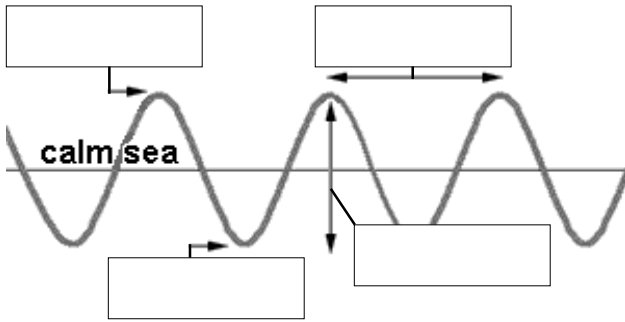
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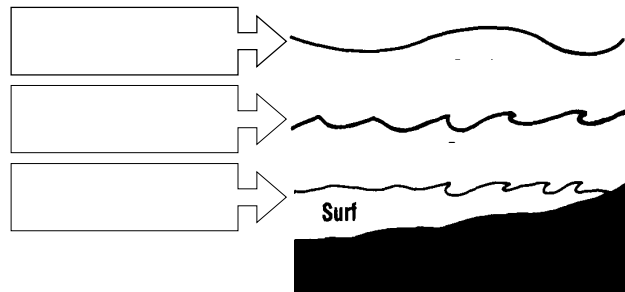
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Describe and label the characteristics of ocean waves.



Explain the difference between sea, swell, and surf.



How are breakers formed? \_\_\_\_\_

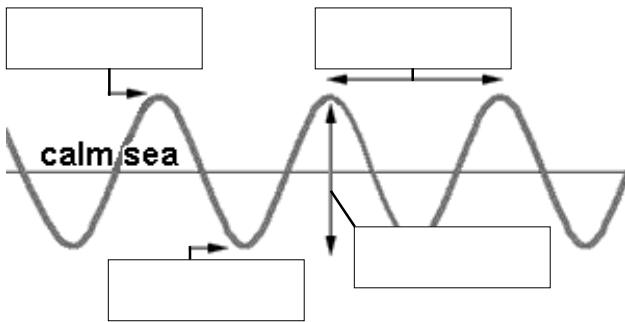
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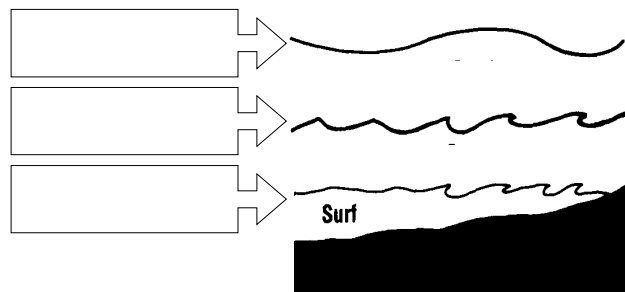
\_\_\_\_\_

	Surface Temp.	Midwater Temp.	Bottom Temp.	Turbidity	Air Temp.	Cloud Cover	Water Roughness
Mon. 9am							
12pm							
4pm							
8pm							
Tues. 9am							
12pm							
4pm							
8pm							
Wednes. 9am							
12pm							
4pm							
8pm							
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12pm							
4pm							
8pm							
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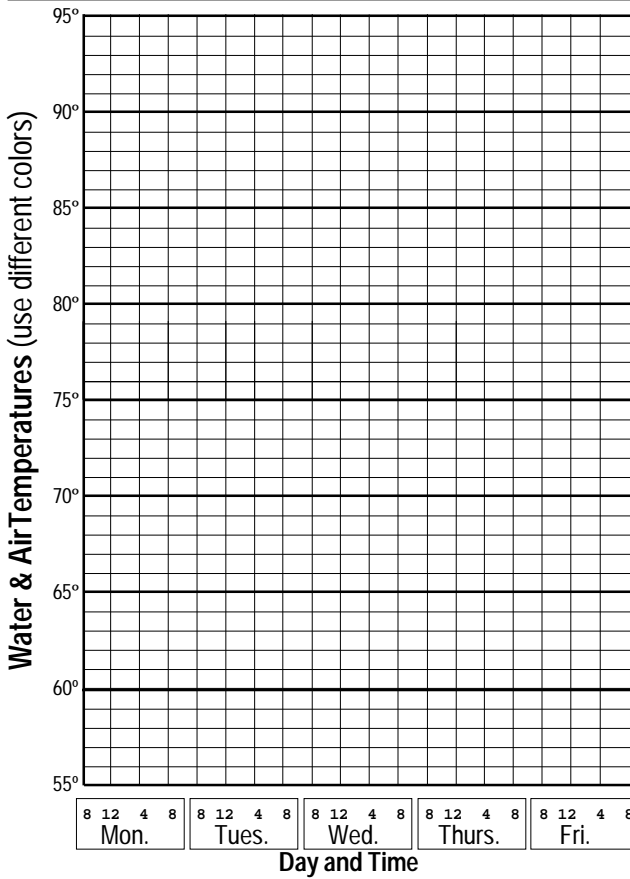
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## FACTS ABOUT THE OCEAN

