

Honey-bee

The honey-bee has been domesticated thousands of years ago. Usually, in a hive of honey-bees there are one queen and a few male bees, and all the rest are work-bees. A queen-bee lives for 5 years and more, but a work-bee lives for several weeks to two months, depending on the season. Work-bees work first inside the hive, and only when they become adult bees they work outside the hive.

For the first two days of its life, a work-bee works mainly at cleaning the cells and preparing them for new eggs.

For the next three days it works at feeding the adult larvae with pollen and honey.

During the 6-11 days of its life, the work-bee feeds young larvae with food rich in protein and vitamins - "queen food".

For the next 10 days, the work-bee works as a storekeeper, cleaner, and mason-bee.

At the end of its life (about 10 days) it works mainly outside the nest, collecting honeydew, pollen, and water.



photograph: Itshak Movshovich

Honey-bee

- 1 a. In your notebook, try to describe in various ways (such as a table, a diagram, or a graph) the work-bee's work during its life.
b. Mark in your description the work-bee's work outside and inside the nest.

- 2 Christopher Robin, watching a bee, found out that it flies on average one meter per second, and that the field where it collects honeydew, pollen, and water is located about 20 meters away from the hive.



- a. What is the maximal number of times that the bee could fly back and forth (between the hive and the field) during one hour?

Answer: _____

- b. What is the maximal number of times that the bee could fly back and forth during a whole day (a day and a night) assuming that it rests for about six hours each day?

Answer: _____

- c. What is the maximal number of times that the bee could fly back and forth during the whole period of its work outside the nest collecting honeydew, pollen, and water? (rely on section 1.)

Answer: _____

*I'm dying for a cup
of coffee and honey cake
right now!*



photograph: Itshak Movshovich

Honeycomb

*Honeycomb: a plate of wax with hexagonal cells. Into some of the cells the queen-bee lays its eggs, and the rest are filled with honey. In nature, the bees build the honeycombs from wax they secrete from their bodies

In order to facilitate the care of the hive and the removal of honey, bee-keepers insert into the hive wooden frames that are easy to pull out. These frames have a wax base on which the bees build their cells. The cells of a hive are joined together and have shared walls.

In this way the work-bees build a vertical honeycomb* containing two layers of cells with their openings directed sideways. The cells in the center of the honeycomb are usually used for raising the young, and the outside cells are used for storing honey.

- 1 Mr. Honeyman can remove 3-3.5 kg of honey from each honeycomb. He filled 400 honey jars, 1.5 kg of honey in each jar. How many honeycombs were needed, approximately, to fill all the jars?

Answer: _____

- 2 Mr. Honeyman found it difficult to sell all the honey jars he prepared, and when he was left with 300 kg of honey, that is to say 200 jars, he decided to divide the remaining honey into smaller jars. He poured some of the honey into jars containing 200 g each, and the rest into 750 g jars. Suggest various possibilities of dividing the honey into the smaller jars.

Answer: _____

- 3 In Mrs. Honeycomb's farm the workers removed the honey from 200 honeycombs, containing 3.5 kg honey each. They poured the honey into 200 g jars. How many jars were filled?

Answer: _____

To the teacher:

It is advisable that you remind your students to use a calculator for performing the calculations.

4 There is much ado in Mr. Poo's farm. Why?

Mr. Poo prepared in his storeroom 500 jars, of capacity of 200 grams of honey each, so as to fill them, exactly, with all the honey he had collected.

About what, then, is all the ado?

The cat Honeycake came into the storeroom and broke 200 of Mr. Poo's jars. Mr. Poo had no other choice, and he filled with honey only the remaining jars.



a. How much honey did Mr. Poo fill in the remaining jars?

Answer: _____

b. How much honey was left outside the jars?

Answer: _____

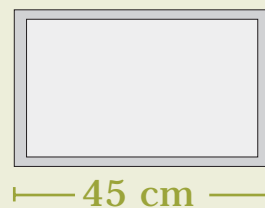
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photograph: Itshak Movshovich

a. The area of a honeycomb, including the frame, is 1057.5 cm^2 . The frame width is 2 cm.

What is the area of the honeycomb without the frame (see the figure bellow)?



Answer: _____

b. For New Year's day, Mr. Honeyman removed a honeycomb containing 3.198 kg of honey.

How many grams of honey were, on average, in each cm^2 of the honeycomb?

Answer: _____

To the teacher:

Summarizing test: "multi-stage word problems".