Welcome to the Supercharged Science

Ocean Science and Marine Biology Teleclass Webinar!

You can fill out this worksheet as we go along to get the most out of time together, or you can use it as a review exercise at the end of the class to see where your strengths are.

What we're going to cover today:

- Ocean floor
- Ocean zones
- Temperature, pressure
- Waves, currents, tides
- Salinity
- Photosynthesis and chemosynthesis
- Food chain/webs
- Phytoplankton
- Bioluminescence
- Marine plants and animals
- Exploration techniques
- Observing techniques

Write down two things you really want to know about marine biology or oceanography:

1._____

2. _____

Do this NOW: Write down WHY you want to learn about the things you mentioned above. What will it give you, or provide you with, or make possible for you if you now understand these things that you wanted to learn?

_____

_____

IMPORTANT: During class, you can either fill out the worksheet, OR if that's too stressful or a hassle, just set it aside and fill it out after class is over so you can enjoy watching the class.

Answer key is on the last page, so put it in a place where you won't be tempted to peek at the answers until after you've given it your best shot.

Material List:

- Cup of water
- Salt
- Hard boiled egg
- Paperclip
- Rubber band
- 2 glow sticks (same color)
- Ice water
- Warm-hot water (not too hot)
- Sample of pond water (make your own by filling a cup of water with grass clippings, then let it sit on the windowsill for a few days)
- Gummy bear (one red and one green)
- Red laser pointer (inexpensive “Dollar Store” keychain type are perfect)
- Needle-nose pliers (or something you can bend a paperclip with)

During the Lesson:

You can look over the worksheet so you know what to listen for as you go through the class with me, or you can go through it along with me during class. OR… flip it over and forget about it and just enjoy the class. When class is over, flip it back over and fill it out and be amazed at how much you've picked up and learned!

1. Marine Biology studies life in _____ environments.

2. Oceanographers study _____, currents, waves, seafloor geology, chemical composition, sea _____ and animals.

3. For every _____meters you descend, _____atmosphere of pressure is added.

4. There are three main _____ of the ocean.

5. The ocean floor has _____ and _____ just like on land.

6. Hydrothermal _____are surrounded by thriving communities of organisms that _____ from the vents for chemosynthesis.

7. _____ in the ocean comes from _____ on land.

8. Bioluminescence is the production and emission of

   _____by a living organism.

9. Light allows organisms _____ and it also provides

   _____.

10. Red light has the _____ wavelength and the

    _____amount of energy in the visible light spectrum.

11. Primary_____are organisms that can create_____

    _____for the food chain.

12. Phytoplankton is a tiny organism that lives in _____.

    Cyanobacteria generate over _____ of the oxygen we breathe.

13. _____ use chemosynthesis to make organic matter in total

    _____.

14. Cephalopods _____their environment by matching color,

    texture, brightness, and pattern.

15. What I didn't know about marine biology and oceanography until class today was:

    _____

    _____

Vocabulary Words:

Aphotic Zone: the depths beyond which less than 1% of sunlight penetrates.

Bioluminescence: The ability to glow in the dark; production of visible light by living organisms

Chemosynthesis: similar process to photosynthesis but uses chemical energy instead of light energy to make food from the carbon in carbon dioxide.

Cephalopod: marine mollusk characterized by well-developed head and eyes and sucker-bearing tentacles

Crustacean: mainly aquatic arthropod usually having a segmented body

Disphotic Zone: known as the twilight layer, this zone has only a small amount of light.

Echolocation: determining the location of objects by reflected sound

Invertebrate: any animal lacking a backbone or notochord

Mollusk: invertebrate with a soft unsegmented body usually in a shell

Photic Zone: is the depth of the water nearest to the surface where enough light penetrates to allow photosynthesis.

Photosynthesis: synthesis of compounds in plants aided by radiant energy

Phytoplankton: Single celled microscopic organisms that are found scattered throughout the photic zone

Pressure: the continuous physical force exerted on or against an object by something in contact with it.

Salinity: The total amount of dissolved salts in seawater. Measured in parts per thousand

Symbiosis: the relation between two interdependent species of organisms

Temperature: the degree or intensity of heat present in a substance or object, especially as expressed according to a comparative scale and shown by a thermometer or perceived by touch.

Answer Key:

1. Marine Biology studies life in salt water environments.
2. Oceanographers study tides, currents, waves, seafloor geology, chemical composition, sea plants and animals.
3. For every 10 m you descend, 1 atmosphere of pressure is added.
4. There are three main zones of the ocean.
5. The ocean floor has canyons and seamounts just like on land.
6. Hydrothermal vents are surrounded by thriving communities of organisms that use energy from the vents for chemosynthesis.
7. Salt in the ocean comes from rocks on land.
8. Bioluminescence is the production and emission of light by a living organism.
9. Light allows organisms to see and it also provides energy.
10. Red light has the longest wavelength and the least amount of energy in the visible light spectrum.
11. Primary producers are organisms that can create new organic material for the food chain.
12. Phytoplankton is a tiny organism that lives in water. Cyanobacteria generate over 50% of the oxygen we breathe.
13. Bacteria use chemosynthesis to make organic matter in total darkness.
14. Cephalopods mimic their environment by matching color, texture, brightness, and pattern.