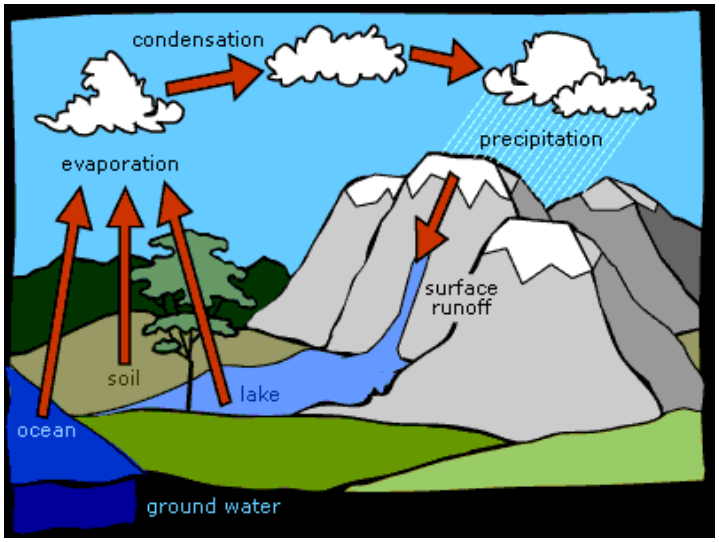
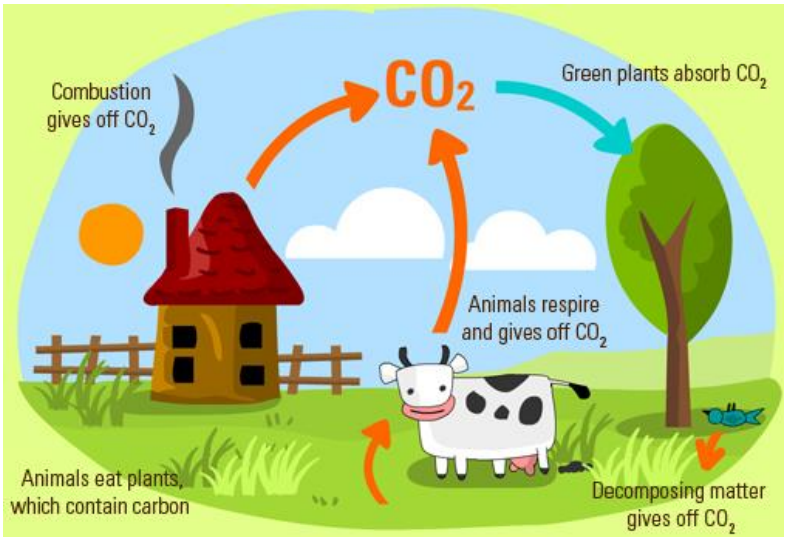
Cycles



1. Explain what the picture to the left shows.

2. Explain what the picture to the right shows.



3. Explain what the picture to the left shows.

Each picture above shows a **cycle**. The first picture shows the **water cycle**, which is how water gets recycled in the environment. The second picture shows the **cycle of the seasons**: summer, fall, winter, and spring. The last picture shows the **carbon cycle**, which is how carbon gets recycled in the environment.

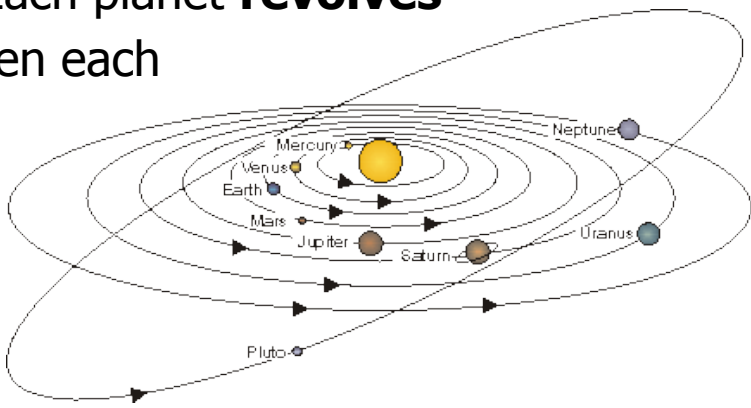
4. In your own words explain what the word **cycle** means.

