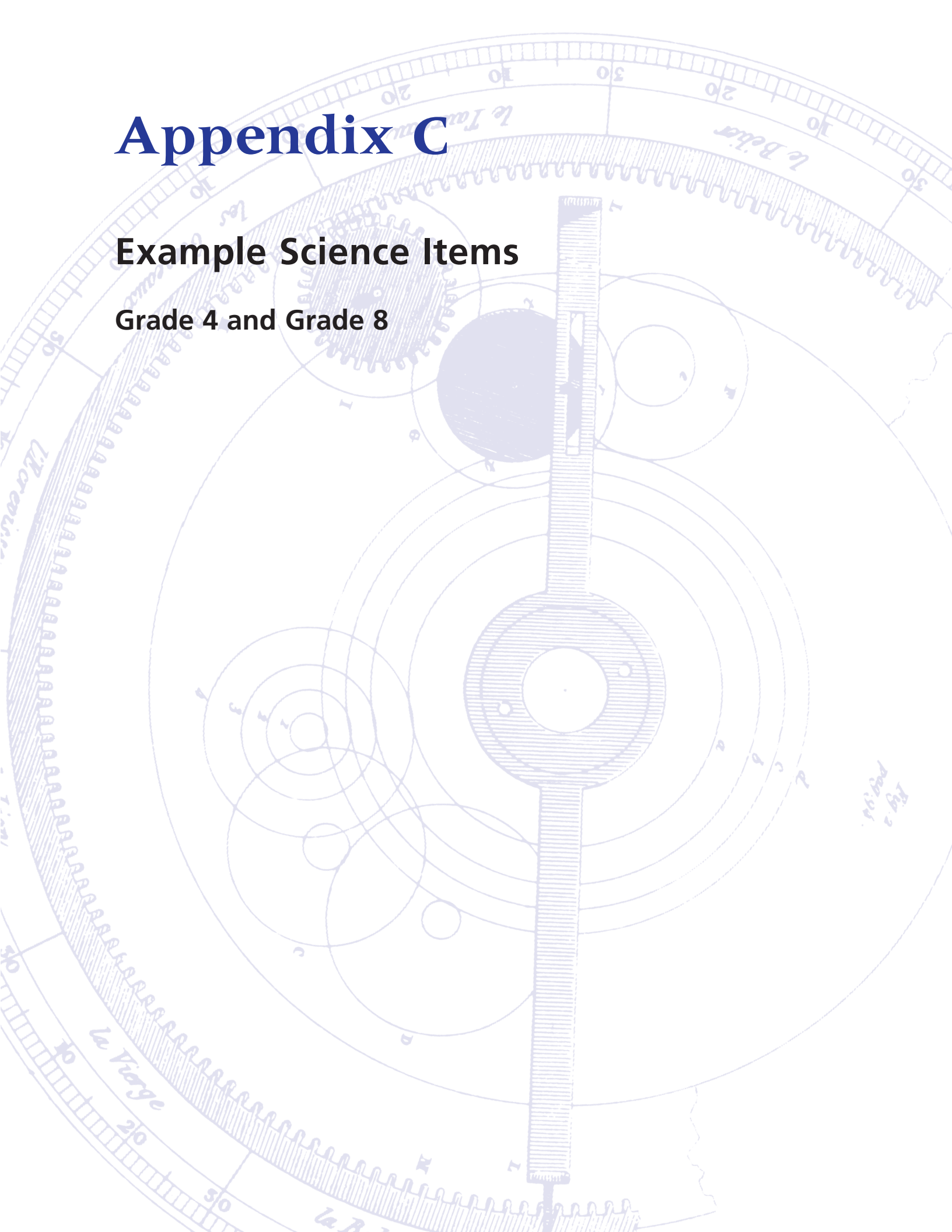