**Area:** about 140 million square miles, or nearly 71% of the Earth's surface.

**Average Depth:** 12,200 feet.

**Deepest point:** 36,198 feet in the Mariana Trench in the western Pacific.

**Mountains:** The ocean ridges form a great mountain range, almost 40,000 miles long, that weaves its way through all the major oceans.

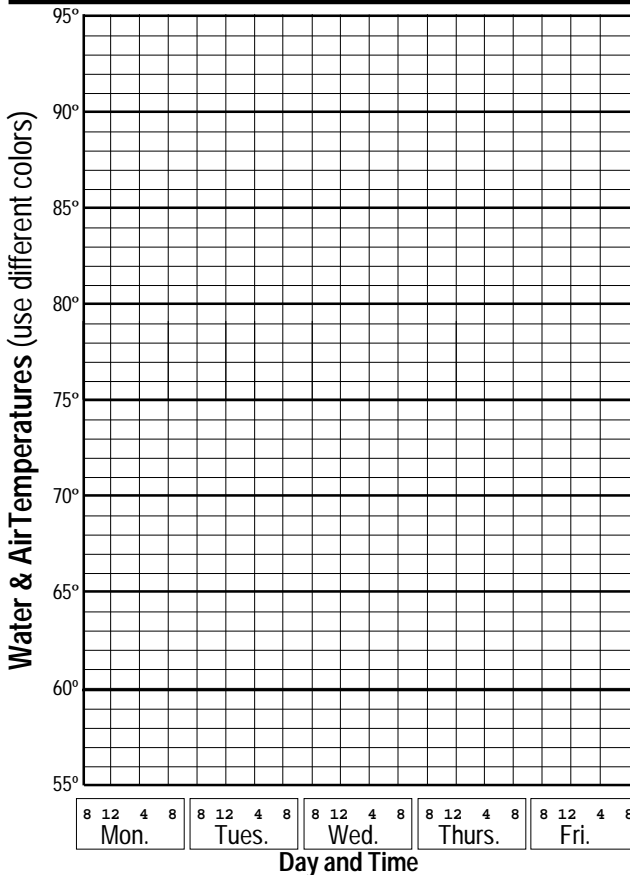


**The Highest Mountain** in the world is:

located in Hawaii. It rises \_\_\_\_\_ feet from its base on the ocean floor (only 13,680 feet are above sea level).

