

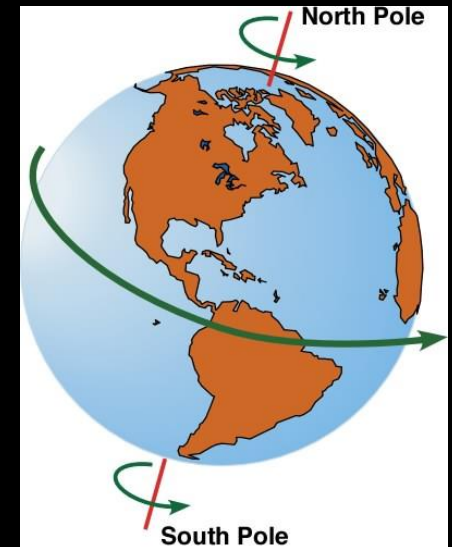
ROTATION VS. REVOLUTION

Understanding the Two “R-Words” of Earth & Space Science

Conyers Middle School

ROTATION OF THE EARTH

- **Rotation** means “to spin.” Earth **rotates** on its axis (an imaginary line running through the center of the Earth from the North Pole to the South Pole).
- Earth completes **1 rotation** (spin) every **24 hours**.
- The Earth rotates **counterclockwise**.

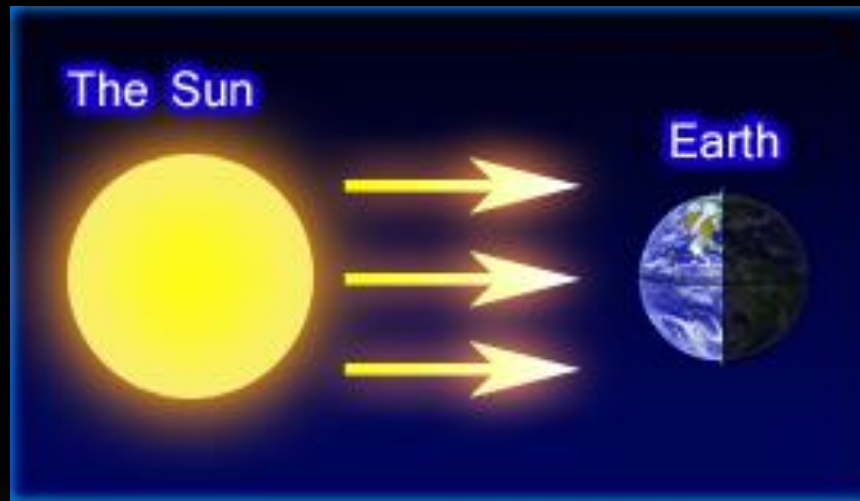


**1 COMPLETE ROTATION =
24 HOURS OR 1 DAY**

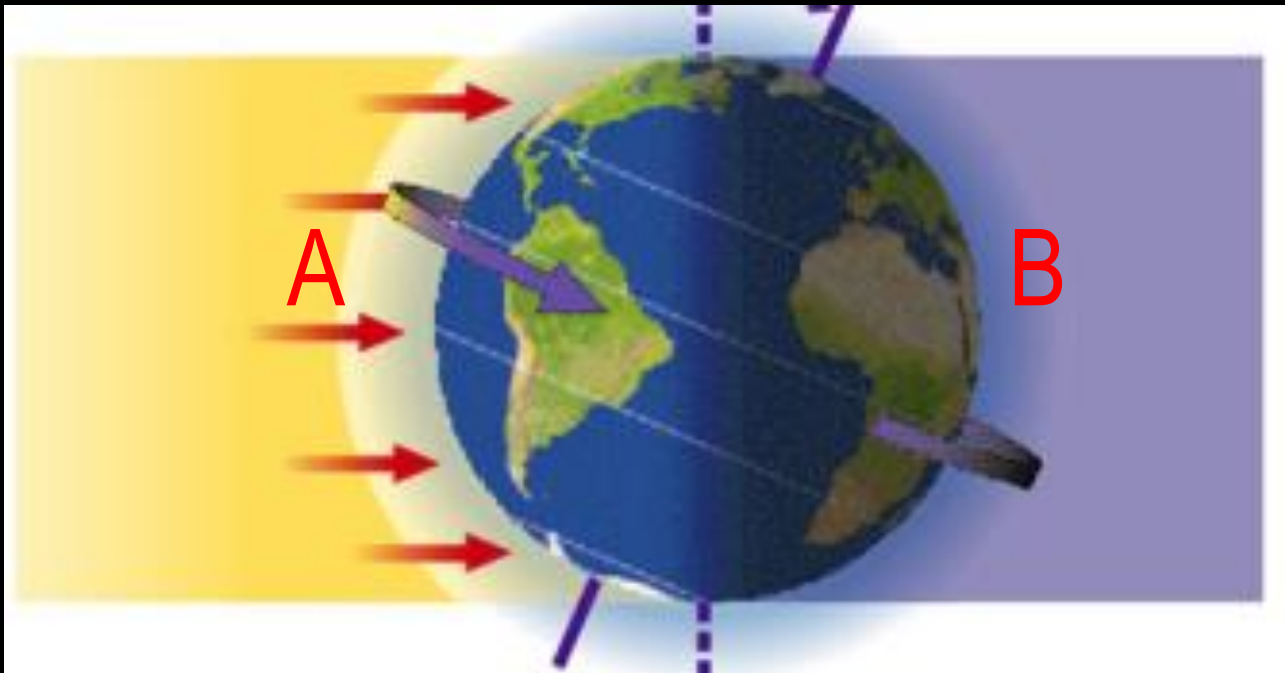


DAY AND NIGHT

- Question: What causes **day and night** on Earth?
- Answer: Day and night are caused by **Earth's rotation (spin) on its axis**. When $\frac{1}{2}$ of the Earth is **facing the sun** it is **DAY**. When $\frac{1}{2}$ of the Earth is **facing away from the sun** it is **NIGHT**.



Q: WHICH HEMISPHERE (1/2 OF THE EARTH) IS EXPERIENCING DAY?



