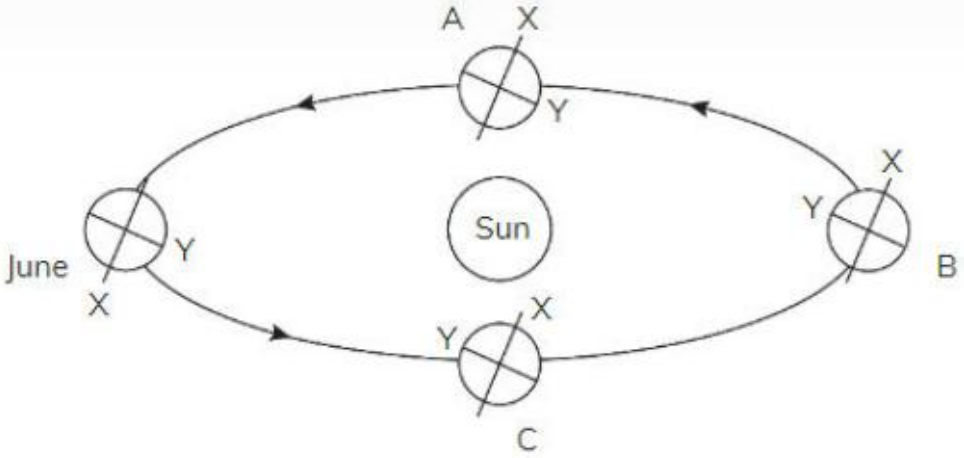


1 What shape is the Earth's orbit around the Sun?

_____

2 In which direction does the Earth orbit the Sun?

_____

3 What is the imaginary line labelled X?

_____

4 What is the imaginary line labelled Y?

_____

5 How long does it take Earth to complete its orbit around the Sun?

_____

6 Find the position of Earth labeled June.
Which month will Earth be at when it reaches the following points?

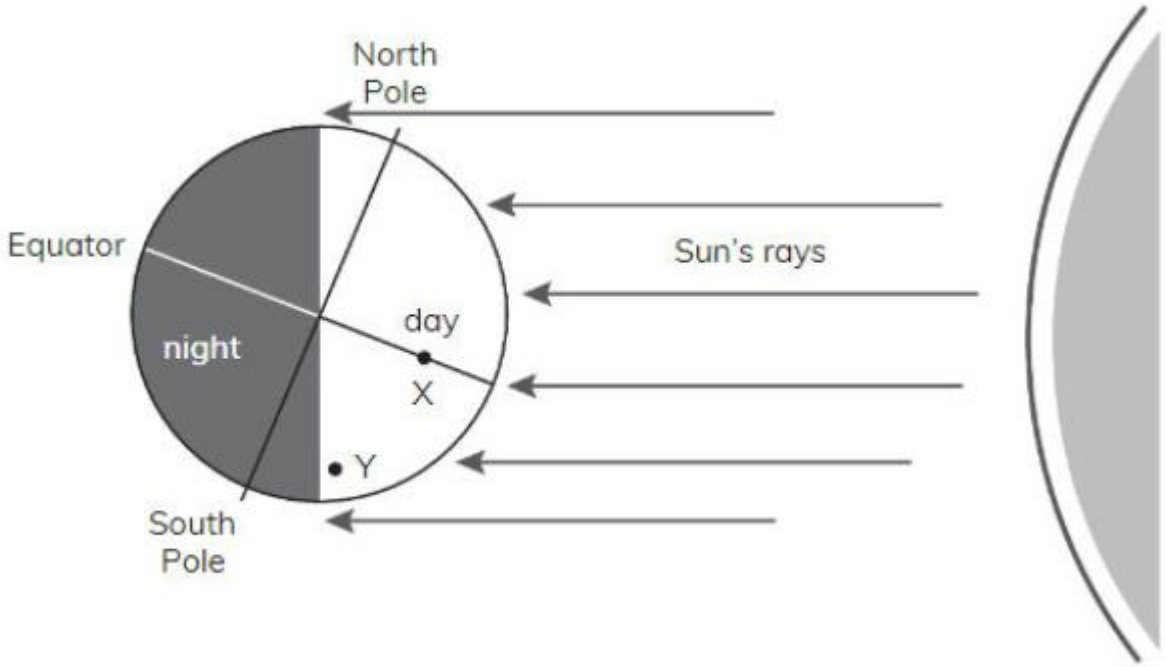
C _____

B _____

A _____

7 What is the length of day and night all over the world in positions A and C?

_____



8 a Which hemisphere is having summer?

