

by jok church

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Dear Beakman,  
 How does the moon change its shape?  
 Scott Pando  
 San Francisco, California

Google: sidereal

Our new POV is from above. You'll need to pretend we can look down at the Earth and moon from way up in outer space. And, yes, I know there is no up or down in space.

How about we're way above the North Pole, as in the drawing?

Earth rotates once every 24 hours, while the moon makes one full circle around the Earth in about 28 days.

From above we'd see that half of the moon is always lighted by the sun. Only we can't see that

when we look sideways at the whole deal. Stuck here on Earth, that's the only POV we have.

Our drawing has our new POV – from above. The gray dot is Earth's North Pole. The white dot is the moon's north pole as it orbits the Earth. The gray dotted lines connect the north poles.

The Earth-side of the black dotted line is the part of the moon we can see from Earth.

Match up the numbers with the views we see from Earth in our new POV on the right.

Dear Scott,  
 The moon does not really change shape. It seems to be because of our point of view (POV). We're looking at this thing the only way we can – sideways. But if we could rise above it all, things would look very different.  
 This is yet another example of how good lighting changes everything. Ask any designer.

*Beakman*  
 Beakman Place

-  **1** New Moon
-  **2** First Quarter
-  **3** Full Moon
-  **4** Last Quarter

