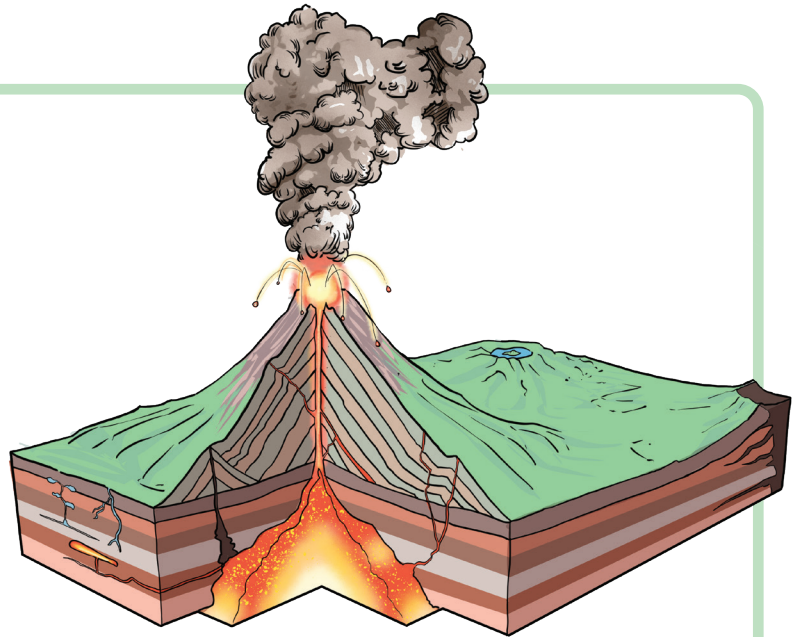


### Volcanoes

There are three different categories of volcanoes: extinct (it was a volcano but will never erupt again), dormant (has not erupted in thousands of years but is likely to again at some point) and active (has recently erupted or has the potential to erupt at any time).

There are about 1,900 active volcanoes on the Earth. Most of the Earth's volcanoes are in the Pacific Ocean, in an area called the 'Ring of Fire', as the word 'volcano' comes from Vulcan, the Roman god of fire.

Most volcanoes are formed on fault lines, which are cracks in the Earth's surface. Volcanoes spew out ash and toxic gases, as well as lava and lava boulders. Incredibly, lava from volcanoes can reach temperatures of 2,000 degrees Fahrenheit! One of the most famous volcanoes on record is Mount Vesuvius, which erupted in Pompeii in 79AD. It was one of the deadliest eruptions recorded in history – the remains of over 1,500 people have been found preserved under the ash from the volcano. However, the true number of fatalities is still unknown.



**1 Volcanoes spew out ash and toxic gases, as well as lava and lava boulders.**

What does the word 'spew' mean in this sentence?

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**2 The remains of over 1,500 people have been found preserved under the ash from the volcano.**

What does the word 'preserved' mean in this sentence?

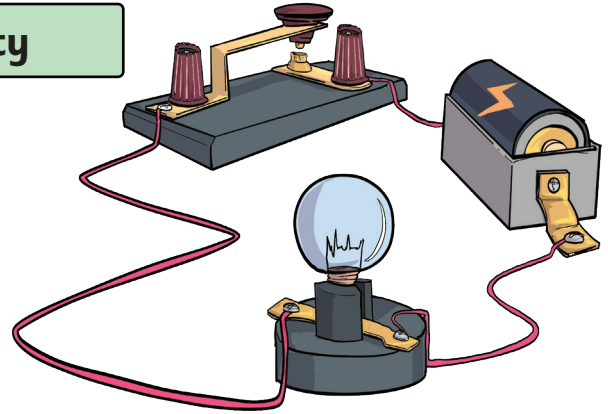
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## Electricity

Historically, the ancient Greeks were the first to study electric forces. Many, many years later in the American colonies during (the 1700s) Benjamin Franklin proved that lightning is a form of electricity.



Scientists later learned that electricity is related to magnetism and then learned how to generate electricity using magnets.

Electricity is the flow of tiny particles called electrons and protons. However, it can also mean the energy you get when electrons flow from place to place. Electricity can be seen in nature in a bolt of lightning; lightning is simply electrons flowing through air all at once, releasing an abundance of energy.

Scientists have also devised how to generate, or create, electricity.

This is useful because electricity that is generated can be controlled and sent through wires and, therefore, used to power such things as heaters, light bulbs, and computers. Today, electricity provides most of the energy to run the modern world. Many moving electrons are called an electric current. A city's power plant produces a powerful electric current and sends it through wires. The electricity used for lighting, heating, and running appliances is made by machines called generators.

**3** **Lightning is simply electrons flowing through air all at once, releasing an abundance of energy.**

What does the word 'abundance' mean in this sentence?

