Astronomy and Earth Science Competition

You can choose the most interesting tasks from the 7 proposed ones (1–2 tasks for 8th grade or younger; 2–3 for 9–11th grades). You can either use the list of questions as a plan for your answer or you can answer the questions separately. Contribute a reasonable number of examples and explanations.

1. There are constellations that contain Latin word "canis" in their names. What does it mean? What are these constellations? How is Russian word "kanikuly" (meaning school holidays) connected to "canis" and these costellations?

2. A lot of science fiction films (for example, Star Wars) feature the following scene: the main character flies through an asteroid belt and maneuvers trying to avoid possible collisions. How would this fictional character pass through the main asteroid belt in our Solar system? What is the distance between asteroids in the main belt? How large are these asteroids? Is it easy to go through the main asteroid belt? How was this problem solved during interplanetary missions? What other asteroid belts do you know?

3. Can inner water bodies form in Antarctica? Can you name some of such water bodies? What are their features? How are they formed? Are there similar water bodies somewhere else? How are they discovered and studied?

4. The Jupiter consists of the same chemical elements as the Sun does; however, the Jupiter doesn't burn like a star. Why? Why doesn't all the Sun's hydrogen explode at once? Why does it burn slowly and for a long time? (By the way, how long does it burn?)

5. Solar eclipses help to make a lot of discoveries and to confirm some scientific theories. But there are also eclipses of other stars. How are they called? What objects can cause such "eclipses"? What can be studied using this phenomenon? What discoveries have already been made due to it?

6. Astronomers study distant objects, so they use other units rather than miles or kilometers to measure distance. What ways to describe long distances in space do you know? How the largest distances between star clusters and galaxies are measured? What units are used to describe these enormous distances?

7. Metric expansion of the universe had been discovered back in 1913–1914. However, the Nobel prize in physics was given to the astrophysicists who studied the properties of that expansion only in 2006. What discoveries did they make? What new properties of the expansion did they find? How is it possible to find out that the distance between galaxies is increasing?

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 $\mathbf{20}^{\boldsymbol{th}}$.