Biology Competition

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

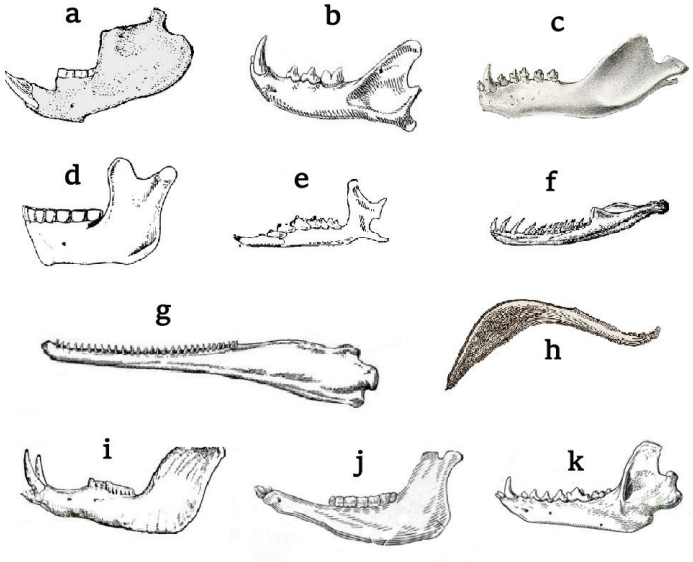
1. From very ancient times people have been domesticating different species of animals. For what purposes could they be domesticated? Name as many possibilities of using domesticated animals by people as you can.

2. In your opinion, to what biological and ecological consequences can lead the disappearance of all mushrooms on our planet?

3. Many seeds are very rich in nutrients, e. g. sunflower or pea seeds. However, there are plants with very small seeds as these seeds do not contain much nutrients. How can they survive without any nutrients? In what way such a strategy can be beneficial?

4. An experienced zoologist can detect genus or even species of an animal and even find out some of its biological features by one tooth or a jaw. In the museum of natural history all the labels with the names of the animals from the box with lower jawbones were lost. Try to examine the lower jawbones in the picture:

1) detect whose jawbones are drawn there as accurately as possible;
2) name the nutritional habits of each animal (not to scale).



5. Reservoirs and their coasts are often used as temporary massive animal packing spots for particular land or mainly land species of animals. What animals can gather in a semi-aquatic pack and what can be the causes of such packings?

6. Mammalian cells (e. g. of a human or a mouse) usually are placed in a typical tissue environment. However, sometimes scientists want to grow cells of a specific type ex vivo, separately from other cells. In your opinion, what can happen to the cells if they are just placed in an environment with nutrients? What conditions should an experimenter think about so that the cells can grow successfully and preserve their characteristics?

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 the points given for correct answers on each question and the student's 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 a 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 works for very homogeneous examples. If the question is about animals whose 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.

Don't forget to **sign** your work (please, write the card number, your last name, school and grade) before **submitting** the work. You do not have to submit the sheet with the tasks. The tasks, their solutions and the results of the competition will be published at http://turlom.olimpiada.ru after November 20^{th}.