

Troop 84

Sandy Hook Oceanography Merit Badge

Pre-Trip Packet

WHO

For all scouts who signed up for the Troop's Trip to Sandy Hook on September 25-26 and want to earn the Oceanography Merit Badge.

WHAT

Scouts must complete this packet covering requirements 1, 4 and 7a. before attending the merit badge program at Sandy Hook.

To complete this packet, please search the internet, visit your local library, or see the Oceanography Merit Badge Booklet.

WHEN

Please hand in the completed packet (all 6 pages plus the plankton net) to the Troop's secretaries on September 13, 2010. Be sure to put your name on everything you hand in.

SCOUT'S NAME: _____

Our Ocean

We may call it Earth, but ours is truly an ocean planet. The vast oceans cover most of the earth's surface and reach depths of several miles, encompassing a realm that is, if anything, richer than the land. Hidden beneath the waves are extraordinary natural wonders, many of which are still undiscovered.



The Earth from space.

If you look down at our planet from outer space, most of what you see is water; 71% of the planet's surface is covered by ocean.

The ocean wraps the globe and is divided into four major regions: the Atlantic Ocean, the Pacific Ocean, the Indian Ocean and the Arctic Ocean. Some scientists consider the waters around Antarctica to be a separate, fifth ocean as well. These oceans, although distinct in some ways, are all interconnected; the same water is circulated throughout them all.

Boy Scout Oceanography Merit Badge Requirement #1

A. Oceanography is interdisciplinary; it combines all sciences with the study of the ocean. Name the four main branches of oceanography:

- 1.
- 2.
- 3.
- 4.

B. Why study the oceans? Because scientists know more about outer-space than they do about our ocean here on earth! There are many, many important reasons to study the ocean. Describe at least 5 reasons why it is important for people to learn about the ocean. One of the 5 reasons should describe how studying the ocean could impact you directly.

Boy Scout Oceanography Merit Badge Requirement #4

Directions

First pre-read and research the questions and highlighted words on this worksheet. As you follow each question you will, on the back of this worksheet, draw, label, and color a cross section (profile) of the ocean floor using each highlighted vocabulary word and answer the question in the space provided.

1. Start with a **continent** in your drawing. This is the beach, where the ocean meets the land. You may already know what a continent is. Can you name three continents?

_____ / _____
_____.

2. Next create the **continental shelf**. It is still pretty shallow and flat. It may continue for 30 miles out from the shore. What is a way that you can remember what and where a continental shelf is?

3. A **continental slope** comes right after the continental shelf. It slopes down deeper and deeper. What is a way you can remember what and where a continental slope is?

4. Now you are entering the deep ocean basin or what is called the abyss. There are many features on the deep ocean floor just as there are many different features on land (mountains, valleys, hills, plateaus, etc.). As you create each feature, try to think of a way you can remember what it is. Also, tell what landform it reminds you of. Anything else you think is important to remember about each feature, you should write down. Ask your teammates for help on what to write.

Seamount: Most seamounts began life as volcanoes formed over hot spots in the ocean floor. After the crust moves off the hot spot, the volcanic activity stops. Seamounts are usually 25 miles (40 kilometers) in diameter and can be 10,000 to 15,000 feet (3000 to 4500 meters) tall. In fact, some are so tall that their peaks pierce the ocean surface forming a volcanic island. How can you remember it, is there a landform that it reminds you of?

Volcanic Island Arch or Volcanic Island Chain: This happens when several seamounts occur together and stick through the surface of the water creating a group of islands. Hawaii is a volcanic island arch. How can you remember it, what landform does it remind you of?

Mid Ocean Ridge: The mid-ocean ridge is two chains of mountains separated by a large depression that is the Rift Valley, that forms at a spreading center (or where two plates are drifting apart). The mountain ranges can have peaks as high as 12,000 feet (2,500 meters) and some even reach above the ocean's surface. Iceland, along the mid-Atlantic Ridge, is an example of this. How can you remember it, what land form does it remind you of?

Abyssal Plain: It is a very flat deep expanse of the ocean floor. How can you remember it, what land form does it remind you of?

Guyot: These are seamounts whose peaks have eroded and become flat. How can you remember it, what land form does it remind you of?

Ocean Trench: These are the deepest areas of the ocean. The deepest, the Mariana Trench is more than 35,000 feet deep. How can you remember it, what landform does it remind you of? (Hint- it's found in the Himalayas)

How does it compare to this landform? _____

Submarine Canyon: The continental shelf and slope are often cut by deep valleys running perpendicular to the shoreline. These canyons are created by powerful currents which scour the canyon out of the surrounding sediment. How can you remember it, what landform does it remind you of? (Hint it's found in Arizona)

Ocean floor worksheet adapted from:
<http://t3.preservice.org/T0300126/topolessonplan.html>

How to Construct a Plankton Net

Materials:

- One two-liter soda bottle with cap
- One Nylon knee high stocking
- Nylon or other heavy-duty string (about 9 feet)
- Duct Tape
- Scissors
- Hole Puncher
- Small Collection Jar (baby food jars are fine)

After you have your material assembled:

Remove cap from soda bottle and set aside and flatten out soda bottle as much as possible.

1. Cut the soda bottle at 2 places to have 3 separate parts. (see figure 1)
 - a. The first cut should be made about 3 inches down from the neck of the bottle.
 - b. The second should be made about 4 inches down from the first cut.
 - c. Recycle the bottom part of the bottle.
2. Cut small hole at toe of nylon stocking.
3. Slide top portion of bottle through stocking so neck of bottle is sticking through hole in toe. Pull till snug then tape in place. Attach middle of bottle to other end of stocking. (see figure 2)
4. Punch 3 holes evenly spaced apart around the open end (the end not attached to the nylon stocking) of the middle portion of the soda bottle. (see figure 2)
5. Cut string into 3 three-foot pieces; attach each string to a hole.
6. Tie the 3 pieces of string together at the end to make a tow line. (see figure 2)
7. Replace cap onto neck of your new plankton net.
8. Wade through water with open end of the plankton net moving through the surface water, be careful **NOT** to drag on the bottom of the seafloor and fill with sand. Plankton will collect on the nylon stocking of your plankton net; squeeze down while in the water to collect into capped neck of the bottle.
9. Remove cap to pour collected sample into collection jar.