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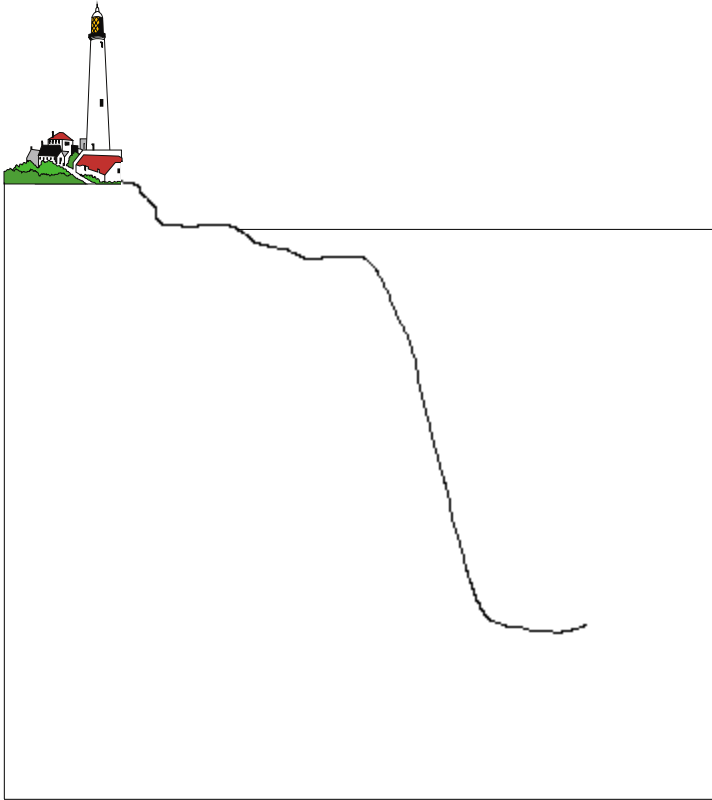
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# OCEAN FLOOR (4)



c) Measure the water temperature at the surface, midwater, and bottom of a body of water four times daily for five consecutive days. You may measure depth with a rock tied to a line. Make a Secchi disk to measure turbidity (how much suspended sedimentation is in the water). Measure the air temperature. Note the cloud cover and roughness of the water. Keep track of your data on the chart on page 19. At the end of the experient, show your findings (air and water temperature, turbidity) on the graph on page 18.

How did the water temperature change with air temperature?

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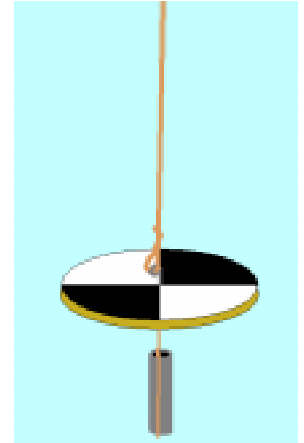
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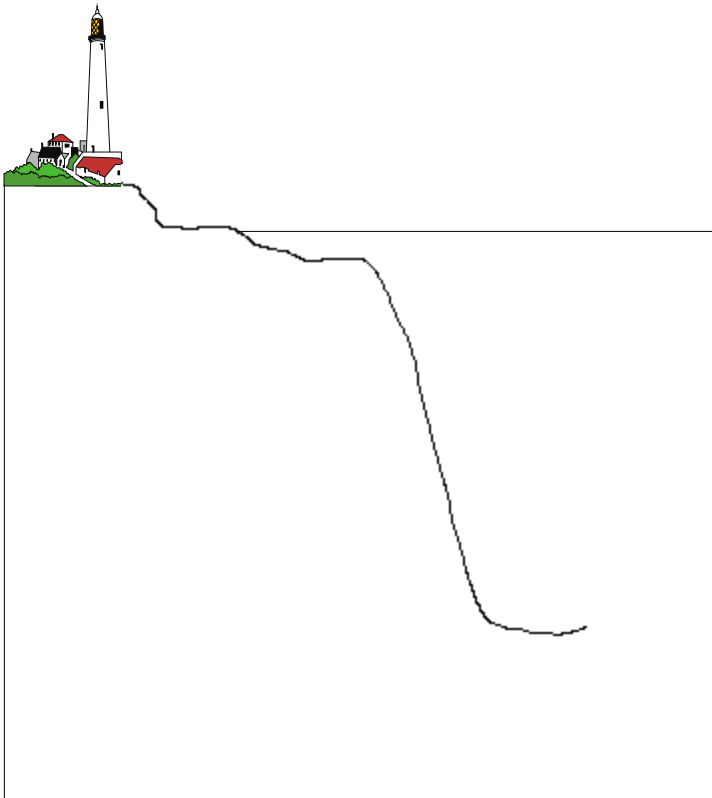
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SEE: <http://www.hwr.arizona.edu/globe/Hydro/G3/secchi.htm>

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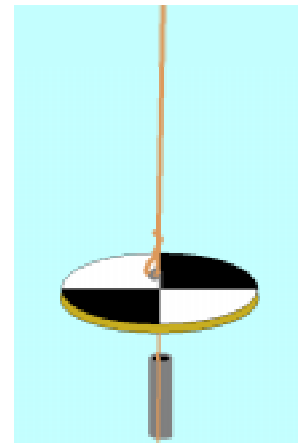
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## SEAWATER PROPERTIES (5)

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SALTS

GASES

NUTRIENTS

List the main salts, gases, and nutrients in sea water.