_____

b Explain your answer.

_____

9 a What will the length of day be at X?

_____

b What time will sunrise and sunset be at X?

_____

10 a If you lived at Y would you need to wear a thick coat outside?

_____

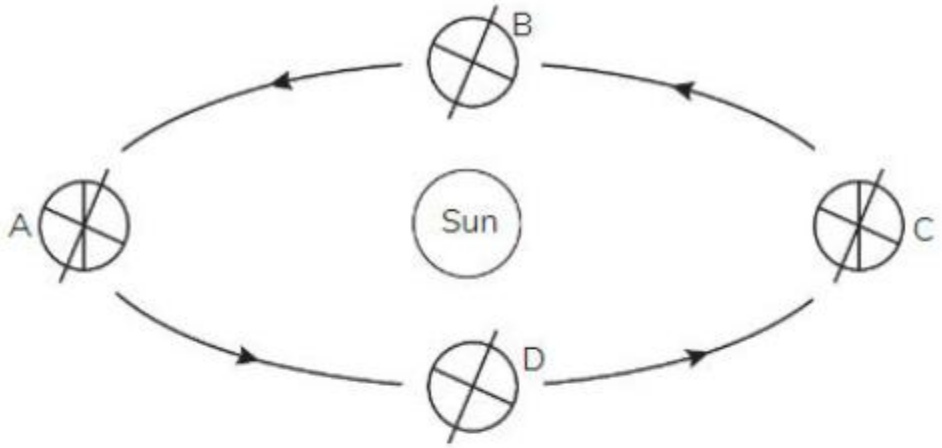
b Explain why or why not.

_____

11 Which month of the year does this diagram represent?

_____

The diagram shows the Earth in four positions during its orbit around the Sun.



12 How long does it take the Earth to complete one orbit around the Sun?

_____

13 On the diagram, colour in the area having night on each Earth.

14 a In position A, what season are people experiencing in the northern hemisphere?

_____

b Explain how you know this.

_____

15 a In position C, what season are people experiencing in the northern hemisphere?

_____

b Explain how you know this.

_____

1 Complete the table by filling in the length of day column.
Then write 'longer' or 'shorter' for each line with a + sign in the last column.

2 Identify the pattern shown by the data for the length of day between March and June.

_____

3 a Is Karachi going from spring to summer or from autumn to winter between March and June?

_____

b Explain how you know this.

