



Name: _____ Date: _____

READING SCIENCE

Positions Cause Patterns

Lexile 890L

- 1 It may seem like the Earth is always changing, because it is! But many of these changes form a pattern, or something that repeats itself over and over again. In fact, there are numerous patterns all around us.
- 2 Take the tides, for example. If you build a sand castle and leave it on the beach, more than likely it will be gone by the morning. This occurs because of tides. Earth has two types of tides. High tide means that the water comes up higher on the land, and low tide means that the water flows back, or doesn't come in as far. Both high tide and low tide happen twice in a 24-hour day. So, when the tide is high, water will cover up the parts of the beach where you made a sand castle at low tide.
- 3 Even though the Moon is over 200,000 miles away, these tides are caused by its position. The Moon is so large that its gravity affects the water on Earth. The pull of the Moon's gravity is strongest when the Moon is more directly facing our part of Earth. That is when high tide occurs. When the Moon is not facing our part of Earth, its pull is not as strong, which is when a low tide occurs.
- 4 Another pattern of the Moon can be noticed. The way the Moon looks changes every night. There are times when you see a full moon and other nights when you see a half moon. And sometimes, there is no moon to see at all. It all depends on the position of the Moon, the Sun, and Earth. But the phases of the Moon, or what the Moon looks like at different times of the month from Earth, are always predictable. They happen in a pattern, or in the same order over and over again.
- 5 We see these particular phases because only one half of the Moon's surface is facing the Sun at any given time. At different times of the month, we can see different fractions of the Moon's lighted surface because of where we are positioned.



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- 6 The seasons are another pattern caused by the positions of Earth and the Sun. Earth revolves, or travels in an orbit, around the Sun. Earth is tilted on its axis, and as the planet orbits, the northern half of Earth is tilted toward the Sun, receiving stronger, more concentrated rays from the Sun. This causes the warmer temperatures of summer. Likewise, winter temperatures are colder because the **position** of the Sun causes the northern half of Earth to receive less direct heat. At the same time, the southern part of the world is having summer!
- 7 Yes, Earth may always be changing, but we can predict many of these changes because they happen in the same way over and over again.

- 1 What is the best summary of this passage?
- A Moon phases are caused by the position of the Sun, Earth, and Moon.
 - B Tides are caused by the position of the Moon.
 - C Seasons are caused by the positions of the Sun and Earth.
 - D Many patterns on Earth are caused by the positions of objects in the solar system.
- 2 If you build a sand castle and it disappears, it is probably because:
- A Kids knocked it over in the night.
 - B Low tide made the water level go down.
 - C High tide raised the water level.
 - D The position of Earth, the Sun, and the Moon caused a change in moon phases.
- 3 What is the best synonym for the word **position** (sixth paragraph)?
- A placement
 - B orbit
 - C phase
 - D shadow

- 4** What is something that might happen at low tide?
- A** Things on the beach will be washed away.
 - B** People who are not careful might be trapped by rising water.
 - C** The Moon's gravity will cause the water to rise.
 - D** You can walk on places on the beach that were underwater earlier in the day.
- 5** What is an example of another pattern in nature that is caused by the position of objects in the solar system?
- A** the petals on a flower
 - B** zebra stripes
 - C** day and night
 - D** a bee's honeycomb