

Biology Competition

Every task may be done by student of any grade (tasks are not divided into groups by grade).

1. It is known that animals with unusual coloration (albino or melanist) sometimes born among normal ones. What kind of advantage and what kind of disadvantage this abnormality produce in their life?
2. You could find the tracks of many animals on the snow. There are special books which would help you to recognize the species of animal by their tracks. But maybe you will be interested in more precise questions — how long ago the animal was here? — what was the main activity of the animal on the spot? — is it some probability to meet the animal here again? To answer all these questions what kind of signs will you use?
3. Because of obvious reasons scientists are interested in the influence of weightlessness on living organisms. Try to assume the results of such study. What will be the effect of weightlessness on different group of organisms?
4. In eukaryotes DNA molecules is packed in the cell nucleus. Prokaryotes have no nuclei and their DNA lays in cytoplasm. The cell nucleus is an important evolutionary adaptation and at the same time it produces some problems for cells. Try to name as many “good” and “bad” things which came from cell nucleus, as you can.
5. There were a lot of species with very big and highly specialized teeth. More often it is front canines. The best known examples are elephant and saber-toothed tiger. Do you know some other examples? Explain how these animals can use their huge teeth?
6. Life is wildly spread on the earth. Even extreme places as hot springs and tops of high mountains have some inhabitants. What kind of problems very high and very low temperatures cause for life and how different organisms solve them?
7. The spacecraft has landed on the surface of the just discovered planet. Scientists have found that fungi are the only inhabitants here. Is it a real story or fantasy? Please, support your point of view with arguments.

We grade the answers as following:

Points are given for correct answers only. The score is not reduced by incorrect answers. The total score depends on points given for correct answers on each question and student grade.

Usually biology questions have several (sometimes many) correct answers. For each correct answer you can get from 1 to 2 points (the amount depends on question difficulty and answer evidence).

There are questions to which there is no uniquely correct answer. In this case scores are given for any reasonable hypothesis.

If the student gives arguments for the answer he'll get more points than without arguing. In some tasks students are asked to provide examples; each correct example gives additional 0.5–1 point. Given examples should correspond to the question. For example, when asked about the luminous aquatic animals an example of “Firefly” will be ignored.

The same is for very homogeneous examples. If question is about animals which the larvae and adults eat different food, examples of the “frog” and “toad” will be treated as homogeneous.

For every task you can get a few points, and even many (8–10). There is no upper limit. Unfortunately, often students give only one answer and get only 1 or 2 points. The amount of consistent arguments and correct examples given by a student is important. The volume of written text does not affect the score.

Arguing on the questions that are not from the task won't give additional points. Only student work is graded. No points are given for texts copied from any literature or any other source or other students' works..