ANSWER

- **Hemisphere A** is experiencing day because it is facing the sun. This is where we live!
 - We live in the **Western Hemisphere**.
 - When the Western Hemisphere experiences daytime, the Eastern Hemisphere experiences nighttime.
 - If you have a friend in China, do not call him when you are at school. He will be sleeping!
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NOW IT'S YOUR TURN TO ROTATE!

- 1) Quietly stand up and push your chair in. Stand behind your chair.
- 2) Stand with both feet inside of one square tile on the classroom floor.
- 3) Lift your left arm to represent the Earth's axis.
- 4) When your teacher tells you to, please tilt your body slightly just like the Earth. Then, rotate counterclockwise.
- 5) Be sure to stay inside of your square tile!

You should be **SPINNING** in place! This is rotation!

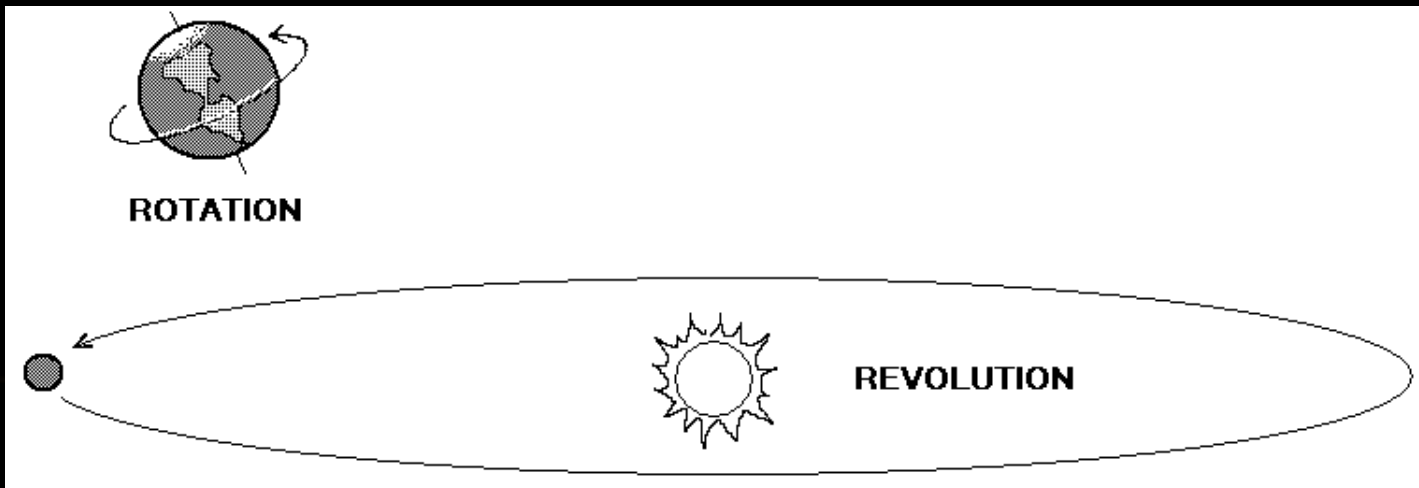
CAN YOU THINK OF OTHER THINGS THAT ROTATE?