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**4** **Scientists have also devised how to generate, or create, electricity.**

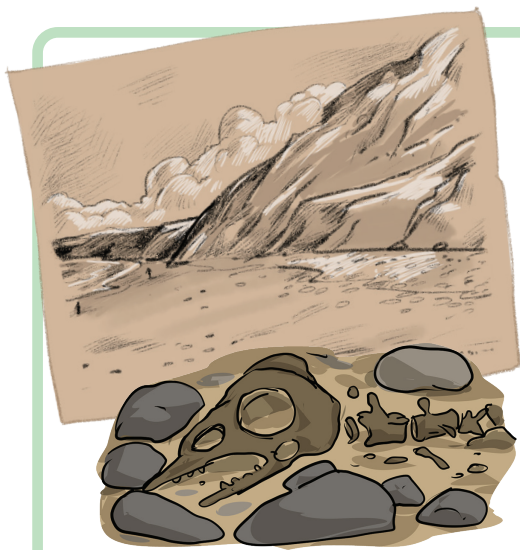
What does the word 'devised' mean in this sentence?

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## Mary Anning

Mary Anning was born in May 1799, the daughter of a cabinetmaker who sold fossils to tourists. Sadly, Mary's father died when she was only ten years old yet his passion for fossils had been instilled in his daughter, who continued to spend many hours scouring beaches for her 'curiosities', along with her beloved dog Tray.

The children's rhyme 'She sells seashells on the seashore' is actually about Mary selling her shells and other findings to tourists in Lyme Regis! Incredibly, at the age of twelve, her brother Joseph discovered the skull of an ichthyosaurus (which means 'fish lizard'). The skull was more than a metre long! Later, when Mary uncovered the rest of the skeleton, she sold it to the Natural History Museum for £23 (approximately £1,400 nowadays).

Despite only attending school on a Sunday and receiving a limited education, Mary was highly intelligent and a particular expert in fossils. At the time, other scientists had discovered what they believed to be rare stones – but it was Mary who famously identified them correctly as coprolites – fossilised dinosaur poo! Mary was always willing to share her discoveries and extensive research with her peers; however, she sadly received very little credit or mention for her work (as she was a woman) and it has only been in more recent times that we have recognised her incredible contributions to geology and palaeontology.

**5** Sadly, Mary's father died when she was only ten years old yet his passion for fossils had been instilled in his daughter, who continued to spend many hours scouring beaches for her 'curiosities'.

What does the word 'instilled' mean in this sentence?

1 mark

**6** Mary was always willing to share her discoveries and extensive research with her peers; however, she sadly received very little credit or mention for her work.

What does the word 'credit' mean in this sentence?

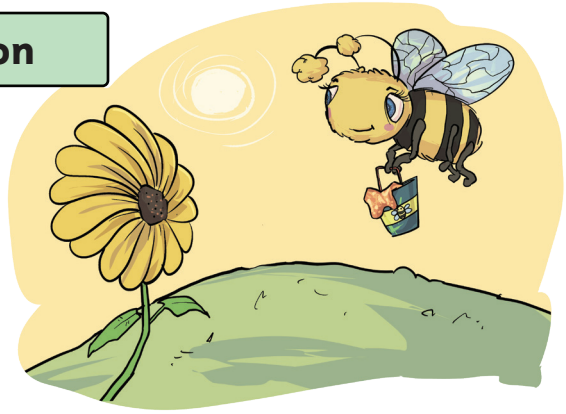
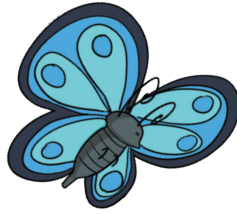
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## Pollination

There are four main types of pollination:

- Sexual pollination
- Asexual pollination
- Cross-pollination
- Self-pollination



Pollination is the process of transferring pollen grains from the stamen to the pistil. Pollen is transferred from one plant to another during this process to make more flowers! Pollen grains are produced within anthers, part of the stamen found inside flowers.

Pollination can occur in two ways: wind pollination and insect pollination. Wind pollination occurs when pollen is carried from one flower to another by the wind. The pollen grains are light and small, so can easily be buffeted by the wind. Despite the fact that the wind transfers pollen, some plants have developed unique adaptations to help them attract pollinators. Pollinators include honeybees, beetles, butterflies, flies, moths, and hummingbirds. Birds, mammals, and many other animals can transfer pollen too through wind or water currents, making them all potential pollinators as well!

Interestingly, some types of food produced as a result of pollination are apples, blueberries, chocolate, coffee, and melons!

**7 The pollen grains are light and small, so can easily be buffeted by the wind.**

What does the word 'buffeted' mean in this sentence?

