BraheChallenge(Grades7 and8)

Sample Package

1.Do not start writing the contest until told to do so.
2.The first five questions are for administration purposes only; they will not count towards your final score, but must be completed if you wish to be recognized as an official contestant.
3.The 35-question multiple-choice contest corresponds to Questions 6 to 40, all of which have five possible answers – A, B, C, D, and E – only one of which is correct. Completely fill in the Scantron box that corresponds to your solution for each question. If you are unsure of this coding system, speak to the supervising teacher.
4.You may use rulers, geometric tools, and paper for rough work. Calculators are recommended.
5.Diagrams are not drawn to scale, while most numerical figures are rounded for simplicity.
6.You will have a total of sixty minutes to complete the contest.

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1. In which of the following programs are you currently enrolled? (Indicate all that apply)

   (A) Gifted (B) French Immersion (C) ESL (D) Other (E) None

2. What is your grade?

   (A) 6 or below (B) 7 (C) 8

3.What is your age?

   (A) 11 or below (B) 12 (C) 13 (D) 14 (E) 15 or above

4.Are you willing to have your name posted on our website at <www.spacesim.org>?

   (A) Yes (B) No

5.Are you interested in participating in a simulated space mission or Elementary Education Program at our facilities?

   (A) Yes (B) No (C) Maybe

Part A – Identify the astronomical entity asked for in each question.

Each question from 6 to 15 will feature various astronomic, scientific, geographic, historic, and cultural details pertaining to a common celestial object or domain. Students are to indicate the identity of the body being described.

6.A remnant of the original solar nebula, this postulated object is located about one light year from the Sun and is believed to be a spherical cloud constituting many billions of comets.

(A) Oort Cloud (B) Andromeda (C) Asteroid Belt (D) Kuiper Belt (E) Scattered Disk

Part B – Use your knowledge of astronomy, science, and mathematics to answer these.

Each question from 16 to 24 will provide a small amount of background material pertaining to a specific astronomic concept or entity. Using this information, as well as relevant knowledge of space science, students are to answer questions linked to the topic.

7.Saturn is the only planet in the Solar System whose density is less than that of water. If the mass of Saturn is approximately 5.7×10^{26} kg, while its volume is 8.3×10^{14} km^3, what is its average density, rounded to the nearest hundredth?

(A) 0.061 g/cm^3 (B) 0.24 g/cm^3 (C) 0.69 g/cm^3 (D) 2.77 g/cm^3 (E) 14.85 g/cm^3

Part C – All questions appear in sets of two dealing with the same topic.

Each question pair from 25 to 40 (25-26, 27-28, 29-30, 31-32, 33-34, 35-36, 37-38, 39-40) will pertain to a specific area of astronomy. The first question from each set will usually provide background information for both itself and the second question. Each correct answer is still worth one point.

8.The conversion between the Fahrenheit and Celsius scales is: $°C = (°F-32) / 1.8$
If the average temperature of Venus is 465 °C, what is its temperature in degrees Fahrenheit?

(A) 246 (B) 587 (C) 717 (D) 869 (E) 1131

9.The maximum surface temperature of the Moon was recorded in both degrees Celsius and degrees Fahrenheit, but had the same numerical value. What temperature is it? (on both scales)

(A) –400 (B) –40 (C) –4 (D) 0 (E) 14

Solutions: *6. (A)* *7. (C)* *8. (D)* *9. (B)*

The Ottawa-Carleton Educational Space Simulation thanks you for expressing interest in the 2007 Brahe Challenge!

If you wish to register your school for this competition, fill out the attached form or print one off from our website at <www.spacesim.org>. We are looking forward to your participation!