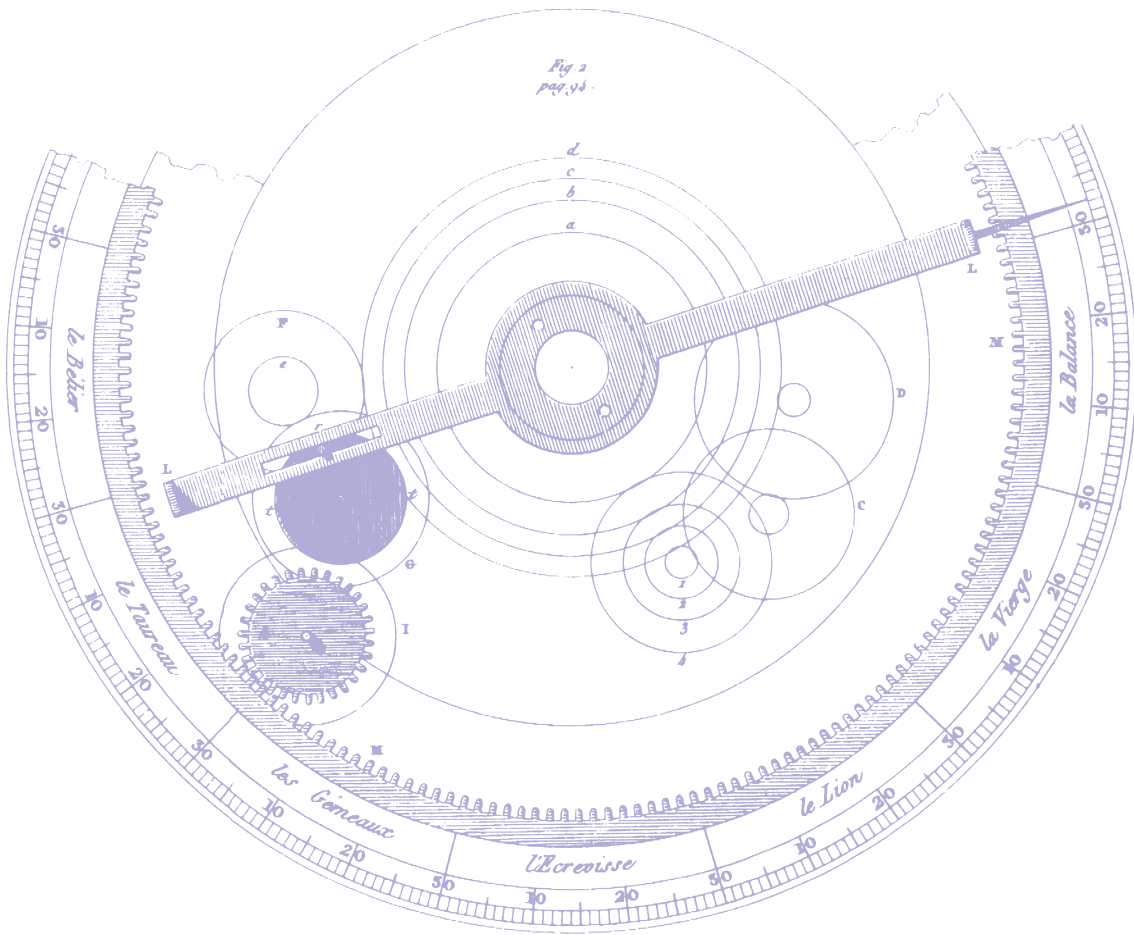


