Explain Events, Procedures, and Ideas

Grade 4 Reading Worksheet - Challenge Me

Name _____ Date _____

Read the text. Circle the answer to each Why question.

READ THIS FIRST

Why the Moon Changes Shape

Look at the Moon on several nights in a row, and you will notice it changing. One week it is a thin curve. A week later it is half a circle. Later still, it is a bright, full disk. These changing shapes are called phases. For thousands of years, people used them to keep calendars. But why do the phases happen?

Start with one key fact. The Moon does not make its own light. It shines only because sunlight hits it and bounces off. At every moment, the Sun lights up exactly half of the Moon. The other half is dark.

The Moon also travels around Earth. The full cycle of phases takes about 29 and a half days. As the Moon moves, we see its sunlit half from a different angle. That angle is what changes the shape we see.

Imagine the Moon at four points on its trip. First, when the Moon is between Earth and the Sun, its lit side faces away from us. We see almost nothing. This is the new moon. About a week later, the Moon has moved a quarter of the way around. Now we see half of the lit side, so the Moon looks like half a circle. Another week later, Earth is between the Sun and the Moon. The entire lit half faces us, and we see a full moon. A week after that, we again see half a circle, but the opposite side is lit. Then the cycle starts over.

Between these points, the shape changes a little each night. When the lit part is growing, the Moon is waxing. When it is shrinking, the Moon is waning.

Many people believe that Earth's shadow causes the phases. It is an easy mistake, but it is not correct. Think about the full moon. At that time, Earth is between the Sun and the Moon, yet the Moon looks completely bright. If Earth's shadow caused the phases, the full moon would be the darkest phase. Earth's shadow does fall on the Moon now and then, but only when the Sun, Earth and Moon line up exactly. That event is called a lunar eclipse. It happens only at a full moon, usually about twice a year.

You can test the real explanation yourself. In a dark room, turn on one lamp to be the Sun. Hold a ball at arm's length, a little above your head, to be the Moon. Your head is Earth. Slowly turn in a circle while watching the ball. You will see the lit part of the ball grow and shrink, just like the Moon's phases.

The Moon itself is not changing at all. Only our view of it changes.

1. Why does the author first explain that the Sun always lights half of the Moon?

It proves that the Moon makes some of its own light.

It shows that the Moon is closer to the Sun than Earth is.

It explains why Earth's shadow causes the phases.

Readers need that fact to see why our view of the lit half changes.

2. Why does the full moon look completely bright?

Earth's shadow has just moved off the Moon.

Its entire sunlit half faces Earth.

The Moon makes extra light once a month.

The Moon is closest to the Sun at that time.

3. Why does the lamp test support the author's explanation?

The ball makes its own light when it is held up high.

Your head's shadow covers part of the ball to make each phase.

The lit part changes only because your view of the ball changes.

The lamp grows brighter and dimmer as you turn.

4. Why does the Moon shine at all?

Sunlight hits it and bounces off.

Earth's glow bounces off its surface.

It is heated by Earth until it glows.

It makes its own light at night.

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Answer Key - Grade 4 Reading Worksheet - Challenge Me

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