_____

4 Explain the data in the +6 months line.

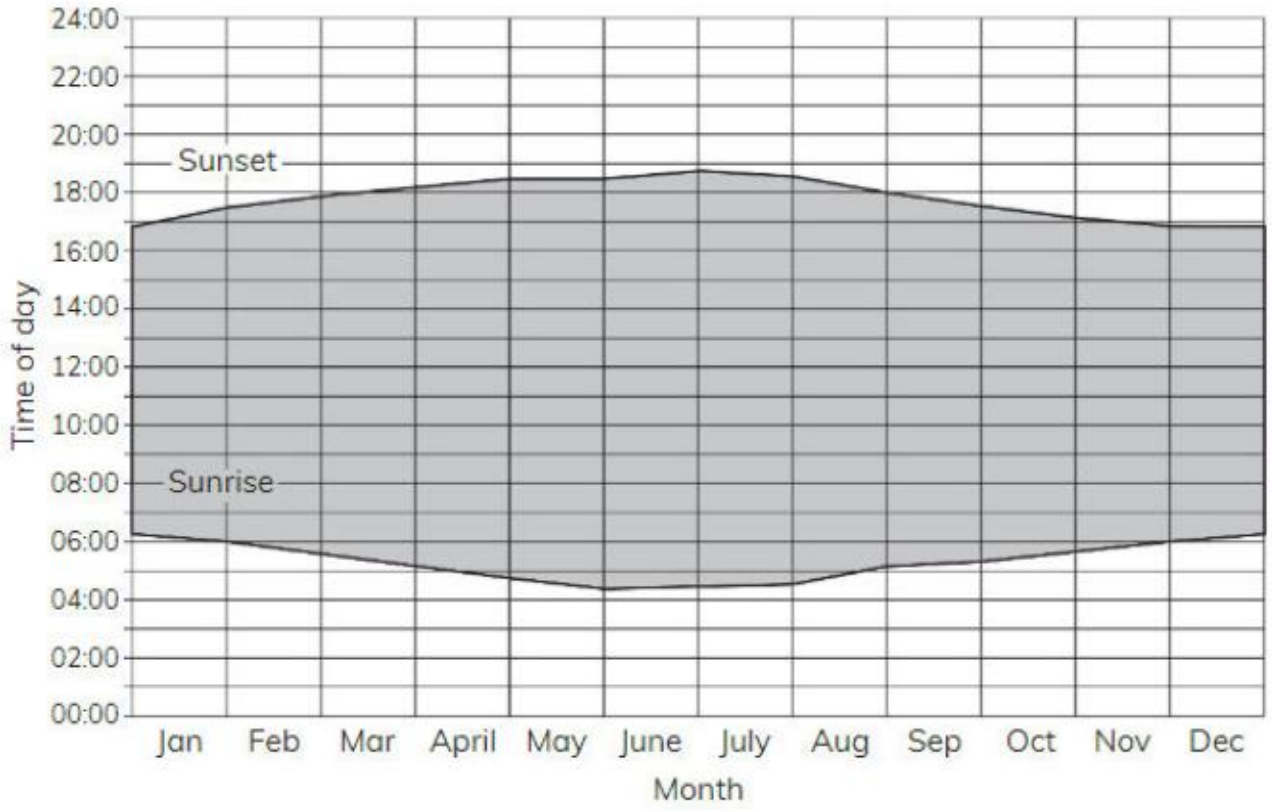
_____

5 What is the difference between animal migration and hibernation?

_____

_____

The graph shows the sunrise and sunset times for Doha, Qatar.



Answer these questions about the graph.

6 What causes sunrise and sunset?

_____

7 What does the height of any shaded part of the graph represent?

8 What pattern does the graph show between January and June?

9 In which months do you think Doha has summer?

10 What causes the pattern shown on the graph?

Challenge

Arctic terns

Arctic terns are sea birds which fly about 40 000 km each year. That's about equal to the distance around the Earth. These birds experience summer in the Arctic and summer in the Antarctic.

Chicks hatch in Greenland in the summer. In September the parents and the young birds fly all the way to the Antarctic to feed during the Antarctic summer. They feed on small fish in the Weddell Sea. In April they return to the Arctic.

An Arctic tern can live for 25 years. During its life it can fly a million kilometres – nearly three times the distance from the Earth to the Moon.

Use the map and the story and your knowledge from the topic to find the answers to the following questions.

11 Does the Arctic tern migrate or hibernate?

_____

12 Give two reasons why the birds do this.

_____

_____

13 a During which months of the year are the Arctic terns in Greenland?

_____

b Explain your answer

_____

14 During which season do they fly south?

_____

15 Which ocean do they fly over?

_____

16 During which season do they feed in the Weddell Sea?

_____

A _____

B _____

C _____

D _____

E _____

F _____

G _____

H _____

1 Identify each plant **A–D**. Choose from water lily, tropical plant, cactus and fir tree.

For each plant say what type of environment it is adapted to.
Use the words 'hot', 'cold', 'wet' and 'dry' in your answers
(some answers need more than one word).

A _____

B _____

C _____

D _____

2 Match one of the following adaptations numbered 1–4 to each plant **A–D**.

1 Large leaves that can lose water. _____

2 Large flat leaves that float on water. _____

3 Needles instead of leaves that do not lose much water. _____

4 Thorns instead of leaves which lose very little water. _____

3 Identify each animal **E–H**. Choose from polar bear, fish, wading bird, monkey.

For each animal say what type of environment it is adapted to.
Use the words 'hot', 'cold', 'wet' and 'dry' in your answers
(some answers need more than one word).