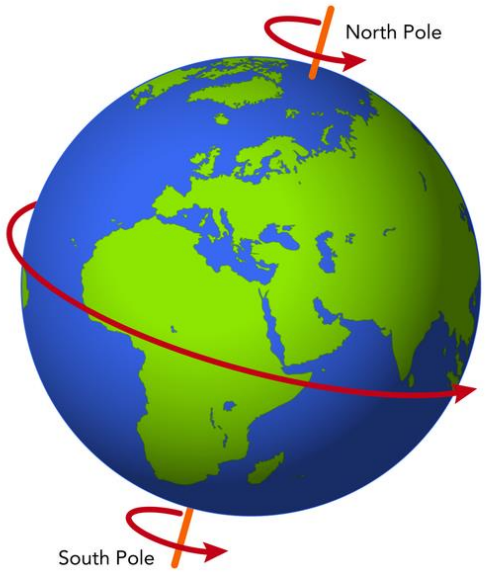
5. Do some research to find one more cycle. Find a picture and explain how the cycle occurs. *Copy and paste or draw the cycle.*

Picture

Explain

Our solar system has many cycles. Each planet **revolves** around the sun. The distance between each planet and the sun is different. So, the length of each cycle around the sun is different. One revolution around the sun is called one **year**.



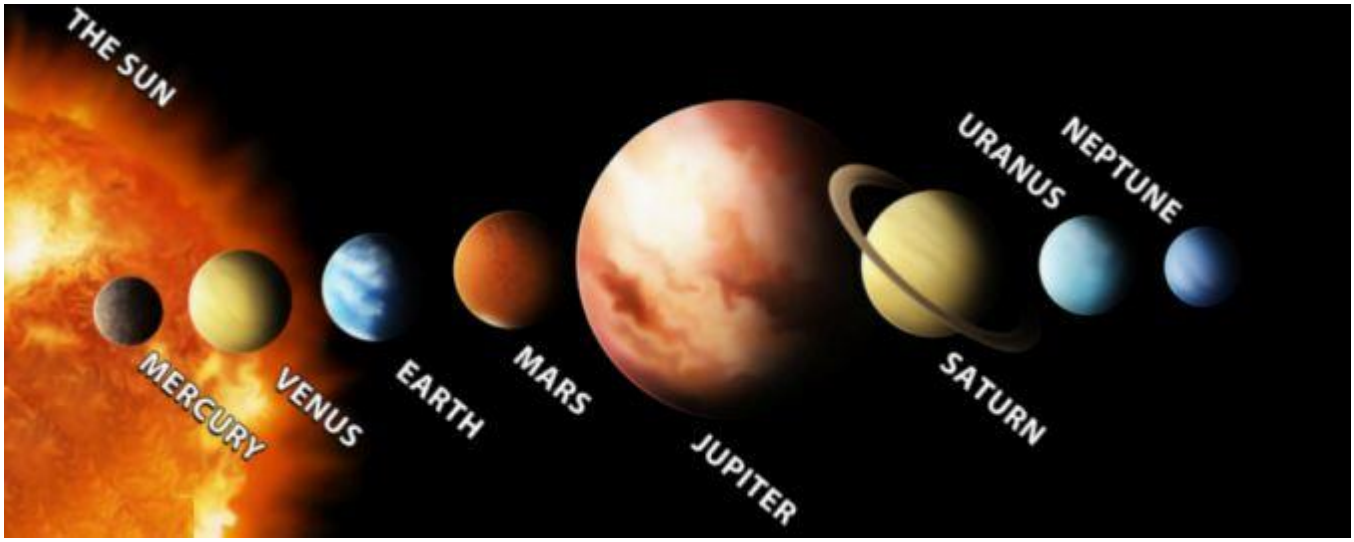


Each planet **spins** or **rotates** on its axis at a different rate. One complete rotation is called one **day**.

6. Explain the difference between rotation and revolution by filling in the table below. *Hint: look at the two pictures above.*

Rotation means	**Revolution means**
Here is a picture of rotation	**Here is a picture of revolution**

Each planet in our solar system is unique. So they all rotate and revolve at different rates. Here are all the planets. Make some guesses about the rotation and revolution cycles.



Note: picture above is not to scale

7. Fill in the table below by guessing which planets have the fastest and slowest rotations. Then guess which planets have the fastest and slowest revolutions.

