

Chapter 13, Lesson 3

What makes up our Solar System?

Vocabulary

Star - A huge ball of very hot gasses in space

Solar system – A star and all the planets and other objects that revolve around it

Constellation – A pattern of stars named after a mythological or religious figure, an object, or animal

Planet – A body that revolves around a star

Universe – Everything that exists, including such things as stars, planets, gas, dust, and energy

Galaxy – A grouping of gas, dust, and many stars, plus any objects that orbit those stars

Pgs. 416, 417 - The Sun and Other Stars

1. Why is the sun important to the Earth?

The sun provides energy to the Earth.

2. What does the brightness of a star depend on?

The brightness of star depends on how far it is from Earth (apparent magnitude) and how bright it actually is (absolute magnitude.)

3. What are two ways scientists classify stars?

Scientists classify stars by their temperature, brightness, size, and color.

4. How many stars are there in the solar system?

There is one star in our solar system: the sun.

Pgs. 418, 419 - The Inner Planets

Use the graphic data to respond to the following questions.

5. What is the order of these planets from largest to smallest size?

Earth, Venus, Mars, and Mercury

6. What is the order of these planets from greatest to weakest force of gravity?

The order of planets from greatest to weakest force of gravity is Earth, Venus, Mercury, and Mars. Although Mercury is smaller than Mars, the material it is made up of is denser. Therefore its gravitational pull is stronger than Mars'.

7. What does the illustration tell you about how a planet's size relates to its gravitational pull?

Generally speaking, the larger the planet, the greater it's pull of gravity. However, as we see with Mercury and Mars, a planet's density, not size, determines its gravitational pull.

8. Is there a relationship between distance of a planet from the sun and the length of its year? Explain.

Yes, the closer a planet is to the sun, the shorter its period of revolution.

9. How many planets are there in our solar system?

There are EIGHT PLANETS in our solar system!

10. How many of these planets are known to support life?

Only one planet, Earth, is known to support life.

11. What separates the inner planets from the outer planets?

The asteroid belt lies between Mars and Jupiter.

Pgs. 420, 421 – The Outer Planets

12. What is between the inner planets and the outer planets?

The asteroid belt lies between Mars (inner planet) and Jupiter (outer planet).

13. What are rings?

Rings are bits of ice, dust, boulders, and frozen gas that circle the gas giants.

14. What are some characteristics of the gas giants?

The gas giants are enormous planets that are made up of hydrogen and helium.

15. What is an asteroid made of?

Asteroids are made of rock.

16. What is a comet made of?

A comet is actually a frozen core that melts, actually it “sublimes,” as it goes near the sun.

17. How do asteroids and comets look different?

Asteroids are chunks of rock, but comets are mostly ice and leave a long tail made of clouds of gas.

18. What do you think eventually happens to a comet?

The sun will eventually melt the comet away.

19. What variables could scientists observe and measure for a comet?

Color of tail; length of tail; size of glowing head

Pgs. 422, 423 – Beyond the Solar System

20. Approximately how many stars are there in the Milky Way galaxy?

There are over one billion stars in the Milky Way galaxy.

21. How many stars are there in the universe?

There are too many to count!

22. What is a galaxy?

A galaxy is made up of dust and a group of stars, including any objects orbiting the stars.

23. What is a light year?

A light year is the distance light travels in one year.

24. What force do you think causes the matter of a nebula to clump together? Explain.

Gravity; the attraction between the gasses and particles of dust causes them to come together.

25. Describe the sun's position and movement in the Milky Way galaxy.

The sun is in one of the spiral arms of the galaxy, and it moves around the galaxy's center.

26. How can Earth support life as we know it?

The large amount of liquid water is what makes it possible for Earth to support life.

Pg. 424 – Space Exploration

27. What is the advantage of sending robot spacecraft instead of humans to explore beyond the moon?

Robots do not have the same needs as humans. For example, they do not require food, water, sleep, or oxygen. Robotic spacecraft can travel long distances and explore where humans cannot go, such as Saturn.

28. In what other ways do scientists study objects in space?

Scientists use telescopes on the ground, and satellites and probes in space.

29. How has space exploration changed since the Apollo missions?

Space exploration has focused on sending robot spacecraft to other parts of the universe.