Appendix C

Example Science Items

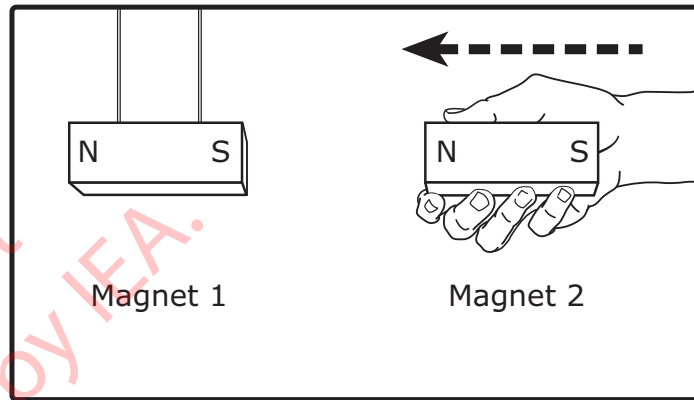
Grade 4 and Grade 8





Example Science Items: Grade 4

1



Magnet 1 is hanging by two strings. Magnet 2 is moved towards Magnet 1 as shown in the picture. What will happen to Magnet 1?

- (A) Magnet 1 will swing away from Magnet 2.
- * (B) Magnet 1 will swing towards Magnet 2.
- (C) Magnet 1 will swing back and forth.
- (D) Magnet 1 will not move.

2

Describe two ways people can help to reduce air pollution in a city.

1. We can ride busses, bikes or share cars with other people.
2. Grow more plants.

*Correct Answer

3

You are given a mixture of sawdust, pebbles, and iron filings.
You must separate the mixture into its parts.

A. What things would you need to separate this mixture?


A: Magnet



A: Container



B. Write down the steps you would take to separate the mixture.

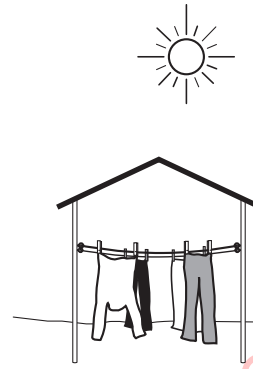
1. First you use the magnet to get the iron filings,
2. Then you bring a  and put the sawdust and the pebbles into it and the sawdust falls through it and pebbles stay on it because the hole is too small and there is a container underneath it and sawdust falls into it and all is done,

4

The picture below shows clothes drying outside on two different days in the same month. On Day 1 it is raining. On Day 2 the sun is shining. The clothes are protected from the rain by the hut.



Day 1



Day 2

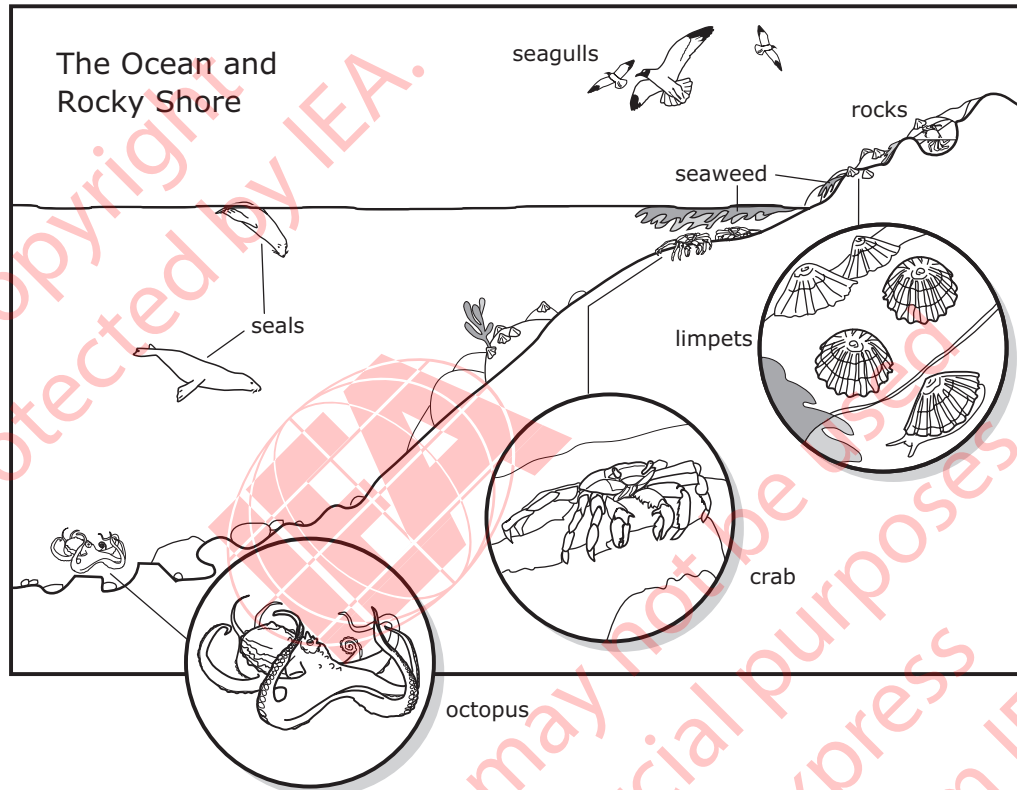
On Day 1 the clothes dry in 24 hours. On Day 2 they dry in 8 hours. Explain why it takes longer to dry clothes on Day 1 than on Day 2.

