

Grade 9 Unit Practice Test

Science

Space Exploration

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1. Which of the following statements describes the current model of the solar system?
 - A. The Sun orbits planets and the Moon orbits Earth.
 - B. The Sun orbits planets and Earth orbits the Moon.
 - C. Planets orbit the Sun and the Moon orbits Earth.
 - D. Planets orbit the Sun and Earth orbits the Moon.

Use the following information to answer question 2.

From a specific point, a star can be found using the coordinates below.

Altitude = 32°
Azimuth = 45°

Peggy wants to find this star in the night sky.

2. To physically locate the star, Peggy must face north, turn *i* , and look above the horizon at an angle of *ii* .

The statement above is completed by the information in row

Row	<i>i</i>	<i>ii</i>
A.	clockwise 45°	32°
B.	counterclockwise 45°	32°
C.	clockwise 32°	45°
D.	counterclockwise 32°	45°

Use the following information to answer numerical-response question 1.

Parts of the Universe

- 1 Earth
- 2 Galaxy
- 3 Solar system
- 4 Sun

Numerical Response

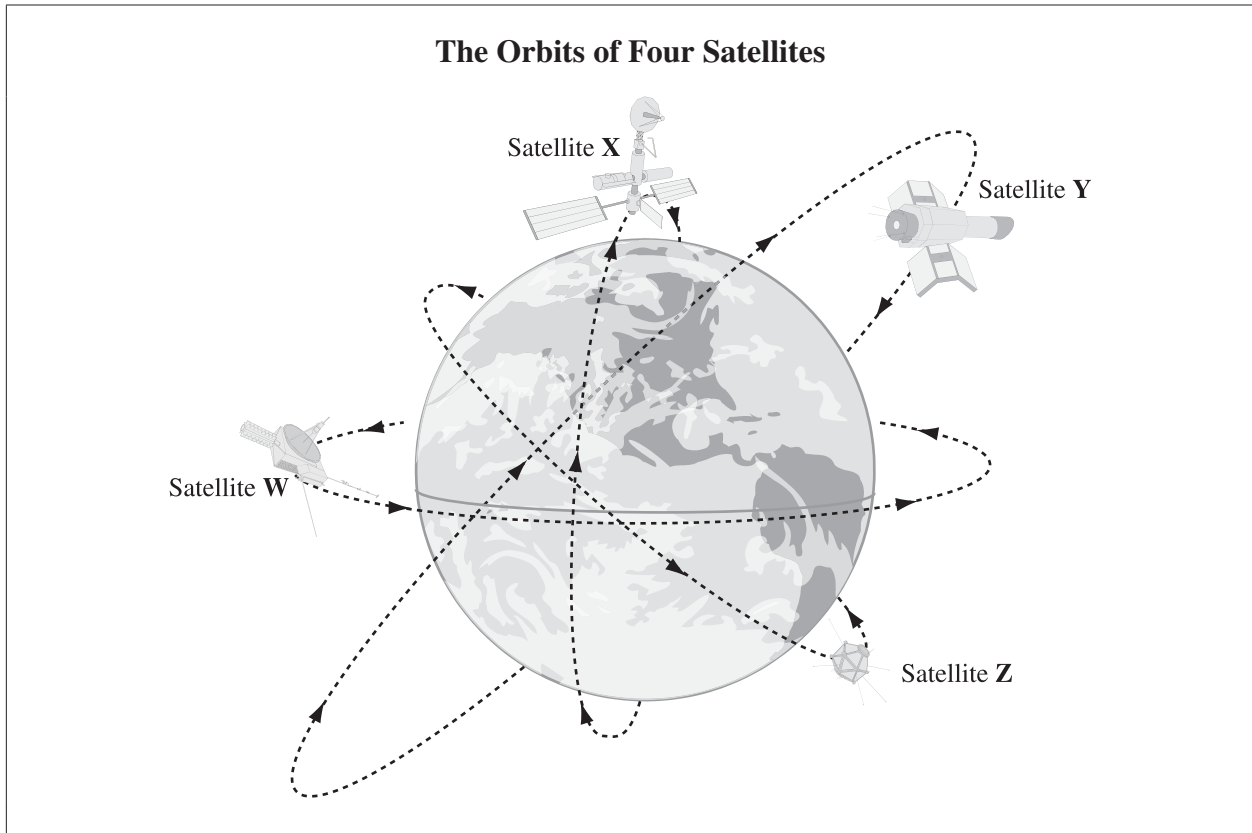
1. List the parts of the universe above in order from the part with the smallest diameter to the part with the largest diameter.

