

**Astronomy and Earth Science Competition**

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It's recommended to choose the most interesting tasks from 7 proposed ones (1–2 tasks on 8 class and earlier, 2–3 ones on 9-11 classes). Your answers should be justified. You will get extra points for extra examples supporting your answers.

1. On November 19, 2011 we will celebrate the 300th anniversary of the great Russian scientist Mikhail Lomonosov. What do you know about his achievements in astronomy and Earth sciences?
2. On September 26 the polar day in the North Pole will end; it began on March 19, so its duration will be 191 days. On the South Pole, the polar day will last from September 21 till March 23, so its duration will be 182 days. What is the duration of the polar night? Why is the polar day on the North Pole longer than that on the South Pole? What can you say about polar days and nights on the Moon? On Mars?
3. How many “horns and hoofs” can be found in the start chart?
4. In 1959, A. P. Kapitza discovered a new lake several kilometers underground. How did he find it? In what aspects is this lake unique? Why is this discovery listed among the greatest geographical discoveries of the XXth century? Why is it important for the study of the Earth and the Solar system?
5. What is the hottest and the coldest place on Earth? In the Universe?
6. On March 11, 2011, an unpredicted strong earthquake broke out in Japan. Is it true that, as a result of the earthquake, Japan islands were shifted by 20–40 meters? What is earthquake? What causes earthquakes and why are they dangerous? What security measures proved to be reasonable? What precautions should be made in the future? Where?
7. On July 18th, 2011 the Russian telescope RADIOASTRON was launched from Baikonur space centre. Why does one need a radiotelescope in space when radio waves reach the earth surface in spite of the atmosphere? Is it true that the mentioned telescope is the biggest (highest, farthest, quickest)? What are the astronomers planning to investigate with this telescope? What exactly do they want to discern?

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