E _____

F _____

G _____

H _____

4 Match one of the following adaptations numbered 1–4 to each animal **E–H**.

1 Long arms and legs to climb up trees and swing on branches to get food in forest. _____

2 Long legs to wade in water. _____

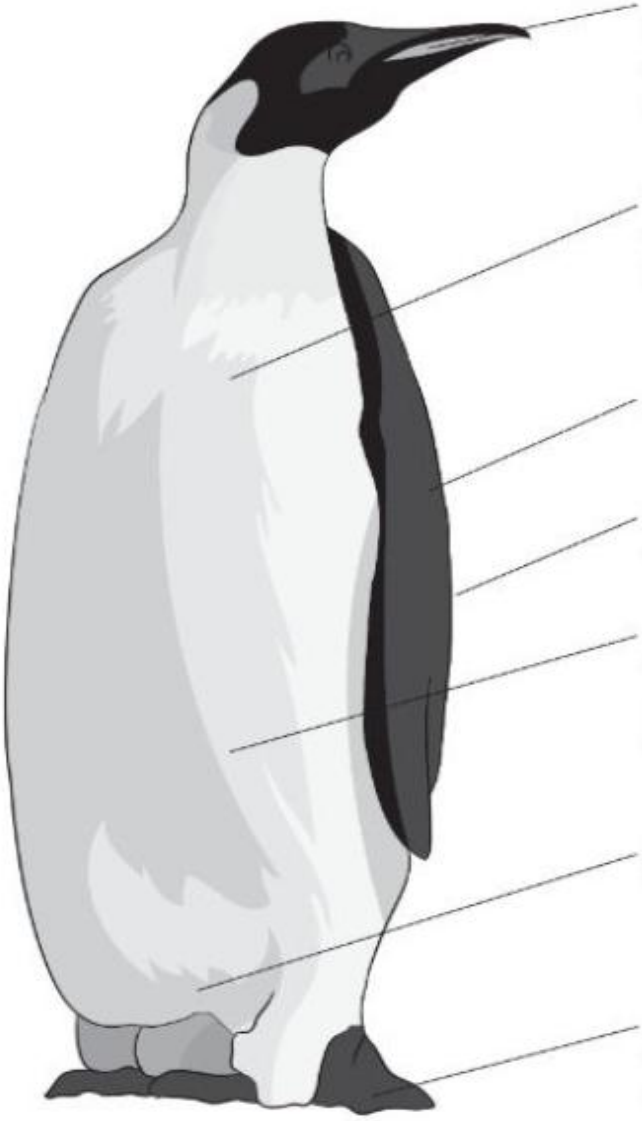
3 Thick layer of fat and fur to keep warm. _____

4 Gills to get oxygen from water. _____

This picture is of an emperor penguin.
This animal lives in Antarctica which is very cold and full of ice and snow.

Emperor penguins hunt for fish in the sea. The female lays one egg.
The male keeps the egg warm while the female hunts for food.

Read about the adaptations this animal has to survive in such a cold, icy environment.



The penguin's nostrils take in heat when the penguin breathes out. This warms up the icy air that the penguin breathes in.

Three layers of feathers to keep body warm. The feathers are oily so that the penguin stays dry while it is on land.

Flippers for swimming.

Streamlined body shape for swimming fast.

Layer of fat under the skin to keep warm and to feed off in the weeks the penguin does not eat while he is looking after the egg.

Special fold of skin to cover egg which rests on its feet.

Feet are standing on the ice. They have good blood supply to keep warm. Feet are also strong and help penguin to swim fast and catch fish.

5 Make a list of the adaptations an emperor penguin has to survive in a cold, icy environment. Use the headings below.

Keeping warm

_____

_____

_____

_____

_____

Getting food

Looking after the egg

Adaptations of frogs

Frogs have many adaptations that allow them to live either in a wet environment or a dry environment.

Frogs may breathe through their skin or use their lungs. When they are in water, oxygen from the water is dissolved into the frog's thin skin. From there the oxygen passes through the walls Frogs have many adaptations that allow them to live either in a wet environment or a dry environment.

Frogs may breathe through their skin or use their lungs. When they are in water, oxygen from the water is dissolved into the frog's thin skin. From there the oxygen passes through the walls of the blood vessels into the blood. When on land, frogs are able to breathe through their lungs at the same time as with their skin. The lungs are a much more efficient way for frogs to get oxygen. Frogs can close their noses to prevent taking in water into their lungs when they are swimming.

A frog's skin is covered with a slimy substance called mucus. The mucus stops its skin from drying out. Frogs replace their skin weekly by pulling off old skin to reveal new skin underneath. A new skin every week makes sure that their skin stays soft and coated with the protective mucus.

Frogs have webbed feet that allow them to move through the water more efficiently. Their strong hind legs help them to swim and leap better when they are on land.

They can see very well even in muddy water and in the dark.