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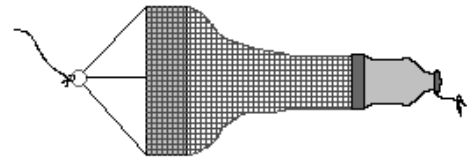
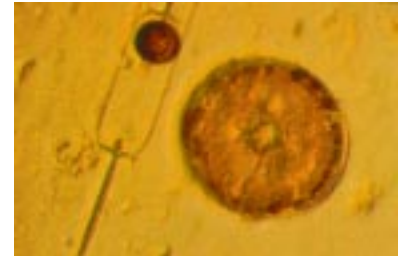
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## EXPERIMENTS (7)

Do **ONE** of the following:

a) Make a plankton net\*. Tow the net by a dock, wade with it, hold it in a current, or tow it from a rowboat. Do this for about 20 minutes. Save the sample. Examine it under a microscope or high-power glass. Identify the three most common types of plankton in the sample.

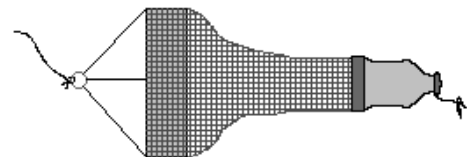
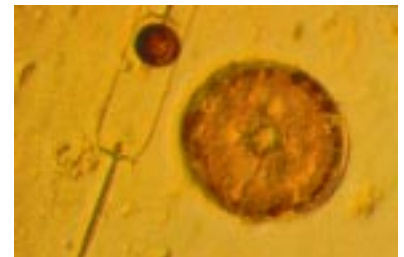


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Describe some of the biologically important properties of seawater.

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Describe the place and importance of phytoplankton in the oceanic food chain.

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Describe some important properties of water:

\_\_\_\_\_

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Tell how the animals and plants of the ocean affect the chemical composition of seawater.

\_\_\_\_\_

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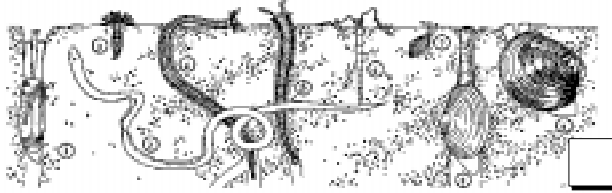
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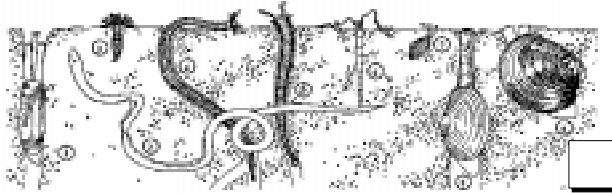
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## OCEAN LIFE (7)



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### (A) Plankton

(from Greek: wandering):

Often called \_\_\_\_\_.

This group of plants and animals spend most of their lives drifting in the water. They lack of strong swimming ability. Generally best viewed with the aid of a microscope. Without the phytoplankton capturing energy from the sun and converting it to plant material, life could not exist in the oceans. Animal plankton (zooplankton) eat the phytoplankton.

### (B) Nekton:

Often called \_\_\_\_\_.

Fish are one of the prominent group of nekton. However, there are other nekton including marine mammals, marine reptiles, cephalopods, some crustaceans and sea birds.

### (C) Benthos:

Often called \_\_\_\_\_.

these invertebrate animals live on or in the bottom sediments of the ocean. It includes organisms like clams, oysters, small shrimp-like crustaceans, and the blood and clam worms.

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