

## Exercise 1

Read the following leaflet about a popular attraction called Deacon Dale, and then answer the following questions.



### WELCOME TO DEACON DALE!

Every year, thousands of people come to Deacon Dale, an area of outstanding natural beauty. Visitors have always been able to walk in the hills and admire the beautiful views, but this year, for the first time, they have the opportunity to explore another world below the ground.

Hidden under the hills, a network of caves has been discovered, and this year, five kilometres of tunnels which link these caves have finally been opened to the public. Now this exciting tourist attraction has something for everyone.

#### Deacon Hole

If you fancy something really different, you'll have to put on your climbing boots and a safety helmet to go down into Deacon Hole, the deepest cave in the network. To reach this cave, you have to face the challenge of crawling on your hands and knees through 800 metres of narrow tunnels. Kim Tomas, a recent visitor, said that this was really exciting: "The highlight of my visit," she said, "was the thrill of reaching the magnificent cave, after crawling in the dark for such a long time!"

#### Starting out

For young people who want to take up caving but lack confidence, there are easier practice caves to explore. Safety is taken very seriously. Our safety features include fixed ladders, first aid supplies and spare torches.

All the essential caving equipment is provided, including an over suit, boots, helmet, light and belt. Any other items, such as a wetsuit or knee and elbow pads, are available at an additional cost.

Your adventure will begin with a short talk by one of our highly qualified instructors, who will show you how to put on and use the equipment. You will then be ready to start your adventure! When you finally emerge from the caves, exhausted but proud, you will be awarded with a special achievement certificate.

Apart from offering an exciting sporting activity for all, Deacon Dale is ideal for groups. Not only does it encourage teamwork and trust, but it also provides participants with a shared sense of achievement.

#### Visitor information

If you would like more information about Deacon Dale, please visit our website at [www.deacondale.com](http://www.deacondale.com) and for advice about educational bookings, email our groups coordinator. Details can be found on the website.

With plenty to do, whatever the weather, Deacon Dale is open all year round. Come and discover the magic!

(a) What has been found underground at Deacon Dale?

..... [1]

(b) What must you do before you can start climbing down to Deacon Hole? Give **two** details.

..... [1]

(c) According to Kim Tomas, what was the best part of her visit?

..... [1]

(d) Where in Deacon Dale can beginners start caving?

..... [1]

(e) Which equipment will you have to pay extra for when you go caving at Deacon Dale? Give **two** details.

..... [1]

(f) According to the leaflet, how will you feel after your first caving adventure?

..... [1]

(g) Why is a visit to Deacon Dale popular with groups? Give **two** details.

..... [2]

(h) Who is the best person to contact to arrange a school visit?

..... [1]

[Total: 9]

## Exercise 2

Read the following article about the Dana octopus squid, and then answer the following questions.

### SQUID THAT LIGHTS UP IN THE DARK

Several species of squid, including the giant squid and the colossal squid, live in the deep waters of the ocean. However, very little is known about them. Scientists have therefore been particularly excited to discover another type of deep-sea squid – one which lights up in the dark.

This enormous squid, known as the Dana octopus squid, has been filmed for the first time in the wild. The film shows the squid, which can grow as big as a human, using bright, flashing lights on its arms to catch other creatures.

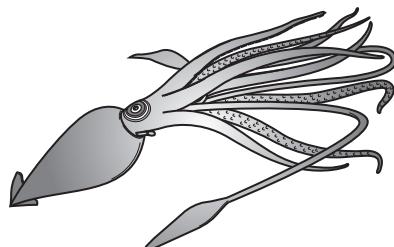
The glow-in-the-dark squid was discovered in 2006 in the dark waters of the North Pacific Ocean off south-eastern Japan by Japanese scientists, during an expedition led by Tsunemi Kubodera of the National Science Museum in Tokyo. They attracted the massive squid by putting food at the end of a long line which they dropped from the research ship down into the ocean, and lowered cameras alongside it. Two years previously, in 2004, the same team had also filmed the first ever images of a live giant squid.

The Dana octopus squid, like most squid, has eight arms with cat-like claws on its suckers. Other large squid use two long tentacles, which are like extra arms, to grab creatures while hunting, but scientists think that the Dana octopus squid blinds its victims using light-producing organs on the ends of two of its arms.

These organs, which are about the size of lemons, are called photophores, and they can be opened and closed like eyes. This deep-sea squid swims in a very dark environment, so their photophores can be used to light up its immediate surroundings. Additionally, the squid uses them to measure the distance between itself and its prey.

The Japanese scientists noticed that the Dana octopus squid also glows when it is not hunting. They believe that the squid uses these light signals as a form of communication. For example, a single flash of light seems to act as a warning signal when the squid is approaching unfamiliar objects. Further investigation revealed that these flashes of light could also be used to attract a mate.

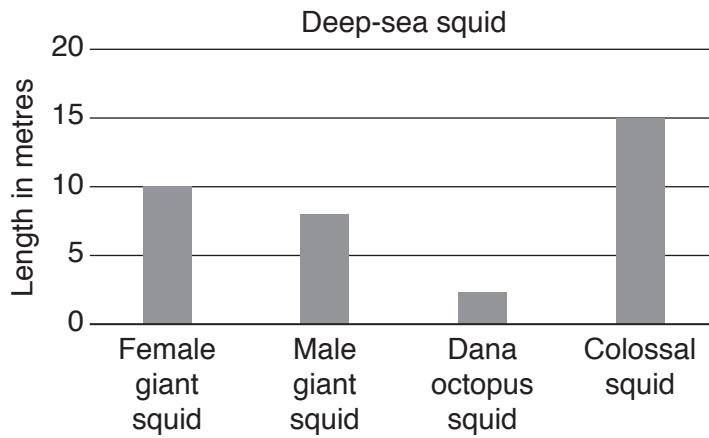
Researchers already had some ideas about how this glowing squid behaves, and the new video footage supports those theories. "It's nice to have some proof," says squid researcher Michael Vecchione of the Natural History Institute. "It has mostly been just theory and guesswork up until now."



The footage also shows that the Dana octopus squid is a very effective hunter. It swims backwards and forwards and it is able to change direction rapidly by bending its body. On the film some were seen reaching speeds of 2.5 metres per second as they attacked the food.

"Some people have said that all deep-water squid are rather slow and heavy because their muscles are not very firm," says Vecchione, "but this particular type of squid has got very muscular fins for swimming."

The Dana octopus squid is thought to be one of the world's largest squid and scientists believe that they live in large numbers in the tropical oceans. However, because they swim in such deep waters, it has not been easy to conduct more detailed research on them. Until the Japanese team caught them on film, no one had ever seen one alive.



(a) Where exactly was the Dana octopus squid first filmed?

..... [1]

(b) How did the Japanese scientists film the Dana octopus squid?

..... [1]

(c) In which year was the giant squid first filmed?

..... [1]

(d) According to the scientists, what is unusual about the way the Dana octopus squid catches its food?

..... [1]

(e) What are the Dana octopus squid's light-producing organs comparable to in size?

..... [1]

(f) Why is the video evidence of the Dana octopus squid important to the researchers?

..... [1]

(g) Apart from using light-producing organs, what makes the Dana octopus squid such a good hunter? Give **two** details.

.....  
..... [2]

(h) Why is the Dana octopus squid better at swimming than other deep-sea squid?

..... [1]

(i) Why is the Dana octopus squid so difficult to study?

..... [1]

(j) According to the chart, which is the second longest squid **and** how long is it?

..... [1]

(k) What does the Dana octopus squid use its light-producing organs for? Give **four** details.

.....  
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.....  
..... [4]

[Total: 15]