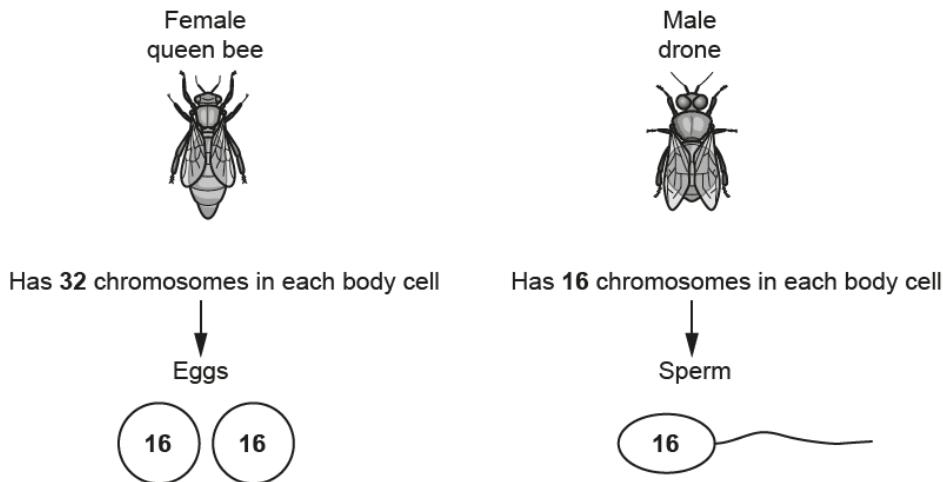


GCSE Biology B (Twenty First Century Science)
J257/01 Breadth in Biology (Foundation)

Question Set 16

1. Female and male bees have different numbers of chromosomes.

The diagram shows the number of chromosomes in female queen bees and male drones.



Use the information in the diagram to answer the following questions.

(a) How is the number of chromosomes found in body cells in the queen bee different to those in the male drones?

[1]

(b) The female queen bee produces eggs.

Which type of cell division makes eggs?

[1]

(c) Fertilised and unfertilised eggs can both become offspring. The sex of the offspring is determined by whether or not the egg was fertilised.

Complete the table.

| Egg | Number of chromosomes in offspring | Sex of offspring |
|-----------------------|------------------------------------|------------------|
| Egg is fertilised | | |
| Egg is not fertilised | | |

[4]

(d) Bees make honey from nectar.

Nectar is made of sucrose and water.

Bees have an enzyme called invertase. This enzyme converts the sucrose in nectar into two separate sugars.

(i) Use the 'Lock and Key' model to describe how the enzyme converts the sucrose into two separate sugars.

[3]

(ii) A student investigates the effect of temperature on the rate of the reaction catalysed by the enzyme invertase.

What effect will increasing the temperature have on the rate of reaction?

Explain your answer.

[2]

Total Marks for Question Set 16: 11

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