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**8 Despite the fact that the wind transfers pollen, some plants have developed unique adaptations to help them attract pollinators.**

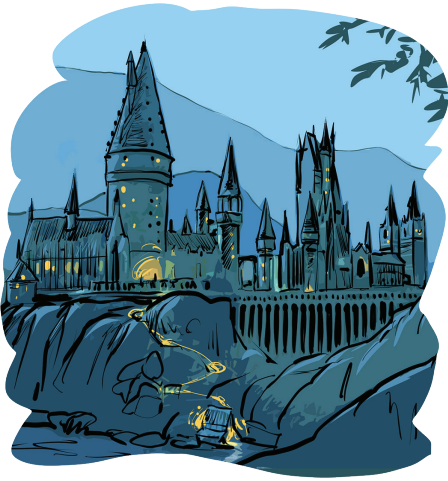
What does the word 'adaptations' mean in this sentence?

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## An extract from 'Dracula' by Bram Stoker



I must have been asleep, for certainly if I had been fully awake I must have noticed the approach of such a remarkable place. In the gloom the courtyard looked of considerable size, and as several dark ways led from it under great round arches, it perhaps seemed bigger than it really is. I have not yet been able to see it by daylight.

When the caleche stopped, the driver jumped down and held out his hand to assist me to alight.

Again I could not but notice his prodigious strength. His hand actually seemed like a steel vice that could have crushed mine if he had chosen. Then he took my traps, and placed them on the ground beside me as I stood close to a great door, old and studded with large iron nails, and set in a projecting doorway of massive stone. I could see even in the dim light that the stone was massively carved, but that the carving had been much worn by time and weather. As I stood, the driver jumped again into his seat and shook the reins. The horses started forward, and trap and all disappeared down one of the dark openings.

I stood in silence where I was, for I did not know what to do. Of bell or knocker there was no sign. Through these frowning walls and dark window openings it was not likely that my voice could penetrate. The time I waited seemed endless, and I felt doubts and fears crowding upon me. What sort of place had I come to, and among what kind of people?

- 9** When the caleche stopped, the driver jumped down and held out his hand to assist me to alight. Again I could not but notice his prodigious strength.

What does the word 'prodigious' mean in this sentence?

1 mark

- 10** Through these frowning walls and dark window openings it was not likely that my voice could penetrate.

What does the word 'penetrate' mean in this sentence?

1 mark

## An extract from 'Alex Rider: Secret Weapon' by Anthony Horowitz

There were five men sitting around the fire, huddled together in the Herat mountains in the north-west corner of Afghanistan. Although it was May and the plains were dotted with spring flowers, up here, five thousand feet above sea level, the winds still came rushing round the corners in icy blasts and the temperature tumbled towards zero once the sun had set.



The men had erected a tent, made from woven goat-hair and tied down with long ropes nailed into the hard ground. They had rested here for three hours and now squatted down with their backs to it, waiting for their meal to cook. The horses that had brought them here were tethered nearby. Five men and a boy.

Alex Rider came out of the tent and took his place on the rough piece of carpet that had been set down for him. He examined the food that was bubbling away in the metal cauldron in the middle of the fire. It was some sort of lamb stew and he had to admit that it smelled delicious. The men had barely spoken to him since they had picked him up at the rendezvous point, a day's ride away on the other side of the Afghanistan border. He knew that they were Kochis – Afghan nomads – and that they were loyal only to themselves. They would have been paid to bring him this far ... gold, weapons, food, or all three. He wasn't sure if he trusted them. Certainly, from the moment they had set eyes on him, they hadn't trusted him.

**11** There were five men sitting around the fire, huddled together in the Herat mountains in the north-west corner of Afghanistan.

What does the word 'huddled' mean in this sentence?

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1 mark

**12** The horses that had brought them here were tethered nearby.

What does the word 'tethered' mean in this sentence?

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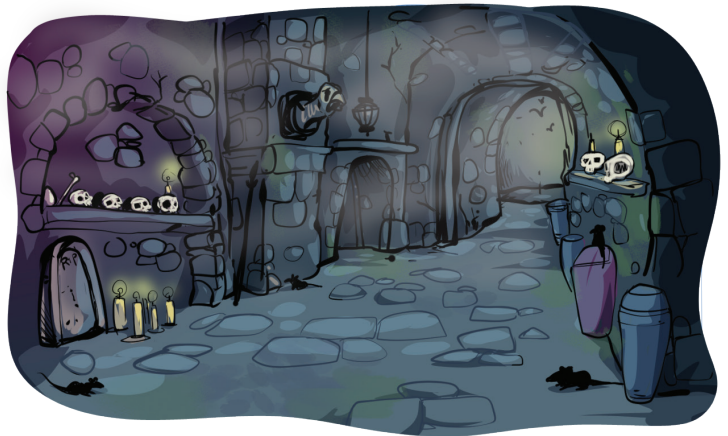


## An extract from 'Frankenstein' by Mary Shelley

It was on a dreary night of November that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs.