- Remember: Rotation means “to spin.”

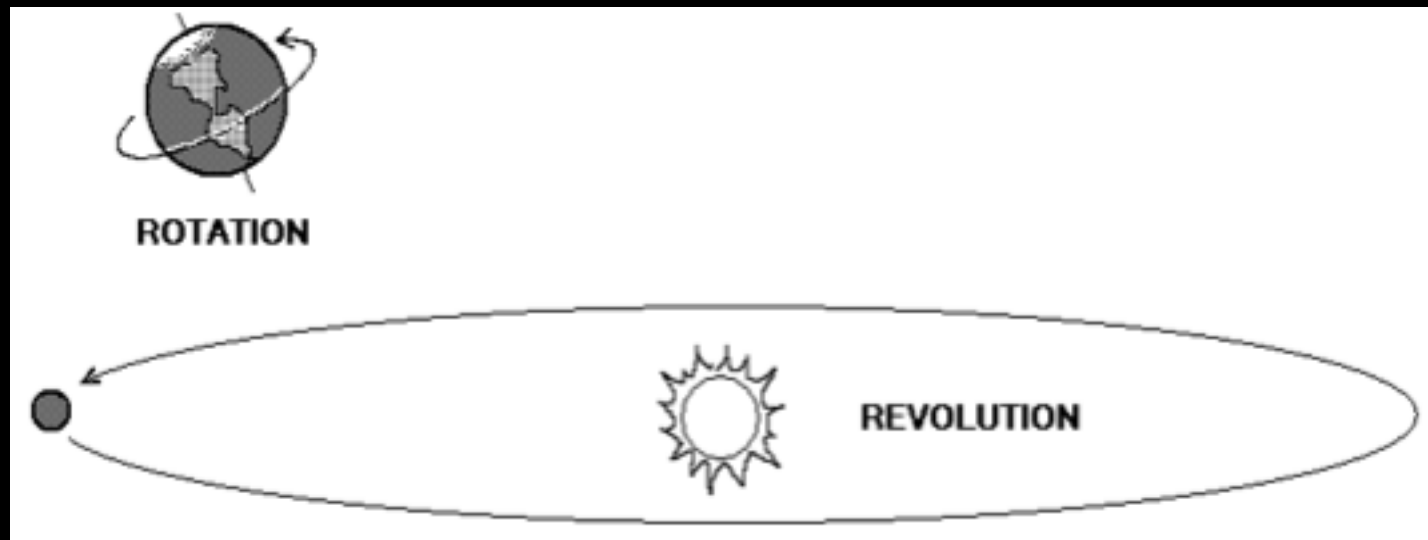


REVOLUTION OF THE EARTH

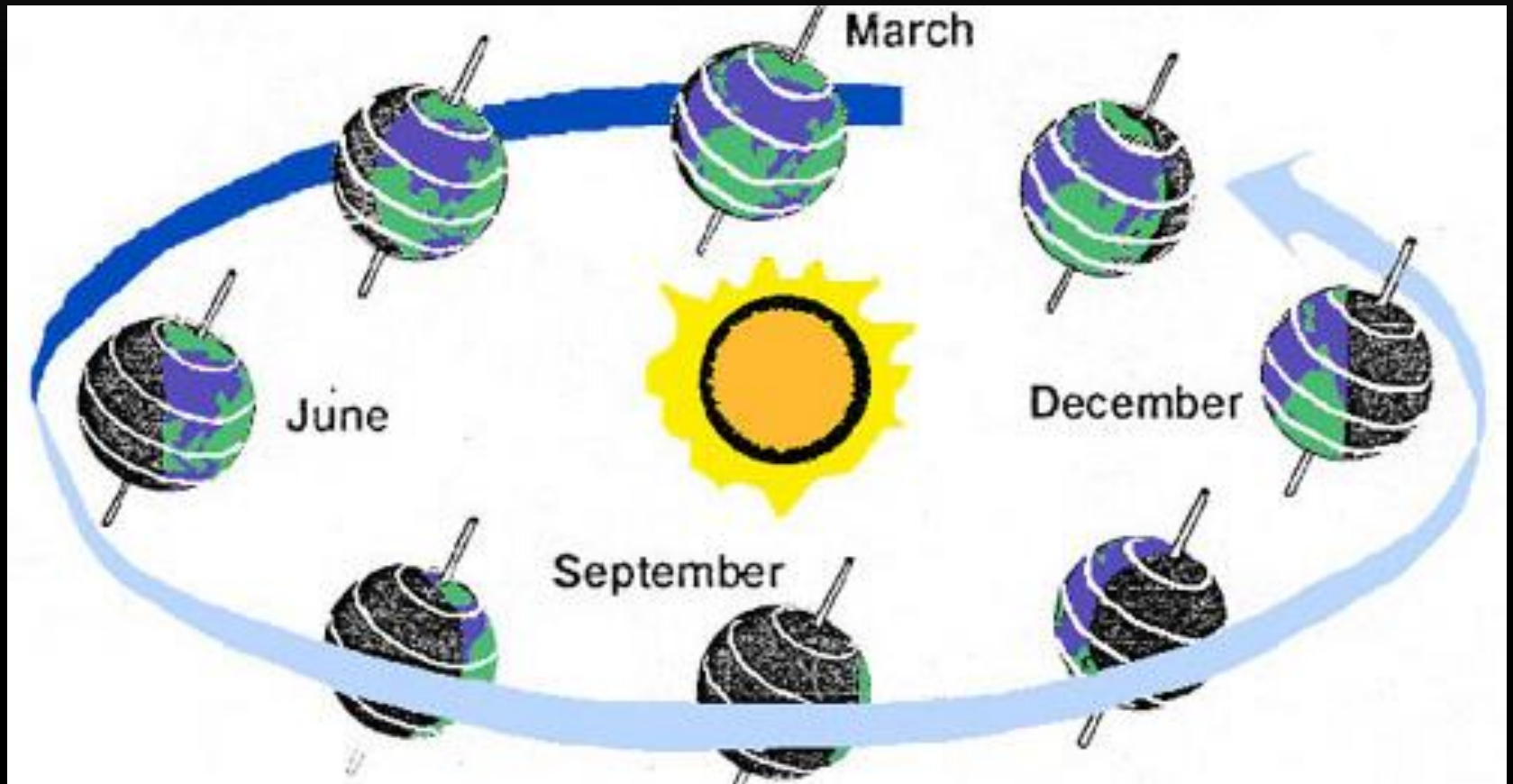
- **Revolution** means “to go around something.”
- A synonym for revolution is orbit. (**revolution = orbit**)
- The Earth revolves (goes around) the sun **counterclockwise**.
- It takes Earth **365 days** (or **1 year**) to make one complete **revolution around the sun**.



DO YOU SEE THE DIFFERENCE?

