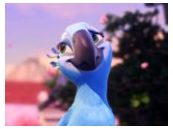
S2 Science Energy and Living Things, Week beginning Monday 4th May 2020 - Answers

Lesson 1 Habitats

Character	Habitat name	What is the environment like- e.g. hot/cold, rainy/dry	What about other plants and animals living there?	Any extra information
	1) Coral Reef	Shallow, warm, salty water	sponges, sea slugs, oysters, clams, crabs, shrimp, sea worms, starfish and sea urchins, jellyfish and sea anemones; various types of fungi, sea turtles, and many species of fish	An individual coral is known as a polyp which is a very small and simple organism. A polyp is basically just a stomach and a mouth with tentacles attached to it like long arms Coral takes a long time to grow
	2) Rainforest	Hot tropical forest, very rainy	birds, snakes, insects, frogs, jaguars	Used to cover 14% of the Earth's surface but due to deforestation now only cover around 6%. Over 25% of natural medicines have been discovered in rainforests.
	3) Polar	Very cold, very little rain The arctic in the northern hemisphere – ice floating on water and the Antarctic in the south – rock covered in ice	Penguins and seals live in the Antarctic whilst polar bears, wolverines, birds, walrus and seals live in the Arctic.	The coldest recorded temperature in the Arctic is around −68 °C. The coldest recorded temperature on Earth occurred in 1983 in Antarctica, measuring −89.2 °C! During the summer months it is light for 24 hours per day in the poles. It never gets dark

	**4)** **Savannah**	**Warm with temperatures ranging from 20 to 30°C. Not much rain, but has a wet season. Mostly grasses and a few scattered trees that covers half the surface of Africa, large areas of Australia, South America, and India.**	Grasses and shrubs. Elephants, zebras, horses, and giraffes.	Some birds fly towards the fires caused by humans, to feed on the flame-roasted insects. In the dry season , if the water shortages are very bad then animals may have to migrate a long way to find water.
	**5)** **Desert**	**Very hot during the day and very cold at night, very dry** **Parts of Africa, America and Asia**	**Plants such as shrubs and cacti and animals like lizards, camels, meerkats and coyotes.**	**The Atacama Desert in South America is the driest place in the world.** **Deserts are good places to farm solar energy** **The Sahara is the largest desert in the world and parts of it have mountains covered in snow in the winter**

Lesson 2 - Sampling Organisms

Learning Intention: to understand the techniques used to sample organisms living in different habitats.

Read

Sampling with quadrats

Quadrats are square grids that can be used to sample and estimate the how many plants or slow moving animals are in an area.

A quadrat of a certain size is thrown in an area.

The number of squares containing a certain plant or animal can be counted. Then the number can be multiplied to calculate an estimate of the total number of organisms in the full area …

For example…

There are four dandelion plants inside a 0.25 m^2 quadrat. The whole field is 50 m^2 in area. The estimated number of dandelions in the field would be:

$4 \times (50 \div 0.25) = 4 \times 200 = 800$

To make sure the sample represents the variety of organisms that are really there, the quadrat should be thrown randomly

The quadrat should be thrown as <u>many times</u> as possible to work out an average number of organisms in each quadrat. This makes the estimated number more <u>valid and reliable</u>.