**Smallest
diameter**

**Largest
diameter**

(Record all **four digits** of your answer.)

Use the following information to answer question 3.



3. Which satellite in the diagram above can transmit signals over the greatest area of Earth's surface?
- A. Satellite W
 - B. Satellite X
 - C. Satellite Y
 - D. Satellite Z

-
4. Astronomers conduct spectral analysis to
- A. see images in space that are not distorted by Earth's atmosphere
 - B. observe celestial bodies that were previously invisible
 - C. map the location of celestial bodies in the sky
 - D. determine the composition of stars

Use the following information to answer question 5.

The diagram below shows Earth in various positions around the Sun in relation to an unknown star.



5. The **best** baseline to determine the distance between the unknown star and the Sun shown above will be established when Earth is in positions W and

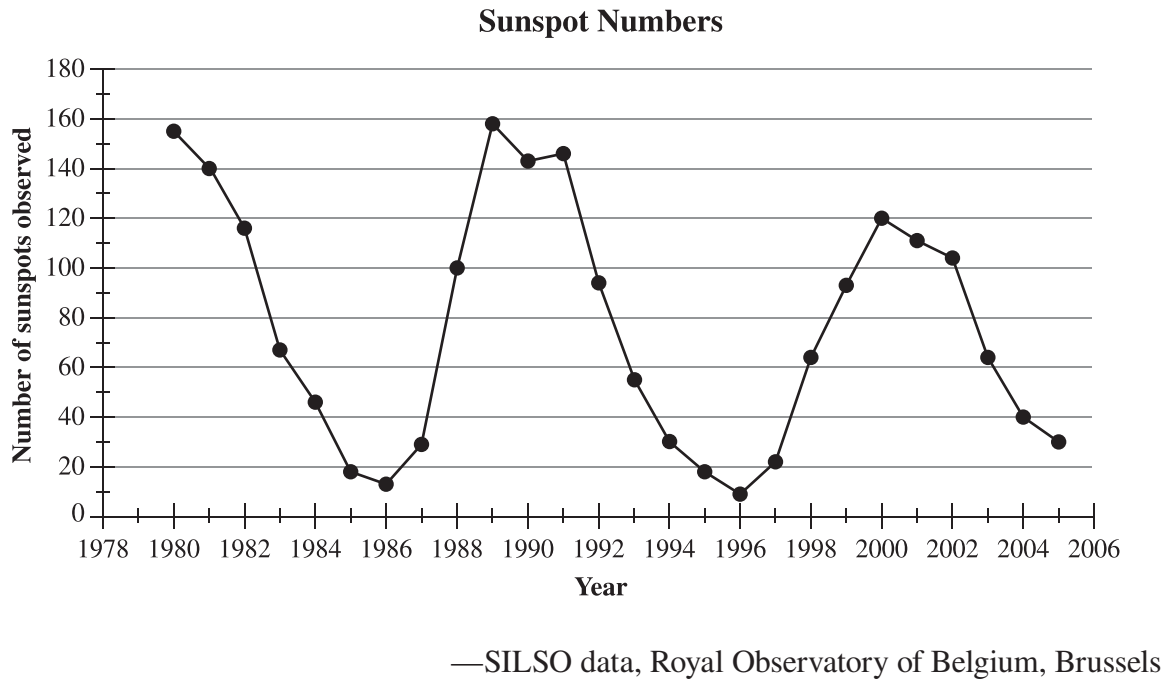
- A. V
- B. X
- C. Y
- D. Z

6. The Hubble Space Telescope produces clearer images than similar telescopes that are used on Earth because

- A. the Hubble Space Telescope is in orbit at a distance of about 550 km from Earth
- B. the Hubble Space Telescope is closer to the stars that it is viewing
- C. there is no interference from Earth's atmosphere in space
- D. there is no air pressure in space

Use the following information to answer questions 7 and 8.

