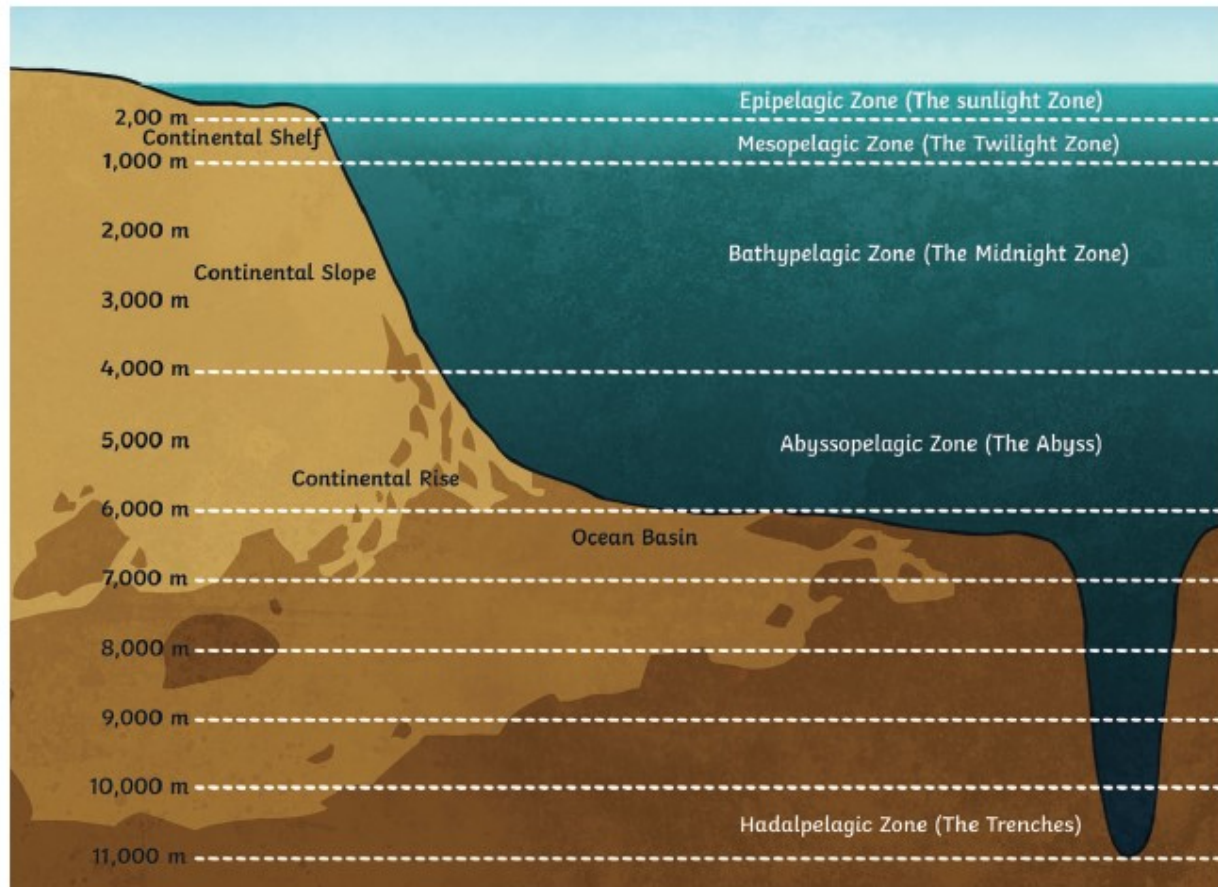


Layers of the Ocean



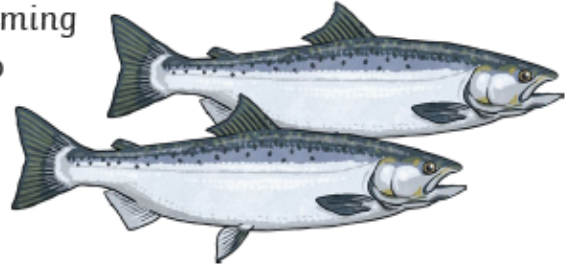
Making up 362 million km² of the Earth's surface, oceans cover two thirds of our Earth. There are five oceans (the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Antarctic or Southern Ocean and the Arctic Ocean) which are not separated and all flow into each other. The Pacific Ocean is the largest and deepest of all the oceans. It is so deep in places that the world's tallest mountain, Everest, would sink without a trace! Oceans should not be confused with seas, which are smaller than oceans and are usually located where the land and ocean meet, for example, around the coast of the UK, there is the North Sea, the English Channel and the Irish Sea.

