**Science- Evolution & Inheritance**

Bit of reading on here, as you look at the resource sheets.

Look through the first 2 pages at the living things that deal with certain environments and consider how they have adapted.

Most environments, however extreme, have some form of life in them – living things that have evolved to survive in those conditions against the odds (and often monopolise them).

Today’s survival challenge is to explore extreme survival and the adaptations that enable living things to thrive in such conditions.

Look at the image of a cactus and consider how cacti are adapted to living in desert areas (i.e. very dry conditions as well as extremes of temperature). They have stems that can store water (they swell after a rain storm and can store a supply of water for many months); a widespread shallow root system that can collect water from a large area (the roots are shallow so that they collect the water in the top layers of the soil as soon as it has fallen); and spines instead of leaves that minimises the surface area of the plant, in turn reducing water loss through transpiration. The spines also protect cacti from animals that might want to eat them! Watch the [BBC video clip](http://www.bbc.co.uk/education/clips/z8sjxnb) (<http://www.bbc.co.uk/education/clips/z8sjxnb>) that describes how plants are adapted to live in very cold conditions.

Now look at the picture of a camel and consider the features that help it survive in sandy deserts, e.g. a double row of long eyelashes, nostrils which can close, store of fat in hump, long strong legs, and thick leathery pads on flat, wide feet and on knees. They also have thick fur to keep them warm during cold, desert nights. Watch [BBC video](https://www.bbc.com/bitesize/clips/z8fpyrd) (<https://www.bbc.com/bitesize/clips/z8fpyrd>) on camels.

Look next at penguins and note that they have webbed feet for powerful swimming and their bodies are streamlined to reduce drag in water. Their wings, shaped like flippers, help them fly underwater at speeds of up to 15 mph. Penguins have tightly packed, overlapping feathers which provide waterproofing and warmth. Their thick skin with a layer of blubber (fat) underneath keeps them warm and their black back feathers absorb warmth from the sun. However, explain that while such adaptations might help, penguins can get overheated if the sun is shining so they have also had to evolve patches which have few or no feathers, e.g. around the foot of their beak & their eyes, to allow heat to escape from their bodies. They lift up their wings to lose heat too by increasing their surface area & allowing air to circulate under their wings where again there are not many feathers. They also pant like a dog sometimes. In the same way look at a picture of a giraffe having a drink and note that it has to use that position because of its long legs – despite having a long neck! This is dangerous because giraffes are quite vulnerable in this position if suddenly attacked by a predator. So while height is an advantage for finding food and a good view of its surroundings, it is a disadvantage for drinking water.

Task

Look at the sample environment’s and consider each aspect of the environment.

You are to choose from 2 options.

A – research a particular animal or plant that might live in one of those environments, and what specific adaptation it has that helps it live in that environment. Include a drawing, description of the animal, how it lives, eats etc, but remember to talk about its adaptation.

B- Can you ‘design’ an animal that might live in the environment. Use the design questions to plan then to draw a technical illustration of both animal and plant. Include details of how it lives, eats etc, but remember to explain what it has done to adapt to the environment you have placed it in.