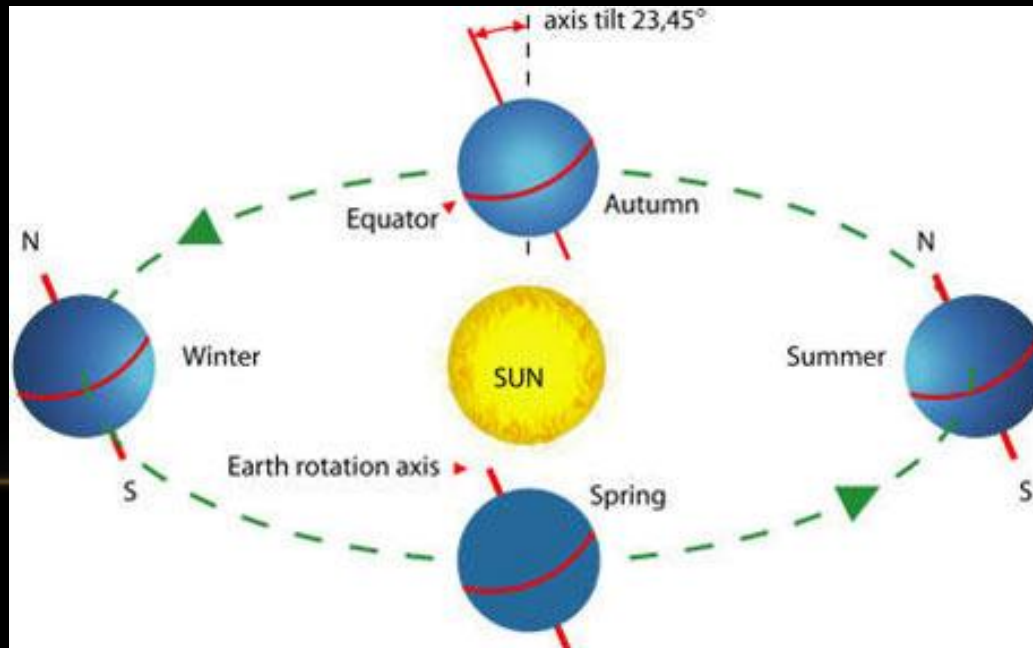


**1 COMPLETE REVOLUTION =
365 DAYS OR 12 MONTHS OR 1 YEAR**

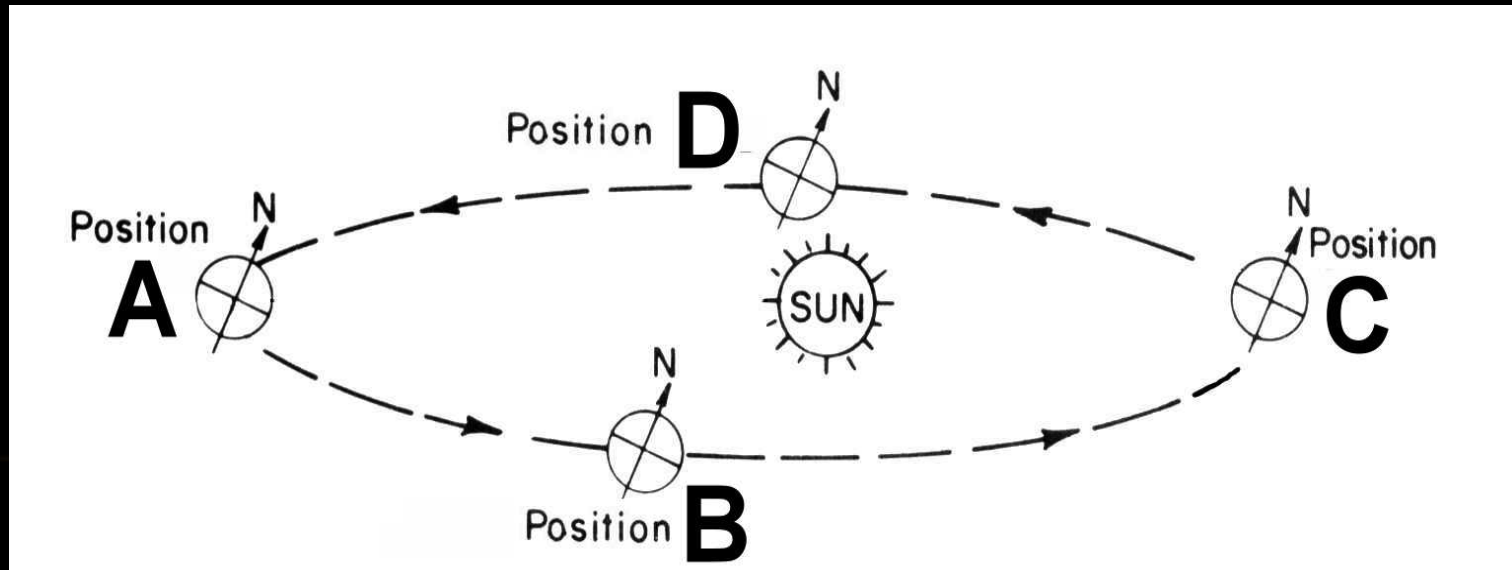


THE SEASONS

- Question: What causes the **seasons** on Earth?
- Answer: Earth's seasons are caused by 1) **Earth's tilted axis** and 2) **Earth's revolution (orbit) around the sun**. When the Northern Hemisphere is **tilted toward the sun** we have **summer**. When the Northern Hemisphere is **tilted away from the sun** we have **winter**.



- We live in the **Northern Hemisphere**. This is the hemisphere above the equator.
 - Q: What season are we experiencing in **Position A**?
 - Q: What season are we experiencing in **Position B**?
 - Q: What season are we experiencing in **Position C**?
 - Q: What season are we experiencing in **Position D**?



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1. The Earth spinning on its axis.

Rotation

Revolution

2. Going around a larger body.

Rotation

Revolution

3. 24 hours.

Rotation

Revolution

4. Causes the Earth's seasons.

Rotation

Revolution

5. Creates a year.

Rotation

Revolution

6. The moon going around Earth.

Rotation

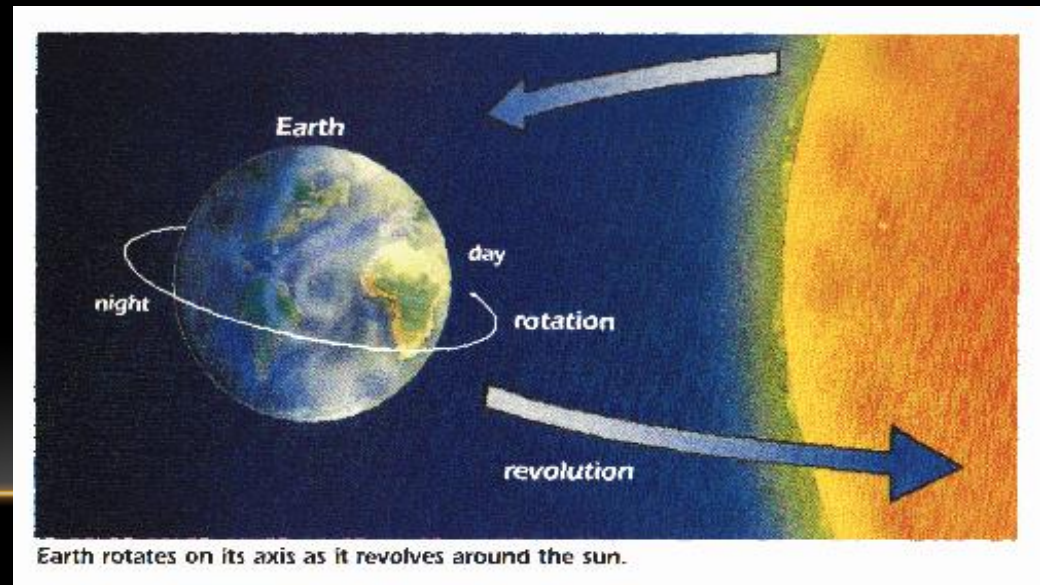
Revolution

NOW IT'S YOUR TURN TO REVOLVE!

- 1) Quietly stand up and push your chair in. Stand behind your chair or off to the side of your desk. Spread out from each other. (You need room to make a revolution).
 - 2) Place an object on the floor in front of you (a pencil, a book, etc.)
 - 3) When your teacher tells you to, walk around the object on the floor. You are making a revolution!
 - 4) Now try rotating (spinning) and revolving (orbiting) at the same time. This is what the Earth does every day!
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REVIEW

- Earth is constantly rotating and revolving.
- Earth's **rotation** on its axis causes **day and night**.
(rotation = to spin)
- Earth's **tilt** and **revolution** around the sun cause the **seasons**.
(revolution = to go around something)



REVIEW

- It takes Earth 24 hours, or 1 day, to make a complete rotation on its axis.
 - It takes Earth 365 days, or 1 year, to make a complete revolution around the sun.
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Identify the motion being shown in each of these pictures. Each team must write their answers for each figure in the form of a question.

