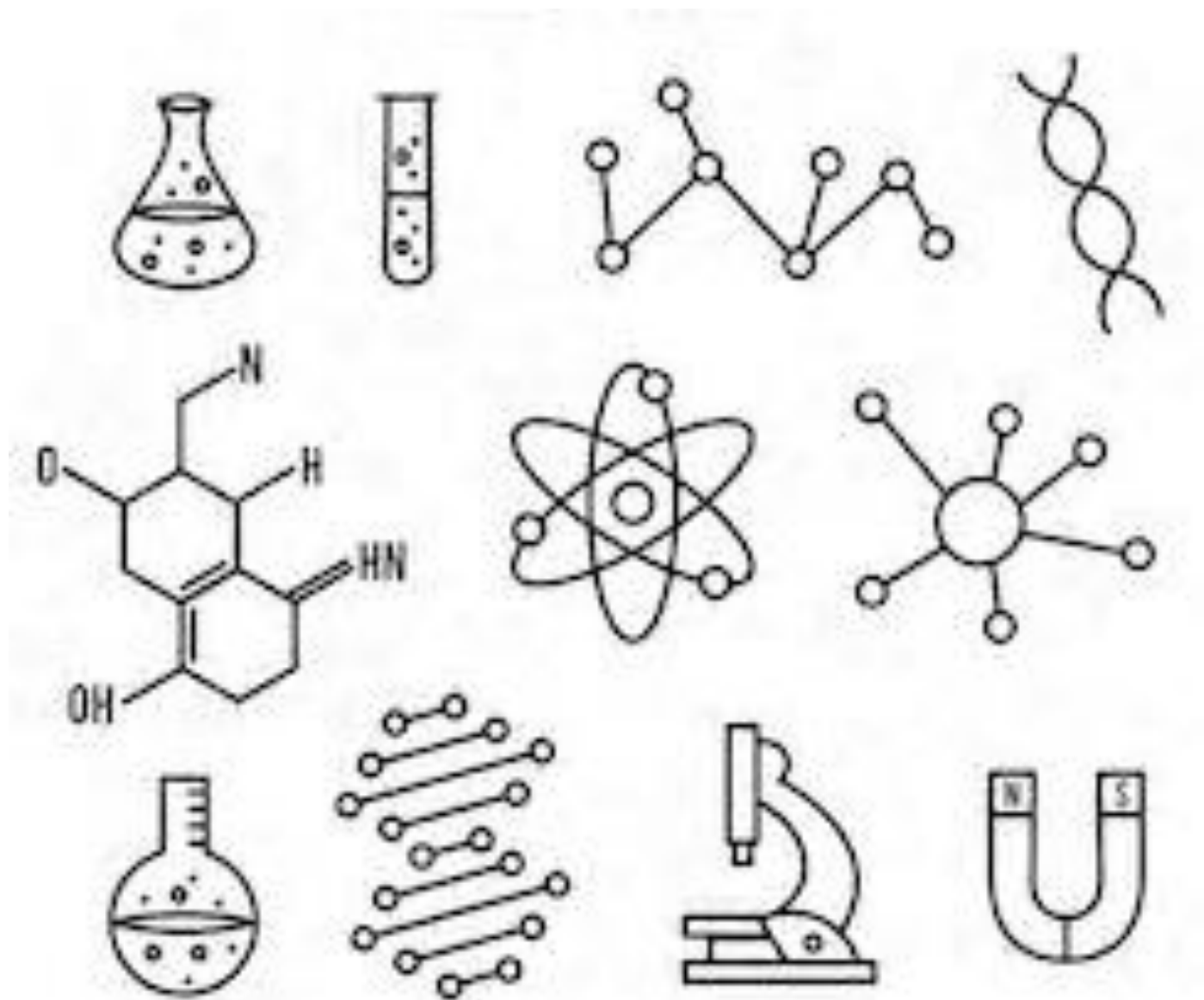


Science



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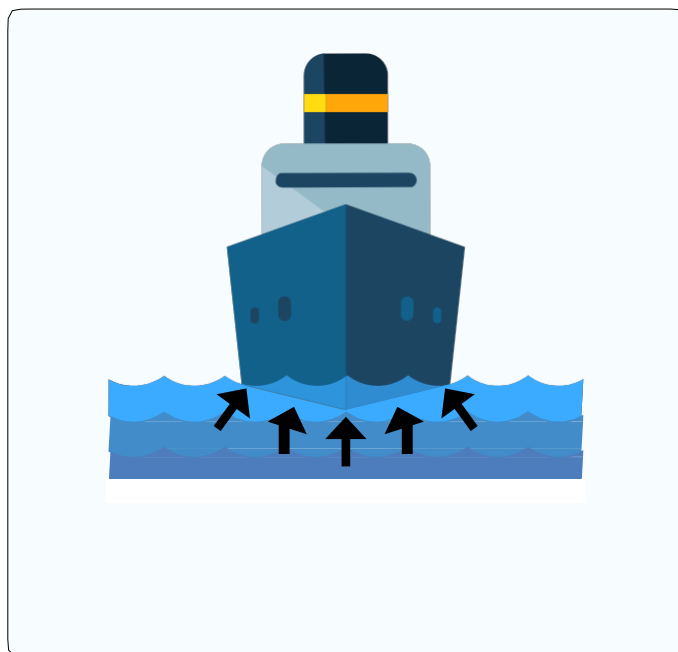


Have you ever wondered what a polar explorer does? What skills they need? Or how they do their work?

We are going to be following the Polar Explorer programme. This follows the research of a group of real Arctic explorers who are trying to safeguard our planet by monitoring conditions in the Arctic Ocean. This is one of the areas of our planet that is changing fastest due to the effects of Climate Change, caused by humans.

Polar Explorer Task 1 – Boat Building

Water pushes upwards with a force called 'upthrust'. (You can feel this if you try to push a light object such as a balloon or aeroboard under water). The shape of a 'boat' affects the weight of passengers or cargo it can hold. The more water that the boat displaces the more it will float and the more weight it can take.



Materials: Bowl 2/3 full of water, Plasticine, modelling clay or blue tack. Peas, dried or frozen. (beads or marbles would do)

Investigation

Make your plasticine into a ball, now put into a bowl of water.

1. Does it sink or float?

2. Why does this happen?

Make a boat out of the plasticine. Adjust your boat until it floats in a bowl of water.

Use some dried (or frozen) peas as “passengers”.

3. How many peas can you carry in your boat before it sinks?

4. Can you modify your boat design to make it carry more passengers without using any more plasticine? What did you do?

Ask your friends if they have managed to carry more “passengers” in their boat than you have.

5. Whose boat design was better and why?

Task 2 – Ocean Food Web

It is very important for Scientists to look at the species in the ocean so that we can check that ocean food webs are healthy. All of these organisms have the right to a healthy life, free from pollution. We also depend on some of them for food. If organisms are removed from a food web because of disease or pollution other organisms may starve or go extinct.