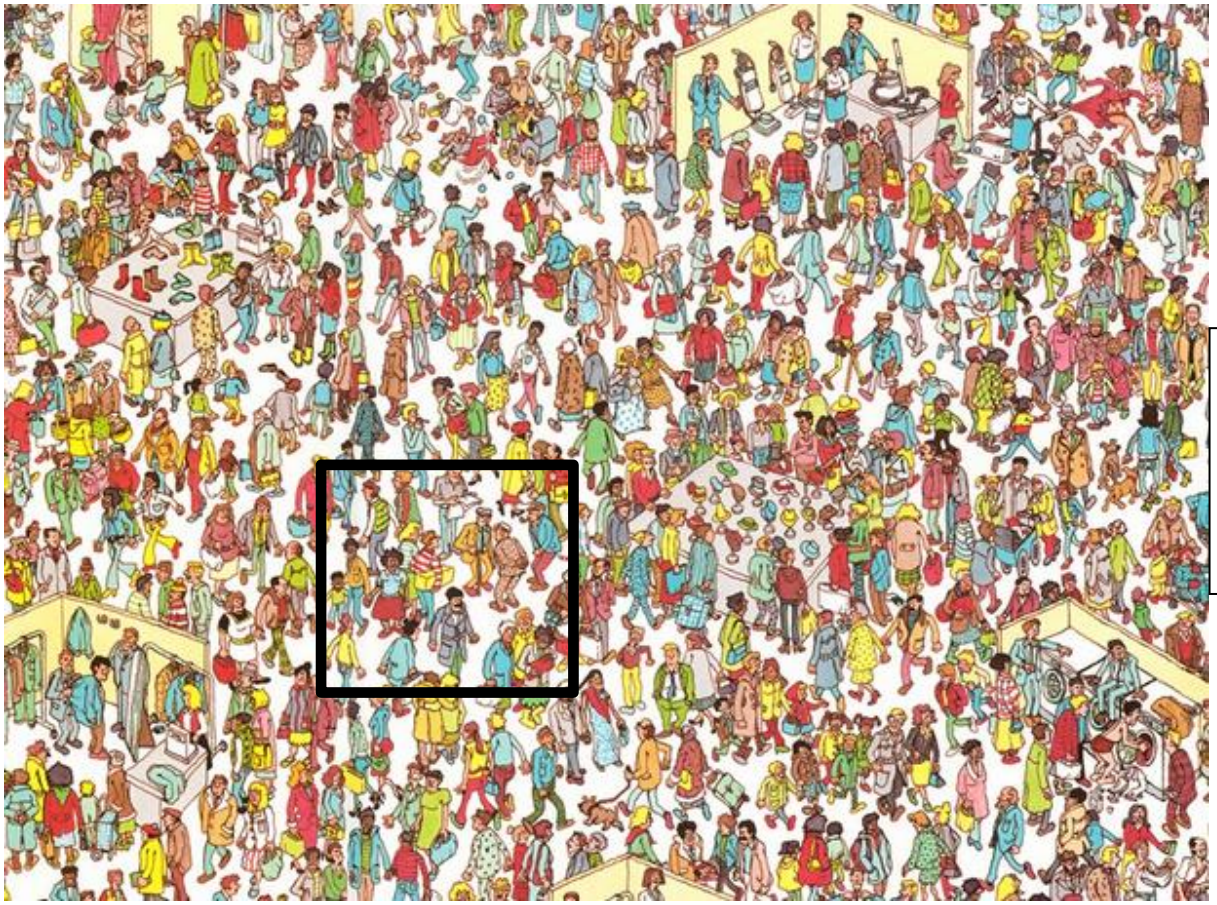
Do

1. A small quadrat was thrown randomly onto this Where's Wally picture.

The picture is 150 cm^2 and the quadrat is $9cm^2$

Can you estimate how many characters there are in the full picture using the method in the example above?

* If a character is partly in the quadrat it should be counted!



I count 29 people in the quadrat…

29 x (150 ÷9) = 483.3 …

483 or 484

2. What types of organisms would usually be sampled using a quadrat? Plants or slow moving animals

3. When using a quadrat, what would you need to do to make sure your sample is representative? Throw it randomly

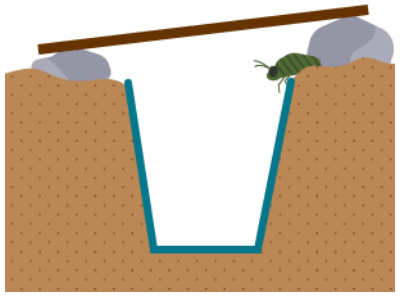
4. When using a quadrat, what would you need to do to make sure your sample is reliable? Throw it many times

Read

Pitfall traps

A pitfall trap is often used to get a sample of small invertebrates living on the ground, such as beetles, spiders and slugs.

It consists of a container, such as a yoghurt carton, buried in the ground. The top of the container is level with the soil surface, and it is covered by a piece of wood with a slight gap to allow insects to climb in. It is important to check the trap regularly to avoid the animals escaping or being eaten before they are counted.



Do

1. If you have a garden or live near an area with suitable soil you could make your own pitfall trap. This will tell you a lot about the organisms that live near you! Use this guide to help you

https://www.rspb.org.uk/globalassets/downloads/kids--schools/teaching-resources/make-a-pitfall-trap.pdf

Take pictures or tell me what you find

2. Jimmy laid a pitfall trap in his garden. He checked it three days later and found three black beetles inside. He decided that the only insects present in his garden are black beetles.

a. Jimmy wasn't right to think this. What could have happened? The black beetles may have eaten other insects. There might have been a small gap at the side of the trap, causing smaller insects not to fall in. Birds may have eaten some insects.

b. What should Jimmy do next time to ensure that his sample is representative and reliable? Check the trap sooner/more often. Make sure the trap has no gap between the soil and is covered to disguise it from birds.

