

Exploring the Solar System

Grade 5 • SCIENCE • Students practice explaining basic relationships among planets, gravity, Earth's rotation, and Earth's revolution around the Sun. • Standards: 5-PS2-1, 5-ESS1-2

Answer each question about Earth's movements, gravity, and our solar system. Write your answers in complete sentences when appropriate.

1. What force pulls objects toward the center of Earth?
2. How long does it take Earth to complete one full rotation on its axis?
3. Does Earth's ROTATION or REVOLUTION cause day and night?
4. How long does it take Earth to complete one full revolution around the Sun?
5. When you drop a ball, it falls to the ground instead of floating away. Which force causes this to happen?
6. Mars takes 687 Earth days to orbit the Sun, while Earth takes 365 days. Why does Mars take longer to complete one revolution?
7. A student observes that the Sun appears to rise in the east and set in the west each day. Which motion of Earth causes this pattern?
8. Jupiter is much more massive than Earth. How would the pull of gravity on Jupiter compare to the pull of gravity on Earth?
9. A planet rotates once every 10 hours and revolves around the Sun once every 12 Earth years. How many times does this planet rotate during one complete revolution around the Sun?
10. Explain why all eight planets in our solar system orbit the Sun rather than drifting off into space. Include the role of gravity in your answer.

Answer Key — Exploring the Solar System

For the teacher / parent. Do not distribute with the worksheet.

1. Gravity
2. 24 hours (or one day)
3. Rotation
4. 365 days (or one year)
5. Gravity
6. Mars is farther from the Sun than Earth, so it has a longer path to travel.
7. Earth's rotation on its axis
8. The pull of gravity on Jupiter would be stronger than on Earth.
9. 10,512 times ($12 \text{ years} \times 365 \text{ days} \times 24 \text{ hours} = 105,120 \text{ hours total}$; $105,120 \text{ hours} \div 10 \text{ hours per rotation} = 10,512 \text{ rotations}$)
10. The Sun's gravity pulls on all the planets and keeps them in orbit around it. Without the Sun's gravitational pull, the planets would move in straight lines into space.