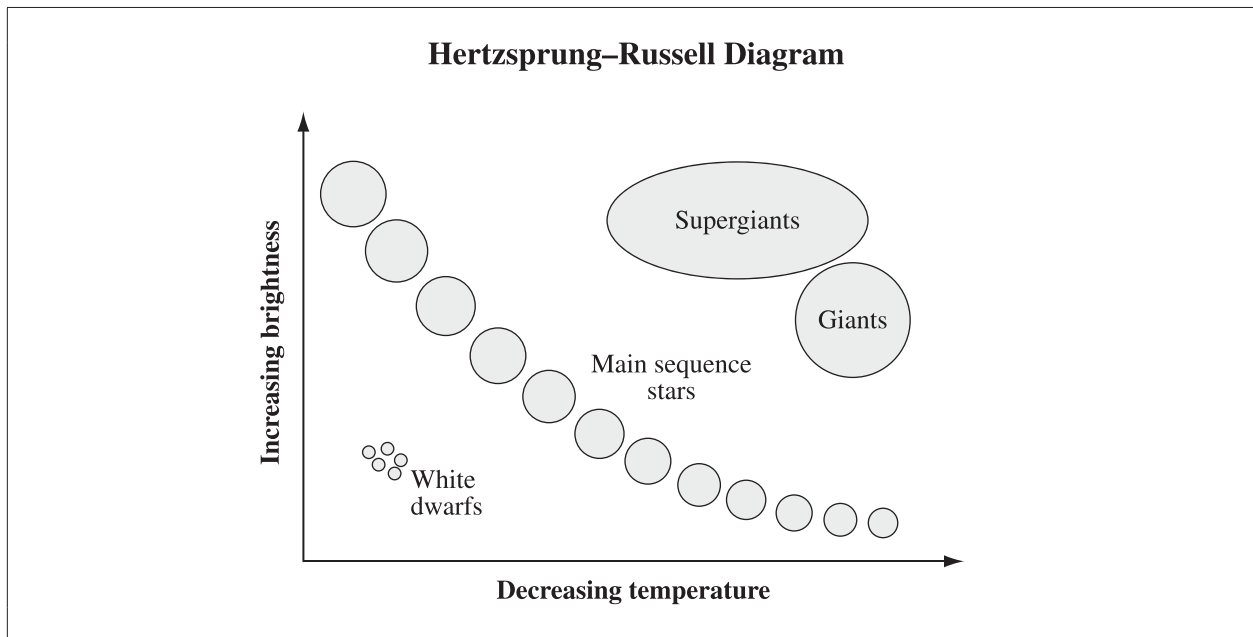
Sunspots are associated with solar flares and coronal mass ejections (CMEs). The number of sunspots alternates between periods of high numbers (solar maximum) and periods of low numbers (solar minimum).



7. Based on the information above, the number of sunspots that are expected to be observed in 2006 is
- A. 15
 - B. 35
 - C. 40
 - D. 50
8. Based on the information above, the manipulated (independent) variable is the
- A. year
 - B. number of sunspots observed
 - C. solar flares and coronal mass ejections
 - D. time between solar maximums and solar minimums

9. Which of the following technologies provides the **least** information about celestial bodies in our solar system?
- A. Telescope
 - B. Remote sensing
 - C. Spectral analysis
 - D. Global positioning system