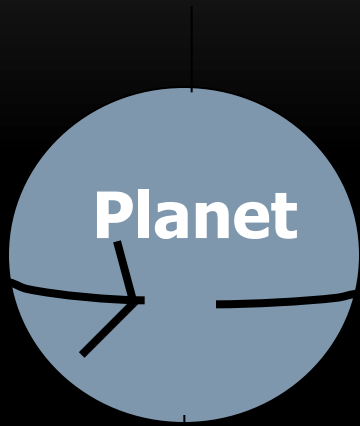


Figure #1 Rotation Revolution

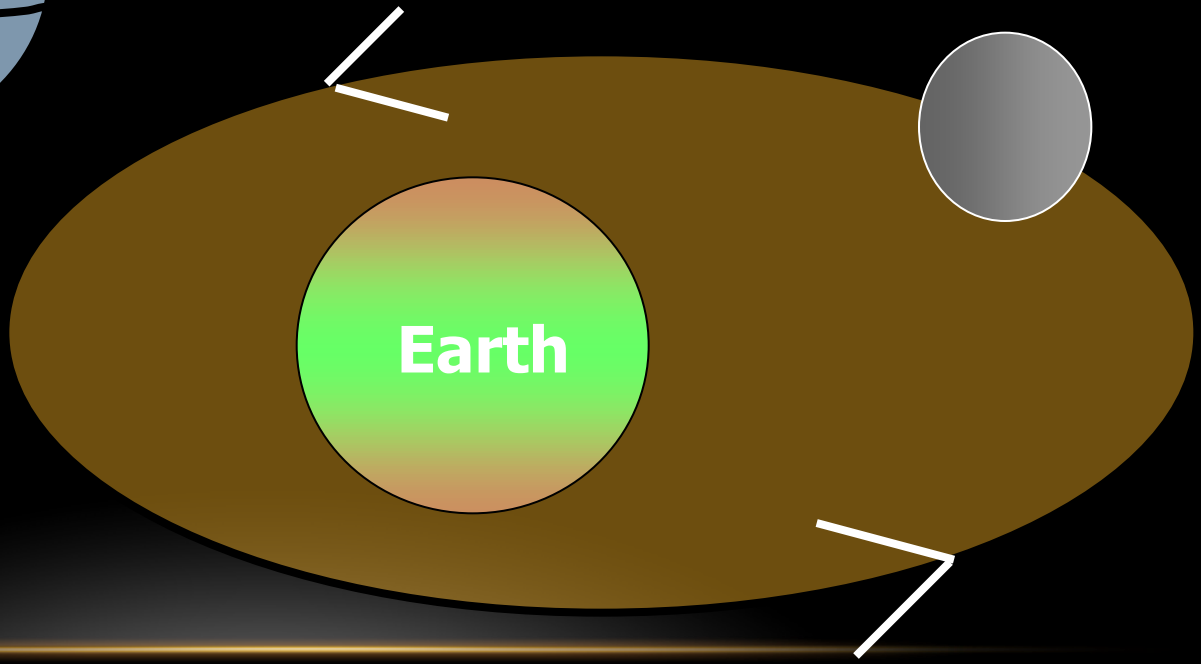


Figure #2

Rotation

Revolution

R & R SONG

(TUNE OF "THE FARMER IN THE DELL")

Rotation means "to spin."

Rotation means "to spin."

This is the cause of day and night.

Rotation means "to spin."

- If you face the sun, it's day.
If you face the sun, it's day.
If you face the sun, you see sunrays.
If you face the sun, it's day.
- If you face away, it's night.
If you face away, it's night.
If you face away, you don't see rays.
If you face away, it's night.



- **Revolve means “go around.”**
Revolve means “go around.”
This is the cause of four seasons.
Revolve means “go around.”
- **Tilting towards the sun feels hot.**
Tilting towards the sun feels hot.
This is the time of summer fun.
Tilting towards the sun feels hot.
- **Tilting from the sun feels cold.**
Tilting from the sun feels cold.
This is the time of winter fun.
Tilting from the sun feels cold.