because on day one it's raining and it would be damp under the hut and on day two it would be warm so they would dry easier.

5

Ocean Food Chain

The picture below shows part of an ocean and some of the organisms (plants and animals) that live in and around the ocean.

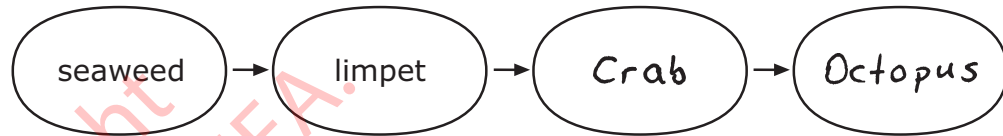


Look at the list of living organisms (plants and animals) below. The table gives information about what each organism in the picture of the ocean needs for food.

Name of Organism	What the Organism Needs for Food
Seaweed	Sunlight to make its own food
Limpet	Seaweed
Crab	Limpets
Octopus	Limpets, crabs, and fish
Seagull	Crabs and fish
Seal	Crabs, octopus and fish

Questions for Ocean Food Chain begin on the next page. ➔

The diagram below shows part of a food chain. The arrows go from one organism to another organism that eats it. In this food chain, the limpets eat seaweed.



- A. Complete the food chain **above** by writing the names of two other organisms from the table in the blank spaces. Use the information in the table about what each organism needs for food.
(There is more than one correct food chain. You need to show just one.)

- B. One year a disease causes many limpets to die. What would happen to the **seaweed** in your food chain when the limpets die?

The amount of seaweed will grow because there isn't lots of limpets to eat it.

- C. Choose another organism in your food chain (not seaweed or limpet).