Oceans are made of five distinct layers which all have their own characteristics, including temperature, light and the creatures living within them.



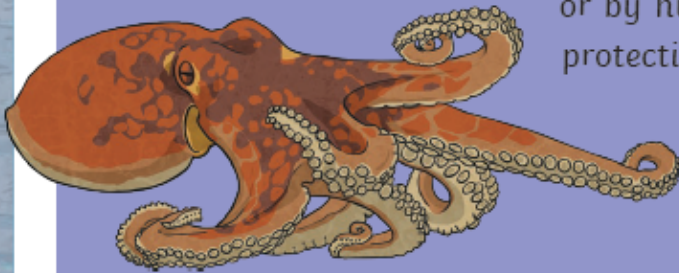
Epipelagic Zone

This layer, which is also known as the Sunlight Zone, extends from the surface to around 200m below the surface of the ocean. There is plenty of light and heat in this zone although they both decrease with depth. Due to the conditions within this zone, there is a wide variety of life found, including: coral reefs, seaweed (which plant feeders eat) and fast swimming hunters, such as dolphins and salmon. Due to its accessibility and favourable state, humans regularly utilise this layer for activities such as swimming, fishing and sea transport.



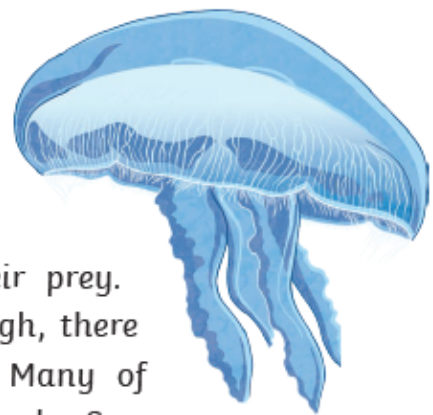
Mesopelagic Zone

This layer is also known as the Twilight Zone due to being up to 1000m below the surface of the ocean. With only faint sun rays reaching it, this layer is home to some of the strangest sea animals, including the sea cucumber, swordfish, wolf eel and octopus, which often have large eyes to help them see. Due to the absence of plants growing within this layer creatures either feed by filtering the water or by hunting other creatures at speed. Wearing protective suits due to the extreme pressure and lack of warmth, humans are able to dive to this layer. Some people do this for fun whereas others do so in order to research the oceans.



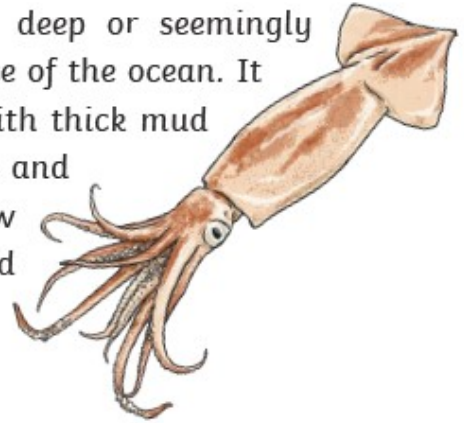
Bathypelagic Zone

The Midnight Zone, which makes up 90% of the ocean, is up to 4000m below the surface of the ocean. No sunlight can reach this layer although some light can be seen from the bioluminescent creatures that produce their own light (such as anglerfish, viperfish and jellyfish) which they use to hunt their prey. Surprisingly, although the pressure in this layer is high, there are a large numbers of creatures living within it. Many of the animals are red or black due to the low light levels. Some creatures, such as the sperm whale, dive to these depths to hunt for food.