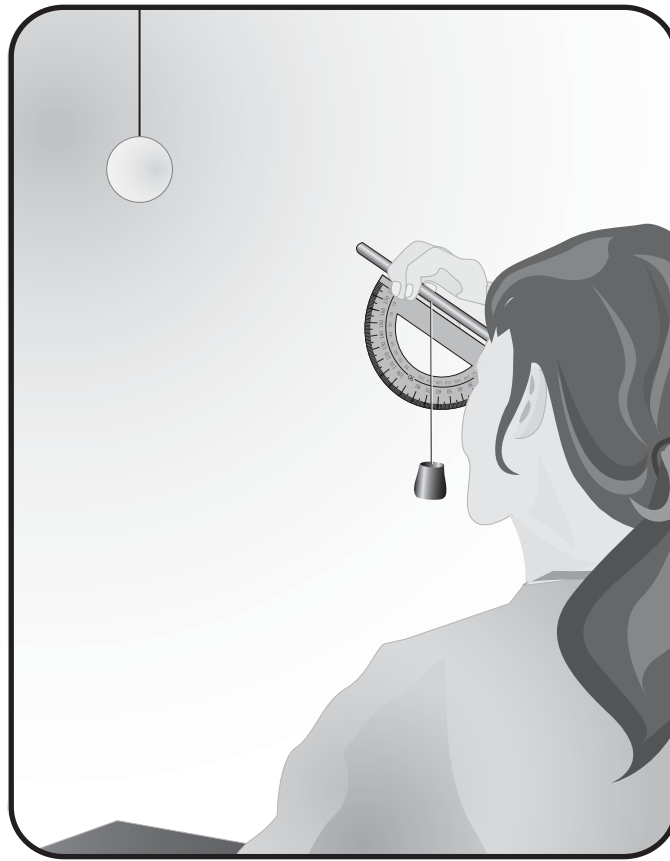
Use the following information to answer question 10.



10. When compared with supergiants, white dwarfs are
- A. brighter and colder
 - B. brighter and hotter
 - C. dimmer and colder
 - D. dimmer and hotter

Use the following information to answer question 11.

A Student Viewing a Hanging Sphere



11. What is the student in the illustration above **most likely** trying to determine?
- A. Diameter of the sphere
 - B. Distance to the sphere
 - C. Azimuth of the sphere
 - D. Altitude of the sphere

Use the following information to answer question 12.

Information About Jupiter

Length of year = 142 Earth months

Length of day = 10 Earth hours

12. When compared to the size of Earth's orbit, Jupiter's orbit is *i* , and when compared to Earth's spin on its axis, Jupiter's spin on its axis is *ii* .

The statement above is completed by the information in row

Row	<i>i</i>	<i>ii</i>
A.	larger	slower
B.	larger	faster
C.	smaller	slower
D.	smaller	faster

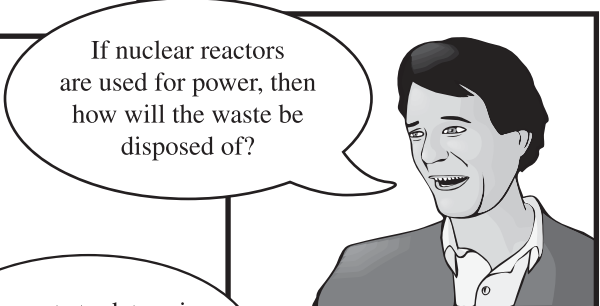
Use the following information to answer question 13.

The year 2050 is the target date for the creation of a base on the Moon.



Speaker I

How much will establishing this base on the Moon cost?



Speaker II

If nuclear reactors are used for power, then how will the waste be disposed of?



Speaker III

Who gets to determine how the resources on the Moon are to be used and distributed?



Speaker IV

How can we ensure that the Moon base is used for peaceful initiatives?

13. Which two speakers above ask questions that reflect an economic perspective?

- A. Speakers I and III
- B. Speakers I and IV
- C. Speakers II and III
- D. Speakers II and IV