Name of organism: Crab

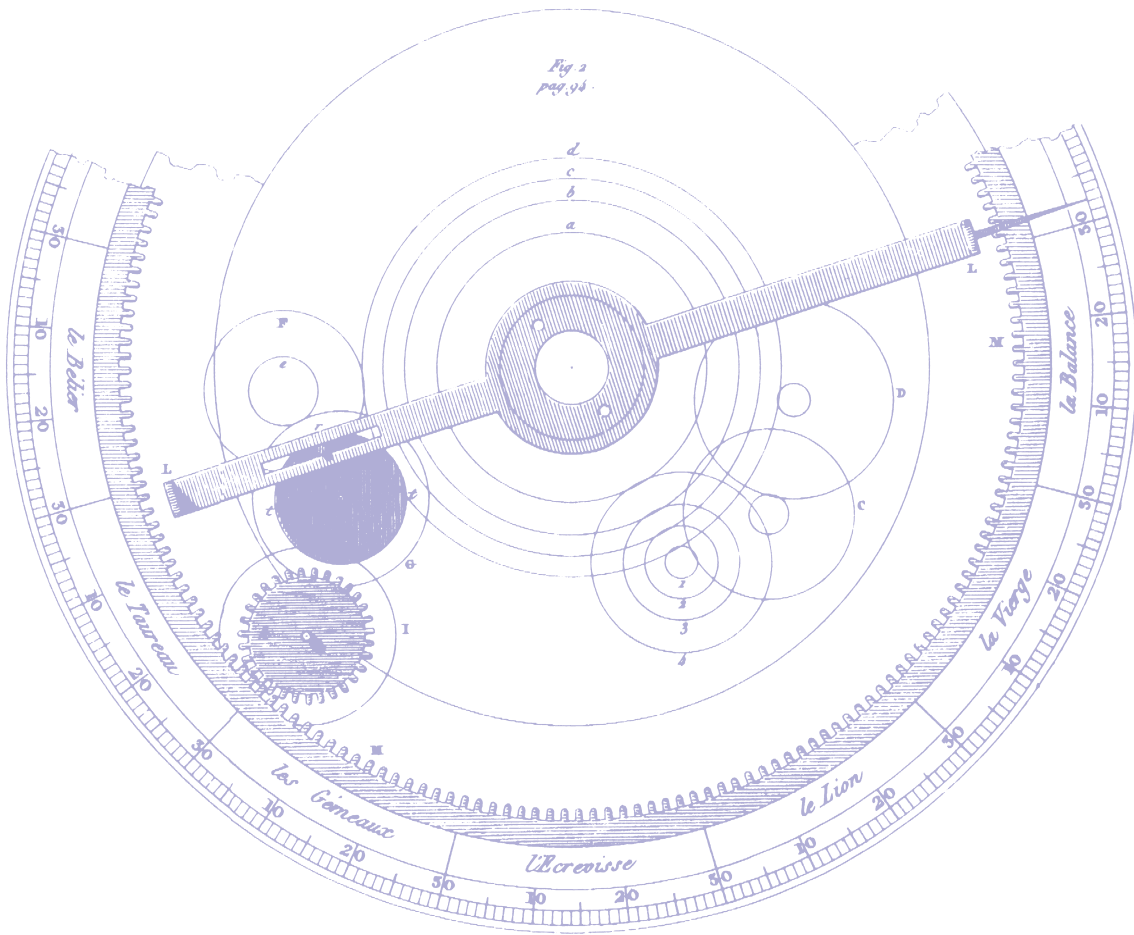
What would happen to this organism when the limpets die?

Some crabs will die because there isn't a lot of limpets to eat.

- D. What would happen to the other organisms in your food chain if the seaweed does not grow well?

The limpets will starve, so some crabs will die, so some octopuses will die. If one tiny thing happens to an animal or plant, it can affect the whole food chain.

End of Ocean Food Chain questions. ●



Example Science Items: Grade 8

1

Your skin and your hair are both made up of cells. When you cut your skin, it hurts. When you cut your hair, it does not hurt.

Explain why.

This is because in our body skin, there are nerves. As our skin is cut, the nerves will then send signal messages to the brain to let us feel pain. Unlike the skin, hair does not have nerves, therefore unable to send signal messages to the brain to feel pain.

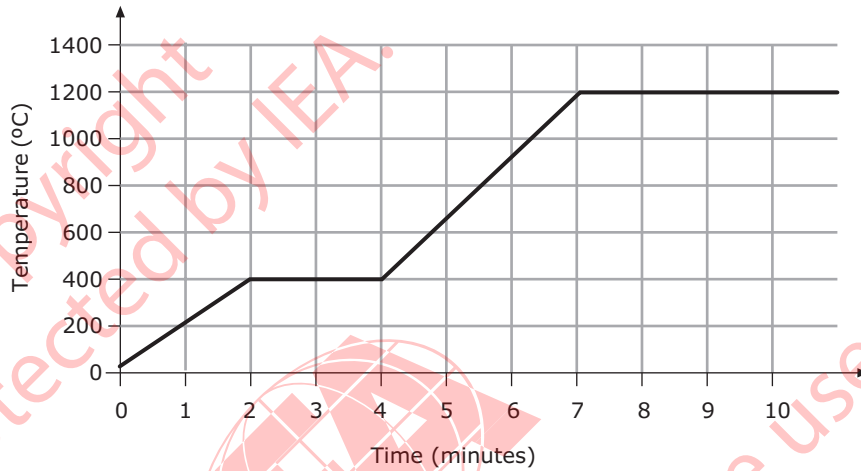
2

The human population of the world has grown rapidly over the past 200 years. Describe one way the increased world population has affected the environment.

