

Does the Moon Rotate?

Complete this exercise with a partner.

Basic Definitions:

Rotation: To spin around an axis. The Earth rotates in a period of 23 hr, 56 min, 4 sec.

Revolution: To orbit around another body. The Earth revolves around the sun in a period of 365.24 days.

Face of the Moon Does Not Change:

If you observe the moon over several phase cycles, it will become apparent that the same side or hemisphere faces the Earth at all times. Obviously, the moon does orbit the Earth, but does the observation of the same face of the moon indicate that the moon is also rotating?

What is your “gut” response to this statement? YES NO (circle one)

Demonstrate Rotation:

Imagine your head to be the Earth and your eyes to be the location of observation on the Earth. In a standing position, slowly complete one rotation. Notice that as you are spinning, your face points to all parts of the room. This would be a necessary condition for rotation.

Does the Moon Rotate While It Revolves Around the Earth?

You will need an uncluttered area to complete this section. Partners should always be facing each other. Decide which person will become the Earth and which person will be the moon. When the experiment begins, the moon should observe which part of the room lies beyond the Earth. Note this on line one. Complete a quarter of a revolution with the Earth-moon remaining face to face. Note the part of the room that lies beyond the Earth on line two. Continue doing this in 90 degree increments until the moon has returned to position one. Change positions with your partner and repeat the same demonstration.

Position 1. _____ Position 2. _____

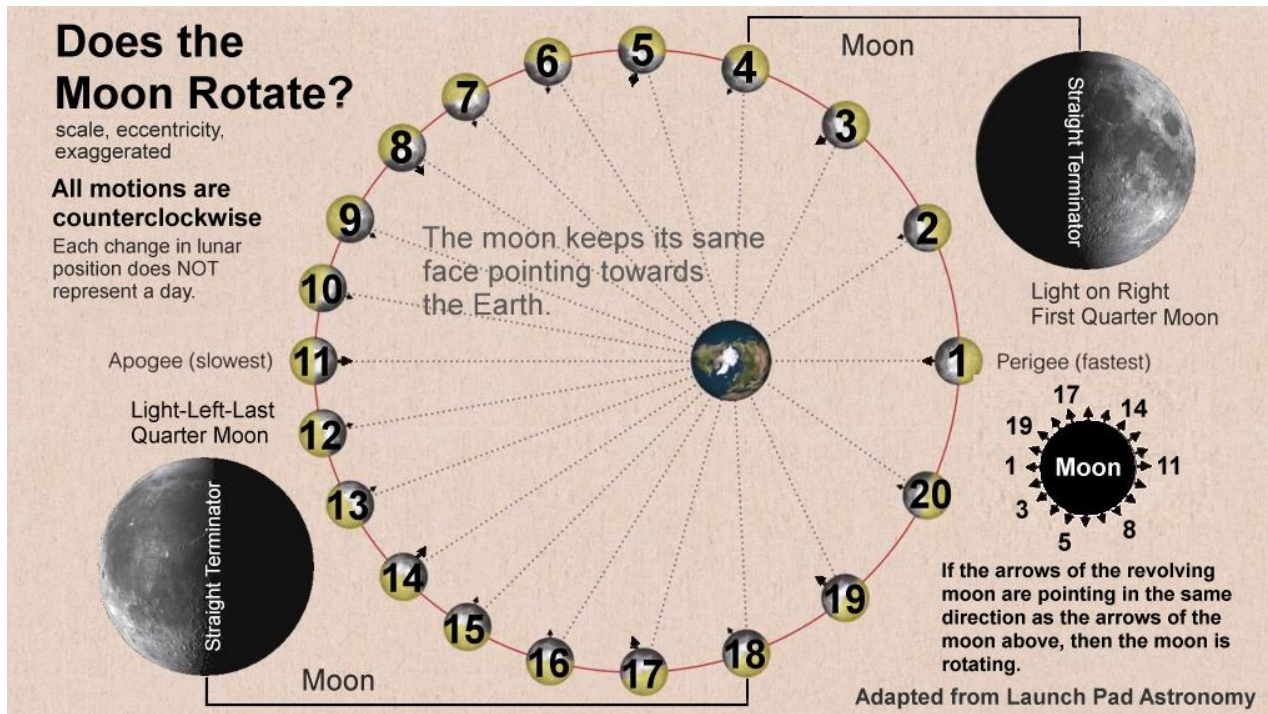
Position 3. _____ Position 4. _____

Repeat position 1. _____

Reread the “Demonstrate Rotation” section again. While the moon was revolving around the Earth, did it meet the necessary condition for rotation? **Yes No** (circle one)

Does the moon rotate? Yes No (circle one)

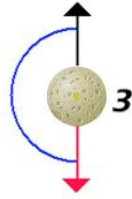
Rotation of the Moon: The moon keeps its same face pointing towards the Earth at all times. This means that the moon does or does not rotate on its axis? Think about this. Examine the following picture. Note the numbers associated with the moon in its orbital path and with the smaller circle on the right with the many arrows pointing from it. The same numbers and arrow directions on the moon wheel correspond to the numbers on the moon's orbital path around the Earth. If the object makes a complete spin then the moon rotates. Does the moon rotate? Yes or No. Circle the answer which you believe to be correct after examining the two pictures which follow this exercise.



Here is another way of looking at whether the moon rotates. In the slide, position marked one, the observer looks in the direction of AAAAAAA. In position two he/she looks in the direction of BBBBBBB, etc. If the moon keeps its same face or hemisphere pointed towards the Earth, then it must complete one spin on its axis. Does the moon rotate?

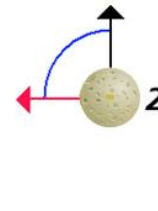
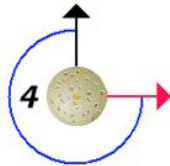
Does the Moon Rotate?

AAAAAAAAAAAAAAAAAAAAA



The letters represent different parts of the sky that the moon would be seen against as it revolves around the Earth.

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B
B
B
B
B
B
B



D
D
D
D
D
D
D
D

The moon always shows its same face towards the Earth.



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February 27, 2021