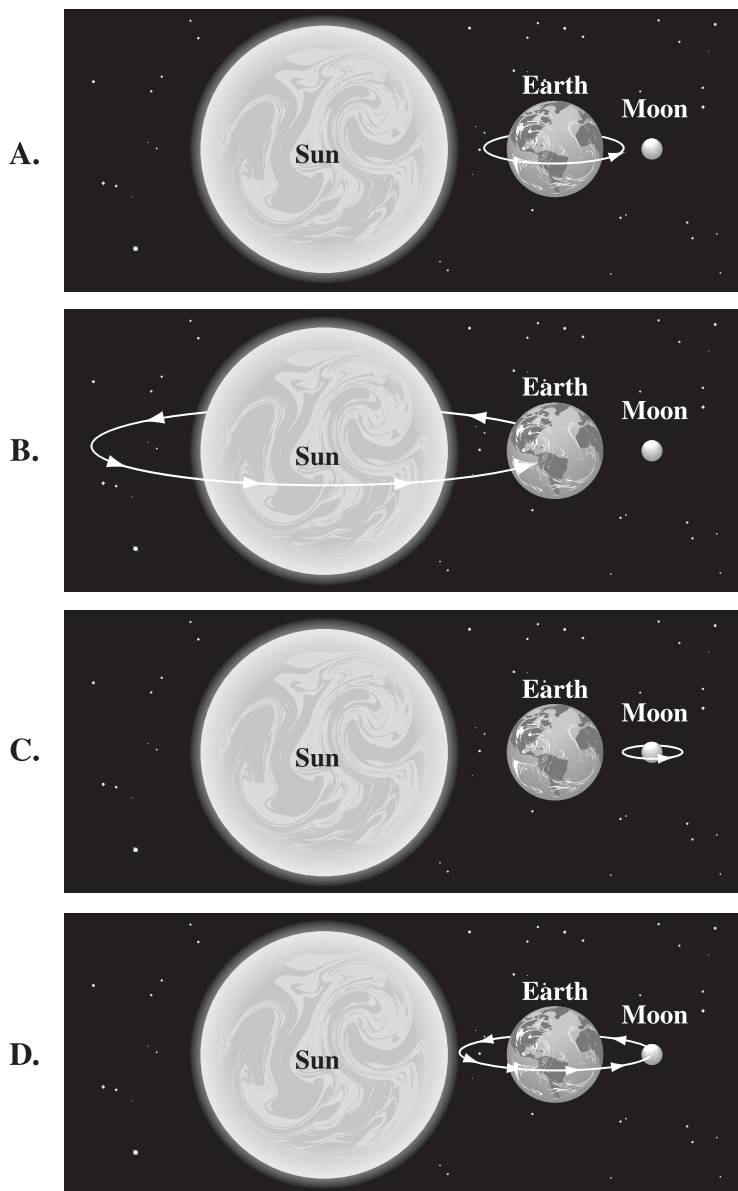
Use the following information to answer question 14.

Space junk is debris from artificial objects that orbit Earth.

14. From the perspective of an astronaut travelling in space, the **most significant** concern with space junk is the threat of

- A. collisions with the Sun causing solar flares
- B. damage to a spacecraft or the International Space Station
- C. collisions with Mars damaging space probes on that planet
- D. re-entry into Earth's atmosphere causing craters in Earth's crust





15. Which of the following diagrams represents one year on Earth?



16. The primary advantage of placing an optical telescope in space, rather than on Earth's surface, is that it
- A. enables the telescope to be maintained at cold temperatures
 - B. prevents distorted images that result from light and air pollution
 - C. decreases the distance from the telescope to the celestial objects being studied
 - D. decreases the telescope's exposure to damaging electromagnetic radiation in the atmosphere
17. Which of the following measurements could be calculated by using the parallax technique?
- A. Brightness of a celestial body
 - B. Temperature of a celestial body
 - C. Distance between two celestial bodies
 - D. Speed at which a celestial body is travelling

Use the following information to answer question 18.

Some Instruments Used by Ancient Astronomers

Instrument	Description
 <p>A circular sundial with a gnomon (a triangular-shaped object that casts a shadow) and Roman numerals around the edge.</p>	Used to determine the time of the day
 <p>A circular instrument with a graduated scale and a sighting device, used for measuring the altitude of celestial bodies.</p>	Used to determine the altitude of a celestial body
 <p>A large instrument with a circular scale and a sighting device, used for measuring the height of celestial bodies above the horizon.</p>	Used to measure the height of a celestial body above the horizon
 <p>A long, thin instrument with a sighting device and a string, used for tracking the position of stars over the course of a night.</p>	Used to track the position of certain stars over the course of a night

18. Which pair of instruments described above functions **primarily** because of the rotation of Earth on its axis?
- A. The sundial and the merkhet
 - B. The sundial and the astrolabe
 - C. The quadrant and the merkhet
 - D. The quadrant and the astrolabe

Science 9 – Practice Test 2019 Space Exploration Key

Question #	Key
1	C
2	A
NR1	1432
3	C
4	D
5	C
6	C
7	A
8	A
9	D
10	D
11	D
12	B
NR2	231
13	A
14	B
15	B
16	B
17	C
18	A