With more people, more roads, schools, buildings and facilities have to be built in order for them to live more comfortably. This means that air pollution (from vehicles, factories) and noise pollution (construction work) are increasing too.

3

A metal was heated for several minutes at a constant rate. It melted and then boiled. The graph below shows how the temperature changed as heat was added over time.



From the graph, what is the melting point of the metal?

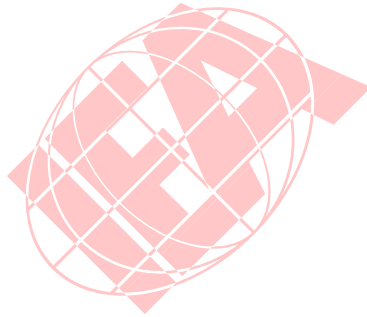
- (A) 200°C
- * (B) 400°C
- (C) 800°C
- (D) 1200°C

*Correct Answer

4

A ship is built mostly of metal. Metal usually sinks when put into water, but a ship does not sink. Explain why.

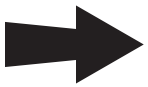
Because the ship is filled with air and because of its surface, also the density of water is more dense than the density of ship.



5

How was the oil formed that is found in the rock layers beneath the ocean floor?

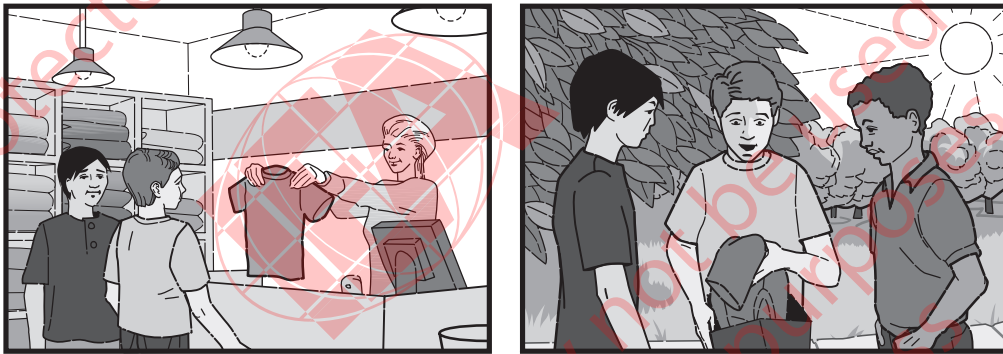
It was formed by dead organisms that over pressure and time decomposed to form oil.



Light Filters

Instructions: Questions **6**, **7**, **8**, **9**, and **10** are about light filters. To answer these questions you may refer to any information shown on the pages in the Light Filters section.

Emile and Andre went to a clothing store. They bought an orange shirt. On the way home, they opened up the bag to show a friend the new orange shirt. They noticed, however, that the shirt looked red instead of orange.



Emile thought that they were given the wrong shirt. Andre thought that they had the right shirt. He said that the color of a material can change under different light conditions. They decided to conduct an investigation to test Andre's ideas about light and color.

Questions for Light Filters begin on the next page.

6

Emile and Andre got a flashlight, some transparent sheets of colored plastic to use as light filters, and some colored paper. They used these materials for their investigation. First they looked at the different pieces of paper in sunlight. They recorded what they saw.

	Paper 1	Paper 2	Paper 3	Paper 4
Appearance in sunlight	White	Red	Green	Black

- A. Andre said that sunlight is made up of a mixture of different colors. He also said that the papers looked the way they did because they reflect only part of the sunlight to the eye and absorb the rest. What colors that make up sunlight are reflected to the eye by papers 1, 2, 3, and 4?

