Explain Events, Procedures, and Ideas

Grade 4 Reading Worksheet - Challenge Me

Name _____ Date _____

Read the text. Circle the answer to each How 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. How does the Moon's lit side face during a new moon?

It faces sideways, halfway toward Earth.

It faces away from Earth, toward the Sun.

It is covered by Earth's long shadow.

It faces straight toward Earth, away from the Sun.

2. How does the Moon look about a week after a new moon?

like almost nothing, a dark circle

like a thin curve of light

like half a circle with one side bright

like a bright, full disk in the night sky

3. How does a lunar eclipse happen?

Thick clouds block the Sun's light from the Moon.

The Moon stops reflecting sunlight for one night.

Sunlight bounces off the Moon in a different direction.

Earth's shadow falls on the Moon as all three line up.

4. How can you test the real explanation of the phases?

Turn slowly in a circle while watching a lit ball.

Watch the Moon through a window for one night.

Hold a ball in a dark room with no lamp at all.

Count how many nights the Moon takes to rise.

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Answer Key - Grade 4 Reading Worksheet - Challenge Me

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