ACTIVITY SHEET EPISODE 18: LABELLING AND DESCRIBING AN OBJECT

Practise and consolidate your learning about labelling and describing an object by completing our activities. Remember to refer to the Study Notes and video for this episode if you need help.

Note: The answers for **all** activities are on page 4.

ACTIVITY 1

Read the passage below and complete the questions that follow.

Bio-robotic Vision

Australian scientists are studying how bees see the world in order to design a robotic helicopter which can fly by itself. They have observed that when a bee sets out from its hive in search of food, it can travel almost 10 kilometres. Having found food, it knows exactly where to go to return home to the hive. In fact, it makes a *beeline* back home. The question baffling scientists is how their tiny direction-finding organisms work. A bee's brain is the size of a sesame seed and has significantly fewer neurones than a human brain. But having learnt what clever tricks these intelligent insects use to see and navigate in the world, scientists have redesigned a radio-controlled crop-dusting helicopter so that it can find its own way around the world without a pilot or anyone at the controls.

The brains of this helicopter consist of a sophisticated Pentium III on-board computer which can be programmed or directed as it flies. Its eyes are a tiny camera with special mirrors which assist it with navigation. The scientists have called this device a *hat mirror* because it is shaped like a Mexican hat. The device, the hat mirror, consists of two main mirrors: a panoramic mirror at the top and a circular mirror at the bottom. The latter does the stereo imaging between the two mirrors. There is another secondary, less important mirror. Its purpose is to reflect all light from the two mirrors to the top and then back down into a hole where a video camera sits inside the mirror.

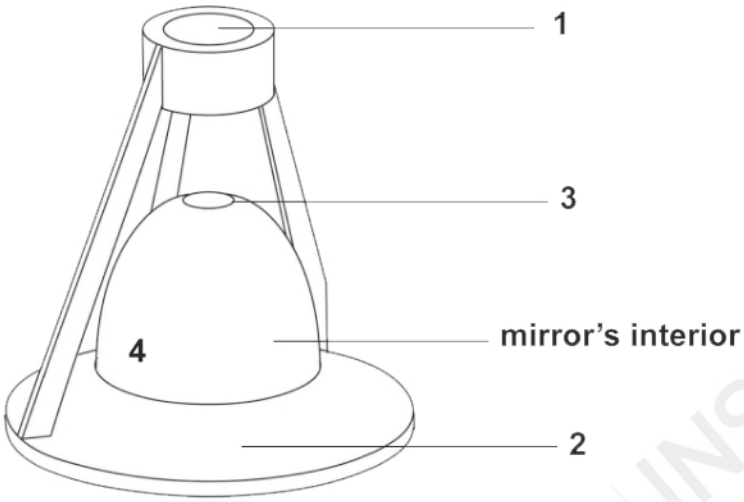
This hat mirror gives the helicopter all-round vision or a panoramic view just like for an insect which has 360˚vision of the horizon at all times. The horizon, in actual fact, maps onto a small circle in an image created by the hat mirror and, keeping the horizon circle centred in the mirror assures stability. This is important because it gives *attitude* from the horizon – in other words, it registers which way is up. One other thing that vision gives is a sense of distance to objects. Being able to look at the *image motion*, it is possible to work out the distance to objects all around, thus making sure of not flying into them.

Questions 1-4

Label the diagram below.

*Choose **NO MORE THAN TWO WORDS** from the passage for each answer.*

Hat Mirror Device



1. _____ mirror
2. _____ for stereo imaging
3. _____
4. _____ is situated

Questions 5-10

Complete the sentences below.

*Choose **NO MORE THAN THREE WORDS AND/OR A NUMBER** for each answer.*

5. Scientists have designed a helicopter with _____.
6. Bees can travel _____ from their hive looking for food.
7. The redesigned helicopter does not need a _____ to navigate it.
8. A programmed computer serves as the _____ of the helicopter.
9. The hat mirror provides a _____ of the horizon for the helicopter.
10. The distance of objects is calculated by looking at the _____.

ACTIVITY 2

Match the word or collocation in the left-hand column with its meaning in the right-hand column. Use the context from the reading passage **below** to determine its meaning.

1	make a beeline	A	showing an image in two dimensions
2	to baffle (someone)	B	records the direction of something
3	direction-finding organisms	C	something that is round
4	to navigate in the world	D	a clever and complex electronic machine
5	radio-controlled	E	a piece of equipment used for a particular purpose
6	sophisticated computer	F	a living thing whose function it is to show direction
7	device	G	to confuse
8	circular	H	something that is managed by a radio
9	stereo imaging	I	to help to find your way around
10	it gives attitude	J	head straight towards something as quickly as possible

Bio-robotic Vision

Australian scientists are studying how bees see the world in order to design a robotic helicopter which can fly by itself. They have observed that when a bee sets out from its hive in search of food, it can travel almost 10 kilometres. Having found food it knows exactly where to go to return home to the hive. In fact, it makes a beeline back home. The question baffling scientists is how their tiny direction-finding organisms work. A bee's brain is the size of a sesame seed and has significantly fewer neurones than a human brain. But having learnt what clever tricks these intelligent insects use to see and navigate in the world, scientists have redesigned a radio-controlled crop-dusting helicopter so that it can find its own way around the world without a pilot and no one at the controls.

The brains of this helicopter consist of a sophisticated Pentium III on-board computer which can be programmed or directed as it flies. Its eyes are a tiny camera with special mirrors which assist it with navigation. They have called this device a hat mirror because it is shaped like a Mexican hat. The device, the hat mirror, consists of two main mirrors: a panoramic mirror at the top and a circular mirror at the bottom. The latter does the stereo imaging between the two mirrors. There is another secondary, less important mirror. Its purpose is to reflect all light from the two mirrors to the top and then back down into a hole where a video camera sits inside the mirror.

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ACTIVITY 1 ANSWERS

1. panoramic
2. circular mirror
3. hole
4. video camera
5. bio-robotic vision
6. (almost) 10 kilometres
7. pilot
8. brains
9. panoramic view
10. image motion

ACTIVITY 2 ANSWERS

1. J
2. G
3. F
4. I
5. H
6. D
7. E
8. C
9. A
10. B