Paper 1: all the colours


Paper 2: red

Paper 3: green

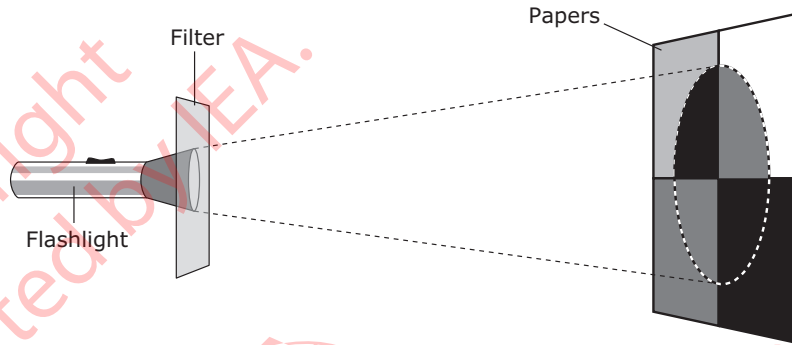
Paper 4: none of the colours

- B. Andre said that sunlight can be separated into its different colors. Give an example of how this can be demonstrated.

This can be demonstrated by passing light through a glass triangular prism.

Questions for Light Filters continue. 

Emile and Andre took the colored papers, the colored sheets of plastic, and the flashlight into a dark room. First they shined the flashlight onto each piece of paper. Then they put each sheet of colored plastic (light filter) over the flashlight and shined the flashlight onto the papers.



They recorded all of their results in a table.

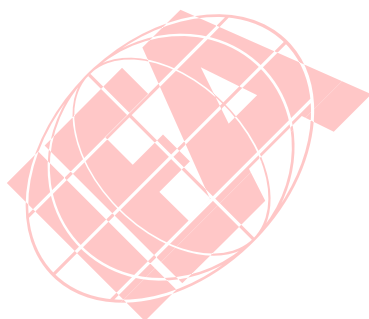
Light Condition	Appearance of Paper			
	Paper 1	Paper 2	Paper 3	Paper 4
Sunlight	White	Red	Green	Black
Flashlight (without a filter)	White	Red	Green	Black
Red light (red filter placed over flashlight)	Red	Red	Black	Black
Green light (green filter placed over flashlight)	Green	Black	Green	Black

Questions for Light Filters continue. ➡

7

Look at the results shown in the table. How does the light coming from the flashlight compare to the light coming from the sun? Explain your answer based on the results of Emile's and Andre's investigation.


it is the same. Both are made up of different coloured lights to form white light. The experiment's results are the same for both the sunlight and the flashlight.



8

Light filters transmit (pass through) only part of the light and absorb the rest. Which of the following statements is true about how the red filter affects the color of light from the flashlight?

- (A) The red filter absorbs the red part of light and transmits the green part of light.
- * (B) The red filter transmits the red part of light and absorbs the green part of light.
- (C) The red filter absorbs both the red and green part of light
- (D) The red filter transmits both the red and green part of light.

Questions for Light Filters continue. 

*Correct Answer

9

Green paper appears black when viewed in red light. Red paper appears black when viewed in green light. Explain why this happens in terms of the light that is transmitted by the filters and the light that is reflected by the papers.

as the light passes through the green filter every colour is absorbed but green, then as the green light hits the red paper the green light is absorbed and there is no red light to reflect so there appears to be an absence of light.

Questions for Light Filters continue. 

10

Light filters have a number of uses. For example, color photographs can fade over time if they are exposed to bright sunlight.