Lesson 3 Biotic and Abiotic Factors

Learning Intention: to understand biotic and abiotic factors that can affect organisms

Watch

Watch the following video about abiotic factors

https://www.bbc.co.uk/bitesize/guides/zq7xjty/video

Do

1. Copy and complete the following statement and table into your jotter or onto a piece of paper. Leave enough space to write down an answer between each question. Watch the video again if you need to.

Abiotic factors are non-living variables found where organisms live. They influence where organisms are found.

Abiotic Factor	Equipment that measures the factor	Sources of error when measuring
Light Intensity	A light meter	Casting a shadow with your body
Soil moisture	Soil moisture meter	Not wiping the probe between different

		readings
Soil pH	pH meter	Not wiping the probe between different readings
Temperature	Thermometer	Not allowing enough time for the thermometer reading to settle. Holding the bottom of the thermometer while taking a reading.

2.

Biotic factors are living variables that affect organisms.

Watch

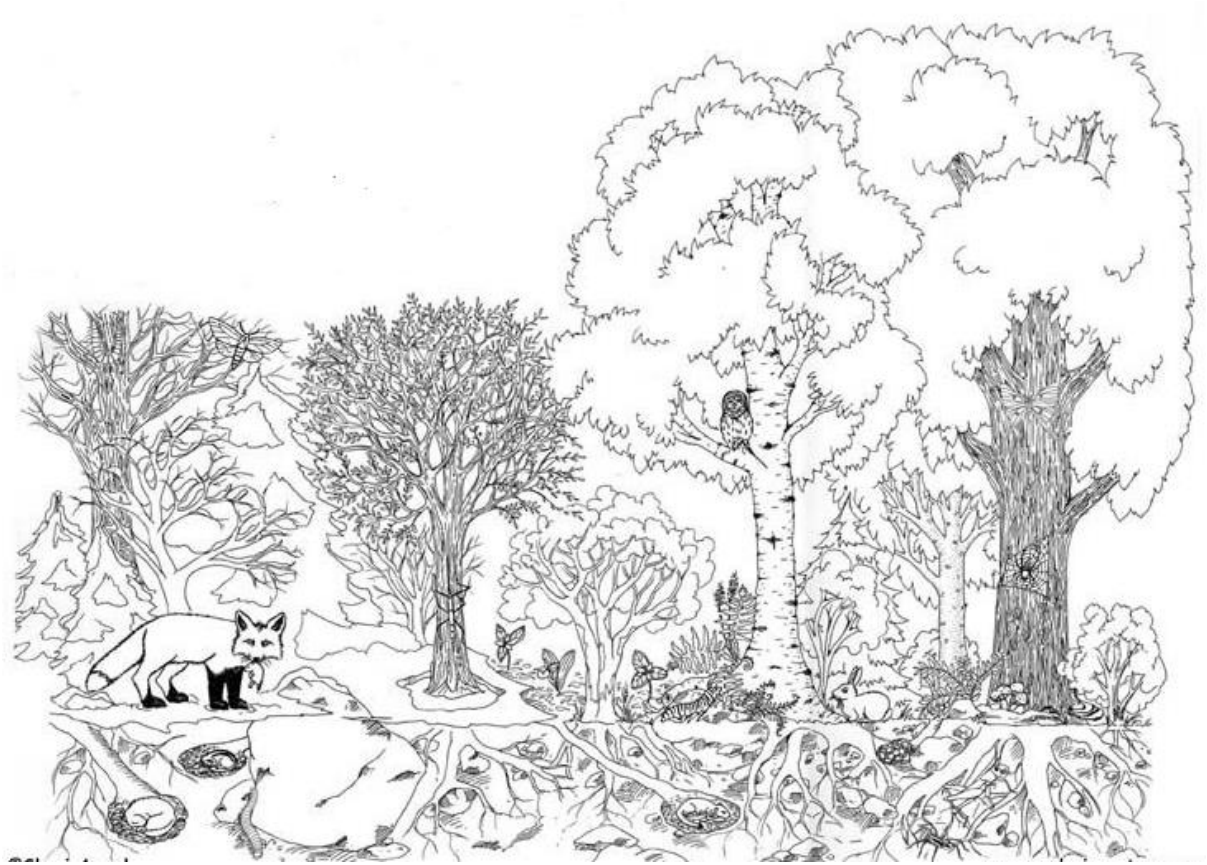
Watch the following videos to help you complete the task below.

https://www.twig-world.com/film/biotic-factors-in-ecosystems-1232/

https://www.youtube.com/watch?v=nQO5x8Q3e8g

Do

List as many biotic factors as you can that can affect the organisms living in this woodland



The number of predators (foxes, owls) the number of prey (rabbits, insects), the presence of trees and other plants as sources of food and habitats, disease (bacteria and fungi) , competition for resources.