Abyssopelagic Zone

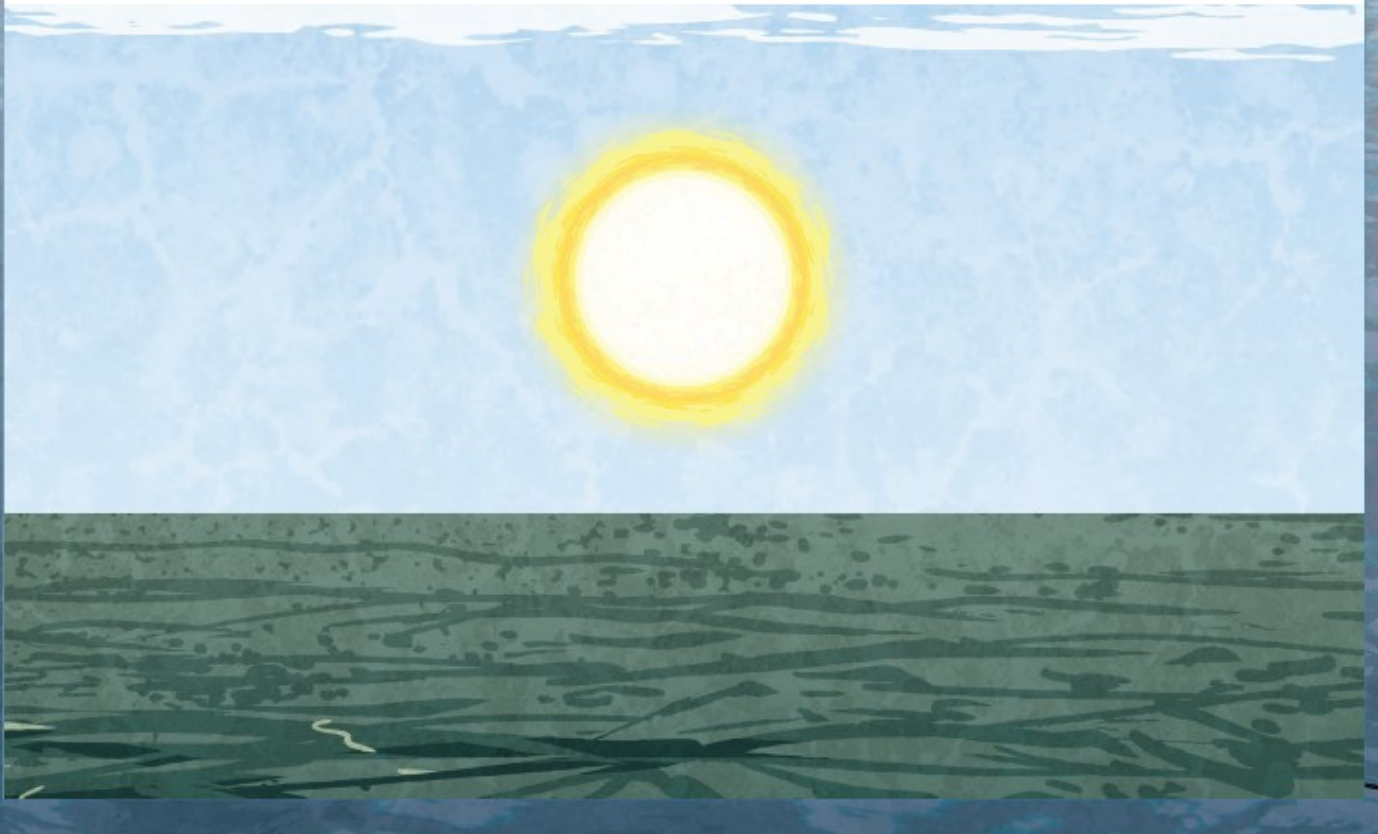
This layer, known as the Abyss (which means a deep or seemingly bottomless chasm), is up to 6000m below the surface of the ocean. It contains 75% of the ocean bed, which is covered with thick mud made from the remains of dead animals. Pitch-black and near freezing due to a total lack of sunlight, very few creatures live here apart from a group of (often) blind invertebrates, which are mainly transparent, such as sea stars, amphipods (shrimps) and squid.



Hadalpelagic Zone

Up to 11,000m below the surface of the ocean the Hadalpelagic Zone, which is also known as the Trench or the ocean floor, is actually a series of underwater canyons (or narrow valleys). This can be explored by humans only when using specialist scientific equipment due to the high pressure and near freezing temperatures. The deepest part of the ocean ever to be explored by man is in the Japanese Mariana Trench, which is almost 11,000m deep! Natural light is unable to penetrate to the trenches but unique creatures can be found, including certain sea stars.

The ocean is an incredible part of our world that oceanographers (sea scientists) hope will be more thoroughly explored as technology advances to increase our knowledge and enable us to protect the oceans for future generations.



1. Which of these are true facts about oceans? Tick **two**.

- Oceans cover two thirds of the Earth's surface.
- The five oceans are all separate.
- The Atlantic Ocean is the deepest ocean.
- Oceans are made of five distinct layers.

2. Which of these is another name for the Mesopelagic Zone? Tick **one**.

- Sunlight Zone
- Twilight Zone
- Midnight Zone
- Abyss

3. Due to the **absence** of plants growing within this layer...

What does **absence** mean?

4. What is the depth of the Abyss?

5. **Find** and **copy** a word from the text which shows that creatures found in the Trenches are one of a kind.

6. In your own words, explain why the Midnight Zone was given that name.

7. Summarise what you have read about the Epipelagic Zone in 40 words or less.

8. Why do you think that the creatures in the Abyss are usually blind?

9. Why do plants not grow in the Twilight Zone?

10. Why is it important to protect the oceans for future generations? Give evidence to support your answer.