BEFORE fading



AFTER fading

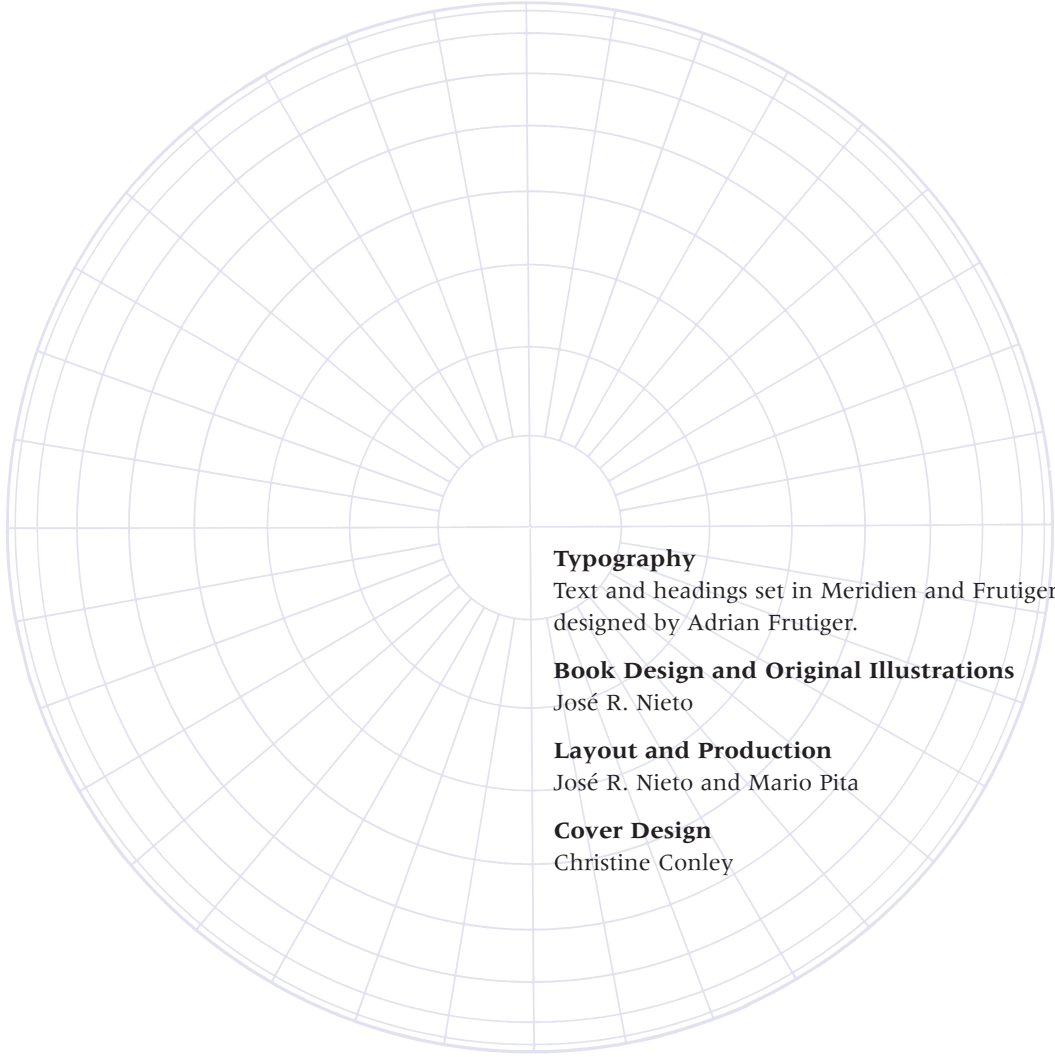
Light filters can be placed over color photographs to reduce the amount of fading that occurs in sunlight.

Plan an investigation using light filters that could be used to test how different colors of light affect the fading of color photographs. Describe the materials you would use and the procedures you would follow. Include in your plan a description of the variable that you would change and the variable(s) that you would keep constant.



5 prints of the same photo would be placed under different filters and left in the sun. 1 of the photos would be a control and would not have a filter. I would record the time taken for each photo to fade.

End of Light Filters section. ●



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