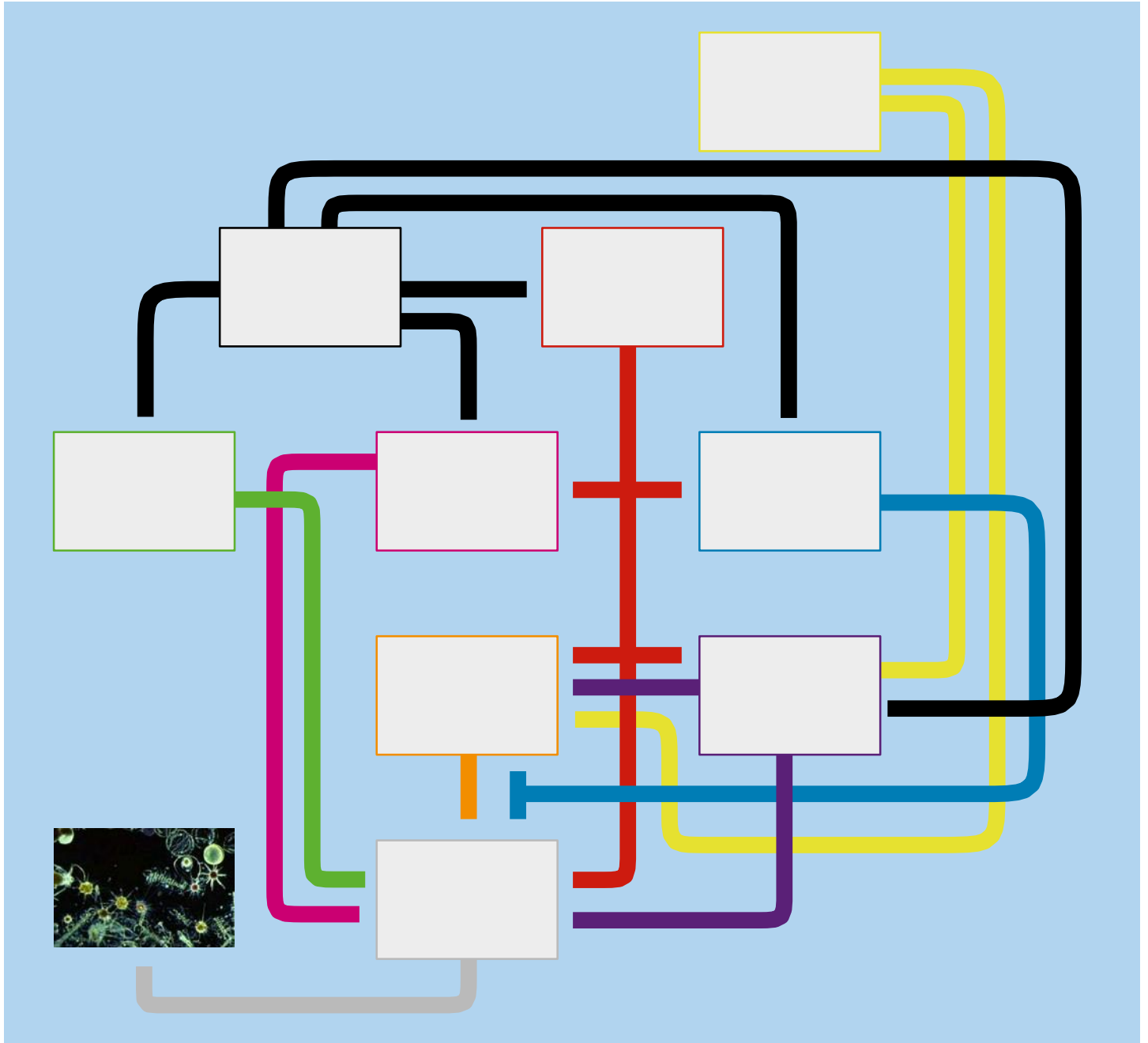
Use the food web sheet (which is an insert into your booklet). Can you place the organisms in the correct place on the food web below?

1. Which organisms are carnivores?

2. Which organisms are herbivores?

3. Which organisms get their energy straight from the sun?

Ocean Food Web



Instructions:

Read the descriptions carefully! This will tell you where to put the different animals.

Stick the pictures on the correct places in the food web above.

Task 3 – Glaciers

The Boat – “The Sir David Attenborough” will be studying melting glaciers and sea ice. Scientists are concerned that global warming caused by pollution is making the ice melt. But does it matter if glaciers or Sea ice melts? Which will make sea levels rise melting glaciers on land or melting sea ice or both? Lets find out!



Glacier at the edge of the sea.



Sea ice, with a Polar Bear!

Materials:

2 x glasses of water, 2 x ice cubes, 1 x **object (e.g a rock or some stones)** to stand one of the ice cubes on. 1 x washing up bowl to put everything in! (Mess alert!)

Instructions

- Model Glacier - Place your object(s) in the first glass of water. Fill the glass with water. Put the ice cube on top of the object so that the ice cube is not in the water. Ideally the water level needs to be level with the top of the glass Now mark the level of the water.
- Sea Ice Model - Place the ice cube in the second glass and fill it up with water. Get the water as close to the top as you can.

- Predict which one you think will make the water level increase the most?
- Watch the ice cubes melt and watch what happens to the level of the water.

Thinking & Explaining

1. Firstly, was your prediction right?
2. Why does this happen?
3. Do you think melting sea ice or melting glaciers on land will make the sea level rise the most?
4. Why do you think this?

Well done, you have now completed all of the activities!

We hope that you have enjoyed these activities and have learnt something from them. When you arrive at Testwood you will be asked to bring this booklet with you and show it to your Science Teacher.