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1) Which does NOT have an effect on how strongly the Sun pulls on an object in space?

- **A)** the mass of the object
- **B)** how far the object is away from the Sun
- **C)** the fact that the Sun is made of a mixture of gases
- **D)** the mass of the Sun

2) Explain why some objects in our solar system are classified as moons, even though they are larger than objects classified as planets.

3) Two of the inner planets are _____.

- **A)** Venus and Saturn
- **B)** Mars and Venus
- **C)** Earth and Pluto
- **D)** Mercury and Jupiter

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4) The order of the inner planets outward from the Sun is _____.

- **A)** Mercury, Earth, Venus, and Mars
- **B)** Mercury, Venus, Earth, and Mars
- **C)** Mars, Venus, Earth, and Mercury
- **D)** Earth, Venus, Mars, and Mercury

5) Which does NOT describe our Sun?

- **A)** it is part of the Milky Way galaxy
- **B)** it is the center of the universe
- **C)** it holds 99% of the mass in the solar system
- **D)** it is one of billions of stars

6) A galaxy that has a shape similar to a football is a(n) _____ galaxy.

- **A)** normal spiral
- **B)** barred spiral
- **C)** elliptical
- **D)** irregular

7) As the solar system cooled and developed, larger bodies were pushed away from its center by gravity.

- True
- False

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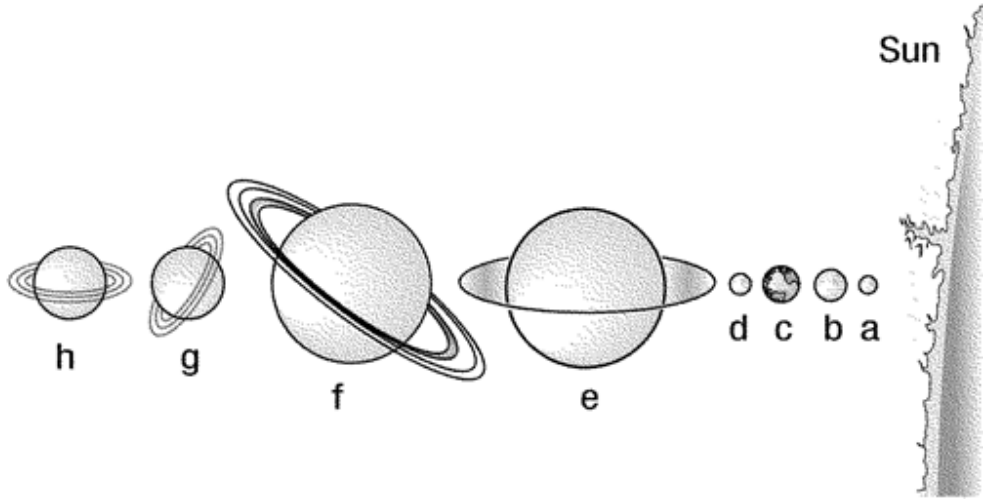
8) *Match the planets below with the letters labeling the planets.*



Earth	_____	**A)** f
Mercury	_____	**B)** g
Neptune	_____	**C)** h
Venus	_____	**D)** c
Uranus	_____	**E)** b
Mars	_____	**F)** d
Saturn	_____	**G)** a
Jupiter	_____	**H)** e

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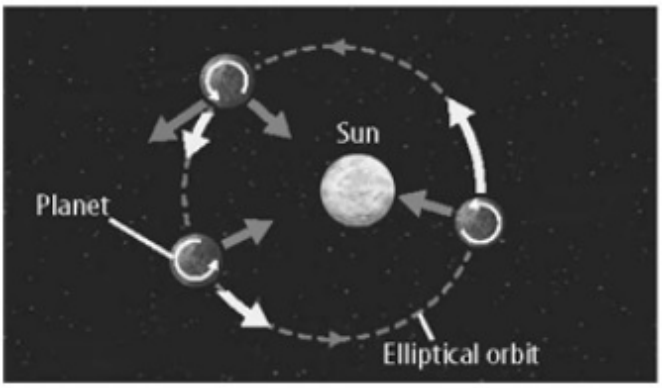
9) What causes planets and other space objects to revolve around the Sun rather than traveling in a straight line as indicated by the solid arrows in the picture below?



10) Which of the following is defined as a huge collection of gas, dust, and stars held together by gravity?