6 Use the information in this case study about frogs to complete this table.

Part of frog	Adaptation in water	Adaptation on land
Breathing		
Nose		
Skin		
Legs and feet		
Eyesight		





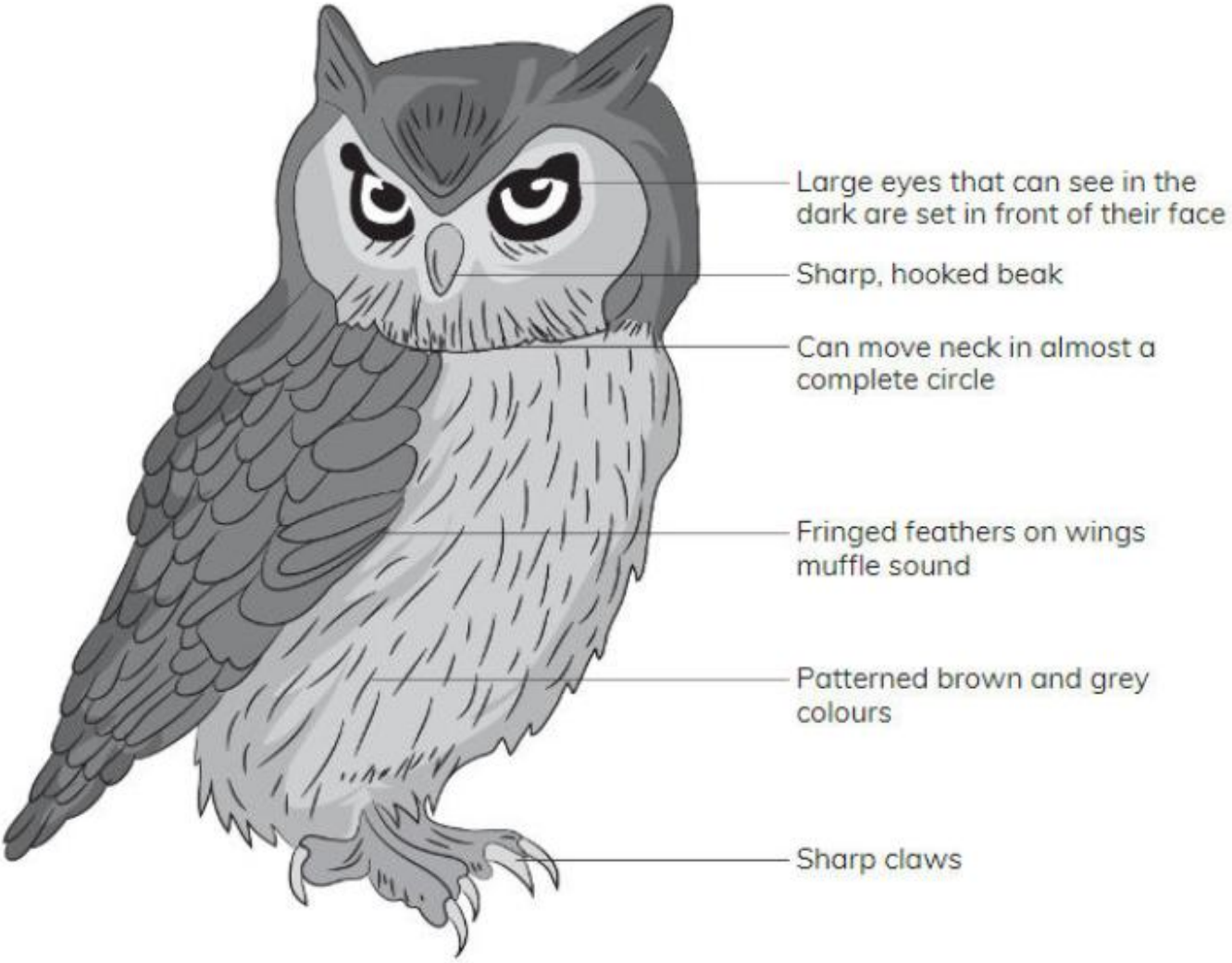

1 Identify three predators and three prey in these pictures.
Match each predator with its prey.

2 For each predator, give two adaptations it has that make it a successful predator.

3 For each prey, give two adaptations it has that help it to avoid being eaten by its predator.

Practice

Owls live in trees. They are predators that hunt at night.



4 List seven adaptations of owls.
Describe how each adaptation makes owls very successful night predators.

5 Use secondary sources, such as the internet or library books, to list examples of the prey that owls hunt.

6 Suggest adaptations which the prey has in order to avoid being caught by an owl.