Supermoon text, tasks, and questions

Supermoon text (167 words)

As you know, a full moon happens when the Moon is on the opposite side of the Earth from the Sun--when the Earth is between the Sun and the Moon. This happens slightly more often than once per month. Three or four times each year we get a supermoon, which can be seen from every place on Earth at nighttime. What is a supermoon? It is a moon that looks extra large.
Remember that the Moon's trip around the Earth--the Moon's orbit--is almost a circle. However, the orbit has a very slight oval shape. Twice each day the moon is closer, about 226,000 miles from Earth, and twice each day the moon is farther away, about 253,000 miles from Earth. That's a difference of 27,000 miles!
If a full moon happens at the same time the Moon is closer to the Earth, we get a supermoon. That is because the Moon looks larger when it is closer, and it looks full when the Moon is on the opposite side of the Earth from the Sun.

Drawing task	Summarizing task
Draw a picture of the Sun, Earth, and Moon when the Moon will look like a Supermoon to someone on Earth at night. On the same picture, show the Earth and Moon when it will **not** be a Supermoon.	Describe the Sun, Earth, and Moon when the Moon will look like a Supermoon to someone on Earth at night. Describe the Earth and Moon when it will **not** be a Supermoon.

Questions:

1) Is the Moon always on the opposite side of the Earth from the Sun?

2) What does the moon look like when it is on the opposite side of the Earth from the Sun?

3) Why does the moon look larger when a full moon happens when the Moon is closest to the Earth?

4) Would we have Supermoons if the Moon's orbit was a perfect circle? Explain your answer.

Solar eclipse

When the sun is blocked by the moon for a little while, we call this a solar eclipse. It is very rare, though you might remember the one here in Illinois in August 2017. The Moon is much smaller than the Earth, so only some parts of the Earth will see the Moon block the Sun all the way—called a total solar eclipse. When the Moon blocks just part of the Sun, this is called a partial solar eclipse.

To get a solar eclipse, we need the Earth and Moon to line up very exactly. The sun is about 93 million miles from Earth. The Moon has to be exactly between your spot on Earth (in Rantoul) and the far, far, far away Sun. When that happens, the Moon casts a giant shadow on parts of Earth. Insects and birds become very quiet when the Sun is suddenly covered up. Animals stand very still, and people stare in wonder.

The next solar eclipse will happen in Illinois in the year 2024. Do you think you will see the next solar eclipse in our state?

Drawing task	Summarizing task
Draw a picture of the Sun, Earth, and Moon when there is a solar eclipse. Try to show how the moon makes a giant shadow on parts of the Earth.	Describe the Sun, Earth, and Moon when there is a solar eclipse. Try to describe how the moon makes a giant shadow on parts of the Earth.

1) What is a solar eclipse?

2) Why does a solar eclipse have to happen in the daytime?

3) Why did we see a partial eclipse here in Rantoul in 2017 but in the town of Carbondale people saw a full eclipse?

4) A solar eclipse can only happen when there is a new moon in the daytime. Explain why this is true.

Seasons at the equator

In Illinois, summers are hot and days are long, winters are cold and days are short, and spring and fall are in-between. But some countries—such as Colombia, Kenya, and Indonesia don't really have cold or hot temperatures in summer, winter, spring, and fall and the day is always about 12 hours long. These countries are all more than 2500 miles South of Illinois. They are at the Equator, a line around the globe that is half-way between the North Pole and South Pole. The Equator makes the widest circle around the earth, much wider than at the Arctic circle or the Antarctic circle.

Light from the sun always hits the Equator pretty much straight on, not at low angle like it does in Illinois in the winter. Remember that when sunlight hits a part of the earth straight on, it feels hotter and looks brighter (like in an Illinois summer). When sunlight hits a part of the earth at a low angle, it feels cooler and looks dimmer (like in an Illinois winter). But at the Equator, sunlight always hits straight on!

Drawing task	Summarizing task
Draw the sun and the Earth, add the Equator and Illinois—you don't have to be exact. Draw the difference between sunlight hitting the Earth at the Equator in winter and sunlight hitting the Earth in Illinois in winter.	Describe how the sun shines on the Earth, being sure to include the Equator and Illinois—you don't have to be exact. Describe the difference between sunlight hitting the Earth at the Equator in winter and sunlight hitting the Earth in Illinois in winter.

1) What is the Equator?

2) What is different between winter weather in Illinois and winter weather in Colombia?

3) Why does sunlight hit the Earth differently at the Equator than in Illinois?

4) Explain why the temperature does not change much over the seasons at the Equator, but the temperature changes a lot over the seasons in Illinois.

Seasons in Australia

Many people would like to visit Australia, nicknamed “Down Under” because it is closer to the South Pole. It has kangaroos, great surfing, and lots of YouTubers! But when is a good time to visit Australia? The answer may surprise you—the middle of our dark, cold Illinois winter is sunny and warm in Australia!

Remember that the tilt of the Earth’s axis is the reason for the seasons. When the sun’s light is most spread out, dim, and cold here in Illinois in December, it is the opposite in Australia. In Australia in December it is about 77 degrees and they have the longest day of the year. In December, the sun’s light hits Australia pretty much straight on, which makes for sunny, hot days.

Drawing task	Summarizing task
Draw the sun and the Earth, add Australia and Illinois—you don’t have to be exact. Draw the difference between sunlight hitting the Earth in Illinois in December and sunlight hitting the Earth in Australia in December.	Describe how the sun shines on the Earth, being sure to include the Australia and Illinois—you don’t have to be exact. Describe the difference between sunlight hitting the Earth in Illinois in December and sunlight hitting the Earth in Australia in December.

1) Where is Australia?

2) What is different between December weather in Illinois and December weather in Australia?

3) Explain why December would be a great time to visit Australia.

4) Explain how and why sunlight in December hits the Earth differently in Australia compared to Illinois.