- **A)** nebula
- **B)** solar system
- **C)** galaxy
- **D)** universe

Module Test: Exploring the Universe

11) Which of the following data can help someone to infer the size of a planet?

- ○ **A)** how many moons it can capture due to its pull of gravity
- ○ **B)** how far it is from the Sun in km
- ○ **C)** its surface temperature in degrees
- ○ **D)** its surface geography

12) _____ causes cast off gases to clump together to begin forming new stars and planets.

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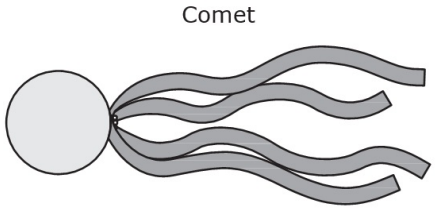
13) Steve uses a foam ball, long strips of ribbon, and some pushpins to make a model of a comet, as shown in the diagram.



He attaches a long string to the ball of the comet model and swings the comet model above his head in a circular motion.

a. Explain how gravitational force is represented in this model and where the Sun would be located.

b. Describe how this model could be used to represent motion of other objects in the solar system.

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14) The table shows the data of four characteristics of four planets in the solar system.

Four Characteristics of Four Planets

Planet	Mass (kg)	Rotation (in Earth Days)	Revolution (in Earth Years)	Volume (km^3)
Earth	60×10^{23}	1.0	1.0	110×10^{10}
Mars	6.4×10^{23}	1.0	1.9	16×10^{10}
Mercury	3.3×10^{23}	58.6	0.2	6.1×10^{10}
Venus	40×10^{23}	243.0	0.6	93×10^{10}

a. Order the four planets from closest to the Sun to farthest. Is the distance between each orbit the same? Explain.

b. Explain why the data in the table support the order of the planets in your diagram.

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15) Here is some data that compares Mars and Earth.
Mars's atmosphere contains 90 percent carbon dioxide (CO_2); Earth's atmosphere has 0.03 percent CO_2.
Both Mars and Earth have clouds, but the clouds on Mars are made of different compounds than clouds on Earth.
Atmospheric pressure on Mars has a narrow range: only from 0.6 to 1.0 kPa; atmospheric pressure on Earth has a broad range: from 87 to 108 kPa.
Mars's orbit averages 2.3 x 108 km from the Sun; Earth's average orbit is 1.5 x 108 km.
Mars has solid CO_2 and water on its surface; Earth's surface has abundant liquid and solid water.
a. Based on the data, describe **two** similarities of Mars and Earth.

b. Describe how the characteristics of these planets affect their surface temperature.

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16) The table shows data about six planets in our solar system.

Planet	Distance from the Sun (AU)	Type	Mass (kg)	Diameter (km)	Number of Known Moons
Mercury	0.39	Rocky	0.33×10^{24}	4,878	0
Venus	0.72	Rocky	0.49×10^{24}	12,104	0
Earth	1.00	Rocky	5.97×10^{24}	12,756	1
Mars	1.52	Rocky	0.642×10^{24}	6,794	2
Jupiter	5.20	Gaseous	1898×10^{24}	142,984	67
Saturn	9.54	Gaseous	568×10^{24}	120,536	62

Identify the **most likely** distance from the Sun where a rocky planet with a diameter of 9,500 km and three moons would be found. Support your answer with evidence from the table.

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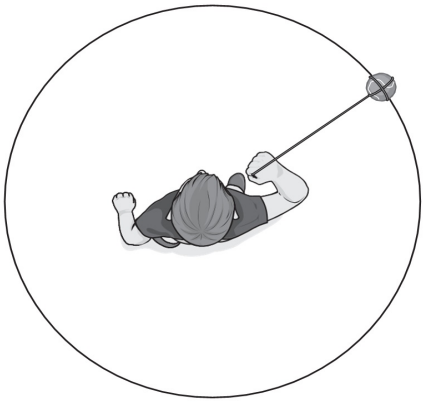
17) Ben made a model of Earth orbiting the Sun by tying a string to a tennis ball and spinning it around his head. The picture shows the model as viewed from above.



a. Identify what each object—the string, the tennis ball, and Ben—represents in the model.

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b. Use the model to describe the role of gravity in the motion of Earth around the Sun. Be sure to include why each object is appropriate for its role within the model.