Gravity in space

Every object in the universe has its own pulling force, called gravity. Gravity keeps the solar system's planets in orbit around the Sun, and the Milky Way spinning in space. The greater an object's mass (the more matter it contains), the greater its gravity.

Gravity facts

- Earth has more mass than the Moon, so its gravity pulls the Moon toward it.
- If the Moon had more mass, it would escape Earth's gravity and fly off into space.
- If the Moon had less mass, Earth's gravity would pull it crashing into the Earth.
- On Earth, gravity pulls us toward the planet's center, keeping our feet on the ground.
- Astronauts in orbit escape the effects of Earth's gravity, so they float around in their spacecraft.
- In order to escape the pull of Earth's gravity and leave Earth's orbit, rockets must reach a speed of 25,000 mph (40,000 kph).

Orbiting objects

Use information on this page to work out whether any of the things in the list orbit the Moon, Earth, or Sun. Write the names of the correct orbiting objects under each picture. Choose from:
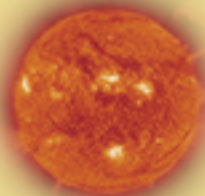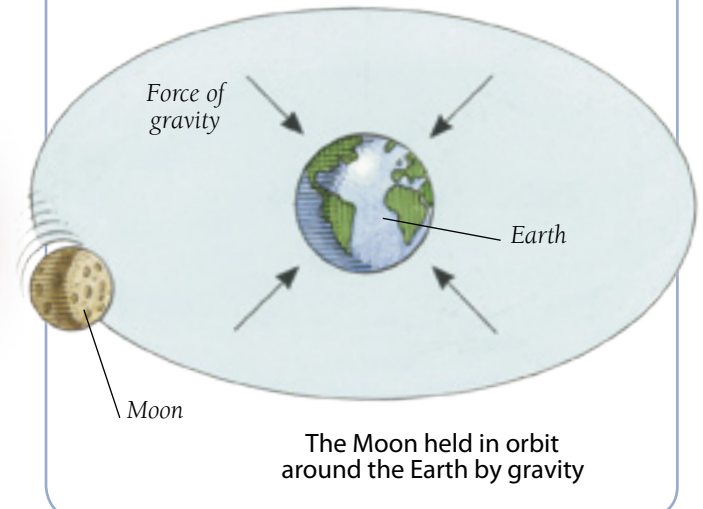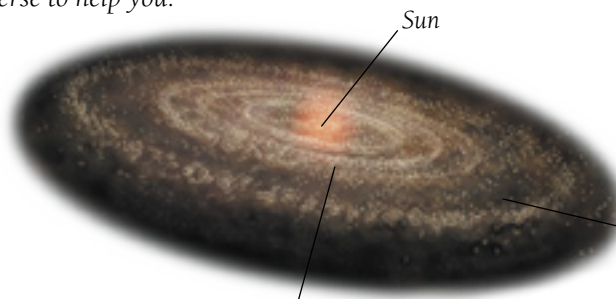
planets   Moon   Earth   space station   satellite

MOON	EARTH	SUN
....	....	....
....	....	....
....	....	....

Force of gravity

Earth

Moon

The Moon held in orbit around the Earth by gravity

Birth of the solar system

Read the captions carefully and then number them 1 to 4 to show how the solar system began. Use the information in Fast Facts: The Universe to help you.

a. Fragments of matter are attracted to each other by gravity. They clump together to form objects called protoplanets.

b. The gravity of protoplanets near the solar system's center pulls in rock, and the rocky planets form. The gravity of the outer protoplanets attracts gas, and the gas planets form.

Sun

Gas planets forming in outer solar system

Rocky planets forming in inner solar system

c. A spinning disk forms around the Sun, made of matter blown off during its birth.

d. A cloud of spinning dust and gas called a nebula collapses to form the Sun.

Activity Answers

Gravity in space

Orbiting objects
Moon: (nothing)
Earth: Moon, space station, satellite
Sun: planets, Earth

Birth of the solar system
a 3
b 4
c 2
d 1