

Orbits and Gravity in Space

READ ALOUD PASSAGE

Gravity is a pulling force, and it does something remarkable in space: it keeps objects moving in curved paths called orbits. The Moon orbits Earth, and Earth orbits the sun, but this happens in a way that might surprise you. An orbiting object is always in a state of free fall. Right now, the Moon is falling toward Earth. But the Moon is also moving sideways so fast that it keeps missing Earth. These two things, falling toward Earth and moving sideways, work together.

That combination is what we call an orbit. If the Moon had no gravity pulling it inward, it would fly off in a straight line into space and never come back. If the Moon had no sideways speed at all, gravity would pull it straight down and it would crash into Earth. An orbit happens only when gravity and sideways speed work together in the right amounts. The same idea explains why Earth orbits the sun.

Earth is always falling toward the sun, but it is also moving sideways fast enough to keep going around and around rather than falling in. Satellites that humans launch into space work the same way. They must be sent up with enough speed to fall around Earth instead of falling into it.

Activity 1: Because, But, So

Finish the sentence two ways. After because, tell why. After but, tell something different or surprising.

The Moon keeps circling Earth **because**

The Moon keeps circling Earth, **but**

Activity 2: Grow a Sentence

This sentence is very short. Answer each question to add more information. Then put your answers together into one longer sentence.

START WITH THIS SENTENCE

The Moon falls.

When?

Where?

Why?

Write your expanded sentence:

Science Mad Lib

Fold the page on the dashed line so the story is hidden. Write a word for each blank. Then unfold the page, copy your words into the story, and read it aloud.

1 _____
An adjective

2 _____
A noun

3 _____
A number

4 _____
A name

5 _____
A noun

FOLD HERE

THE STORY

The Moon felt _____. "I've been falling toward Earth all day," it sighed. "But
 I'm also moving sideways faster than any _____, so I keep missing." Falling
 plus moving sideways makes an orbit. "I've been doing this for _____
 years," said the Moon. A satellite named _____ zipped past. "Same here! If
 I slowed down, I'd drop toward Earth. If I sped up too much, I'd fly off into space."
 The Moon offered the satellite some _____. Satellites can't eat, but it was a
 nice gesture.