

# EARTH AND SPACE

## 1. EARTH AND SPACE

Writer: American Heritage

Toss Up: Short Answer

Sapphires are made by refining which mineral?

Bonus Answer: Corundum

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Bonus: Multiple Choice

Which of the following statements about corundum is not true?

- W) It is an aluminum oxide
- X) It is 8.0 on the Moh's hardness scale
- Y) It is naturally transparent
- Z) It is the source material for rubies

Bonus Answer: X

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## 2. EARTH AND SPACE

Writer: American Heritage

Toss Up: Short Answer

What 16th century astronomer first observed Saturn's ring system, which now has its largest gap named after him?

Bonus Answer: Cassini

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Bonus: Multiple Choice

Which of the following is true about Titan?

- W) Its surface has never been explored
- X) One side always faces Saturn
- Y) It is the largest moon in the solar system
- Z) It has lakes of water on its surface

Bonus Answer: X

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## 3. EARTH AND SPACE

Writer: American Heritage

Toss Up: Short Answer

The proton-proton chain reaction occurs in most stars with mass equal to or less than our sun. Name 3 of the products (assuming consumption of 4 protons).

Bonus Answer: Helium nucleus, gamma ray, neutrino, positron. (Accept energy for gamma ray)

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Bonus: Multiple Choice

If a star does not undergo nuclear fusion through the proton-proton chain, what other mechanism is it most likely using?

- W) CNO
- X) FNT
- Y) FPL
- Z) CNT

Bonus Answer: W

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## 4. EARTH AND SPACE

Writer: Stuyvesant

### **Toss Up: Multiple Choice**

Which of the following rocks is responsible for the formation of black sand?

- W) Quartzite
- X) Schist
- Y) Slate
- Z) Basalt

**Toss Up Answer: Z**

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### **Bonus: Short Answer**

What is the scale used to measure the hardness of minerals?

**Bonus Answer: Moh Scale (accept: Moh)**

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## **5. EARTH AND SPACE**

**Writer: Stuyvesant**

### **Toss Up: Short Answer**

Which type of star will live for the longest period of time?

**Bonus Answer: Red Dwarfs (they can live for 1 trillion years or so)**

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### **Bonus: Multiple Choice**

What resonance does Pluto have with Neptune which ensures that the celestial objects will never impact each other?

- W) 2:1
- X) 3:2
- Y) 5:2
- Z) 5:4

**Bonus Answer: X**

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## **6. EARTH AND SPACE**

**Writer: Stuyvesant**

### **Toss Up: Short Answer**

By name or number, list the following classes of stars from hottest to coolest:

1. Class K
2. Class O
3. Class A
4. Class B

**Bonus Answer: 2,4,3,1**

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### **Bonus: Short Answer**

What are the brightest events in the universe?

**Bonus Answer: Gamma Ray Bursts**

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## **7. EARTH AND SPACE**

**Writer: Centennial**

### **Toss Up: Multiple Choice**

Which of the following was eventually proposed to explain the Pioneer anomaly?

- W) Radiation pressure
- X) Outgassing from spacecraft parts
- Y) Solar wind
- Z) Previously undiscovered planets

**Toss Up Answer: W**

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**Bonus: Short Answer**

What phenomenon was used to measure the speed of the Pioneer spacecraft?

**Bonus Answer: Doppler Effect**

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**8. EARTH AND SPACE**

**Writer: Centennial**

**Toss Up: Multiple Choice**

Which of the following compounds made up most of Mt. St. Helens' ash?

W) Magnesium oxide

X) Aluminum oxide

Y) Silicon dioxide

Z) Sodium oxide

**Toss Up Answer: Y**

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**Bonus: Short Answer**

What mineral forms the dome of Mt. St. Helens?

**Bonus Answer: Dacite**

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**9. EARTH AND SPACE**

**Writer: Centennial**

**Toss Up: Multiple Choice**

Which of the giant planets has the least massive moon system?

W) Jupiter

X) Saturn

Y) Uranus

Z) Neptune

**Toss Up Answer: Y**

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**Bonus: Short Answer**

Which moon is the only one in the Solar System to have a retrograde orbit?

**Bonus Answer: Triton**

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**10. EARTH AND SPACE**

**Writer: Granada Hills**

**Toss Up: Short Answer**

Tahiti, an archipelago in the South Pacific, is an example of what type of island?

**Bonus Answer: Oceanic**

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**Bonus: Short Answer**

CuFeS<sub>2</sub>, one of the most common ores for mining copper, is the chemical formula for what mineral?

**Bonus Answer: Chalcopyrite**

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**11. EARTH AND SPACE**

**Writer: Granada Hills**

**Toss Up: Multiple Choice**

Which of the following elements exist in the highest concentration on the surface of the moon?

- W) Aluminum
- X) Nickel
- Y) Silicon
- Z) Iron

**Toss Up Answer: Y**

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**Bonus: Short Answer**

A sun-like star has an apparent magnitude of 8, and an absolute magnitude of 3. Approximately how far away is the star in kiloparsecs?

**Bonus Answer: 0.1**

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## 12. EARTH AND SPACE

**Writer: Granada Hills**

**Toss Up: Short Answer**

What two isotopes of hydrogen are used to produce helium in nuclear fusion?

**Bonus Answer: Deuterium and Tritium**

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**Bonus: Multiple Choice**

Which of the following types of Martian Meteorites are the most commonly found on Earth?

- W) Nakhla
- X) Shergottite
- Y) Zagami
- Z) Chassignite

**Bonus Answer: X**

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## 13. EARTH AND SPACE

**Writer: Granada Hills**

**Toss Up: Short Answer**

Which scientist is noted with identifying the relationship between a galaxy's distance from a body and its speed?

**Bonus Answer: Edwin Hubble**

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**Bonus: Multiple Choice**

Which of the following is close to the value of the average temperature of Venus's atmosphere?

- W) 270 C
- X) 390 C
- Y) 470 C
- Z) 590 C

**Bonus Answer: Y**

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