How can I describe my emotions at this catastrophe, or how delineate the wretch whom with such infinite pains and care I had endeavoured to form? His limbs were in proportion, and I had selected his features as beautiful.

Beautiful! Great God!



His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of a pearly whiteness; but these luxuriances only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun white sockets in which they were set, his shrivelled complexion and straight black lips.

13

**With an anxiety that almost amounted to agony, collected the instruments of life around me.**

What does the word 'agony' mean in this sentence?

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14

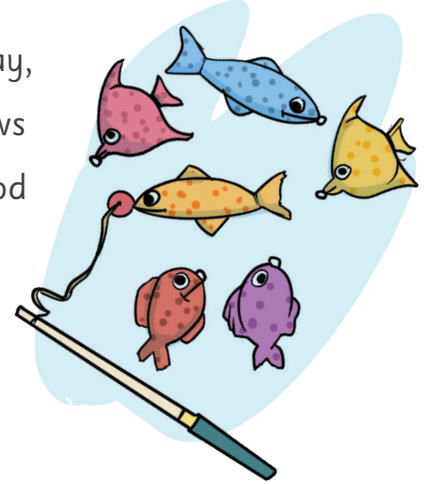
**His yellow skin scarcely covered the work of muscles and arteries beneath.**

What does the word 'scarcely' mean in this sentence?

1 mark

## An extract from 'The Owl and the Pussycat' by Edward Lear

Pussy said to the Owl, "You elegant fowl!  
How charmingly sweet you sing!  
O let us be married! Too long we have tarried:  
But what shall we do for a ring?"  
They sailed away, for a year and a day,  
To the land where the Bong-Tree grows  
And there in a wood a Piggy-wig stood  
With a ring at the end of his nose,  
His nose,  
His nose,  
With a ring at the end of his nose.



**15** Pussy said to the Owl, "You elegant fowl!"

What does the word 'elegant' mean in this sentence?

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**16** O let us be married! Too long we have tarried.

What does the word 'tarried' mean in this sentence?

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1 mark



## 'The Mountain and the Squirrel' by Ralph Waldo Emerson

The mountain and the squirrel  
Had a quarrel,  
And the former called the latter  
"Little prig."

Bun replied,  
"You are doubtless very big;  
But all sorts of things and weather  
Must be taken in together  
To make up a year  
And a sphere.



And I think it no disgrace  
To occupy my place.  
If I'm not so large as you,  
You are not so small as I,  
And not half so spry:  
I'll not deny you make  
A very pretty squirrel track.

Talents differ; all is well and wisely put;  
If I cannot carry forests on my back,  
Neither can you crack a nut."

17

**The mountain and the squirrel / Had a quarrel.**

What does the word 'quarrel' mean in this sentence?

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18

**And I think it no disgrace / To occupy my place.**

What does the word 'disgrace' mean in this sentence?

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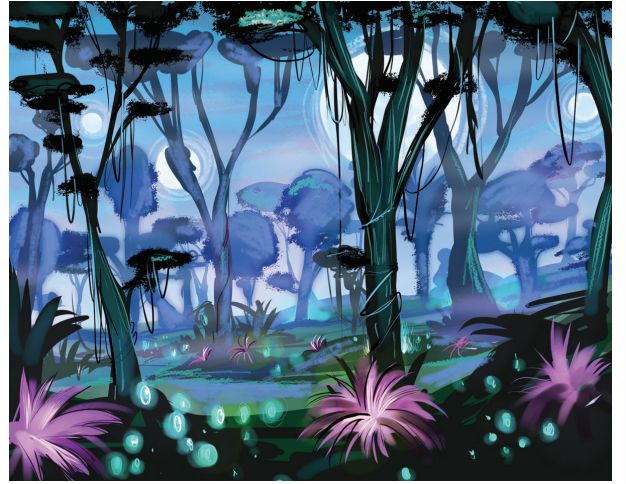


## 'The Moon' by Robert Louis Stevenson

The moon has a face like the clock in the hall;  
She shines on thieves on the garden wall,  
On streets and fields and harbour quays,  
And birdies asleep in the forks of the trees.

The squalling cat and the squeaking mouse,  
The howling dog by the door of the house,  
The bat that lies in bed at noon,  
All love to be out by the light of the moon.

But all of the things that belong to the day  
Cuddle to sleep to be out of her way;  
And flowers and children close their eyes  
Till up in the morning the sun shall arise.



### 19 The squalling cat and the squeaking mouse.

What does the word 'squalling' mean in this sentence?

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### 20 Till up in the morning the sun shall arise.

What does the word 'arise' mean in this sentence?

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