Speed	**Rotation**	**Revolution**
Fastest		
Slowest		

8. Fill in the table with the revolution and rotation cycles for each planet. Use the text book, pages 321-327, or look it up online from reliable sources.

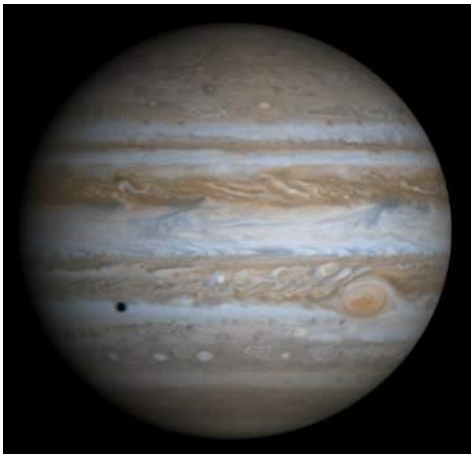
Planet	Time to rotate (day)	Time to revolve (year)
Mercury		
Venus		
Earth		
Mars		
Jupiter		
Saturn		
Uranus		
Neptune		

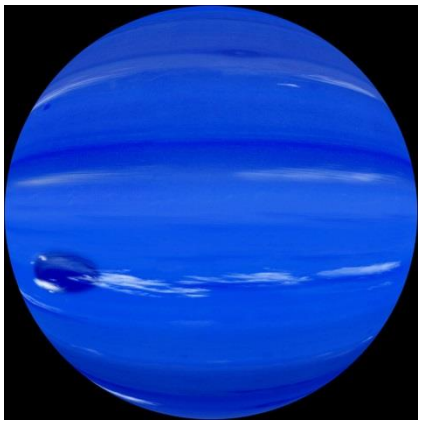
9. Fill in the table below with the actual results from the table above.

Speed	**Rotation**	**Revolution**
Fastest		
Slowest		

10. Compare the table from #7 with the table from #9. Explain if any of your guesses were accurate.

11. Jupiter has the fastest rotation. The length of its day is _____ hours. Guess why.





12. Neptune has the longest revolution. The length of its year is _____ days. Guess why.

13. Read the article below using the "talk aloud" technique.

The student on the right will read the yellow highlighted text. The person on the left will follow along and listen carefully. Once the section has been completed, the person on the left will state what they heard the person on the right read.

Then the person on the left will read the blue highlighted text and the same process will be followed.

14. Write a one or two sentence summary for each section.

Years of the Planets

by Abby Cessna on August 17, 2009

A year on Earth is 365 days – unless it is a leap year – but the actual definition of a year is the time it takes a planet to orbit the Sun. Mercury orbits the Sun in 88 Earth days, which is the shortest orbit of any of the planets. This makes sense considering it is the closest object to the Sun. In comparison, a year on Mercury is about a quarter of a year on Earth. Mercury moves at different speeds depending on where it is in its orbit. When it is near its perihelion – the closest point to the Sun in an object's orbit – it moves faster. It moves slower when it is near its aphelion – the farthest point from the Sun in an object's orbit.

SUMMARY

A year on Venus lasts 224.7 Earth days, which is 0.62 the length of a year on Earth. The odd thing about Venus is that a day on Venus is 243 days, so Venus' day is longer than its year.

Earth's year is actually 365.25 days long, not the 365 days that we round it to. Because an Earth year is not exactly 365 days, we have a leap year – a year with 366 days – every four years. That extra day is added to the month of February so in a leap year it has 29 days instead of 28. The next leap year is in 2012.

SUMMARY

A year on Mars is 687 Earth days. You may have noticed by now that the length of the planet's year increases the further the planet is from the Sun, which is only common sense because the further out planets have to make a bigger orbit around the Sun. Because two years on Earth is only a little more than a year on Mars, the two planets are close together every two years, which is when astronomers sends probes to Mars.

SUMMARY

While it only takes about 10 hours for Jupiter to rotate, it takes 11.9 Earth years to orbit the Sun. Although this seems like a long time, it is actually much less than some of the other planets.

Saturn's year is 29.7 Earth years long. Our planet rotates 30 times in the time it takes Saturn to rotate once.

SUMMARY

A year on Uranus lasts 84.3 Earth years. One of the odd things about Uranus is that its axial tilt is so radical (97.8°) that it actually rotates on its side. This results in extreme seasonal changes.

Since Pluto lost its status as a planet, Neptune has the longest year. It takes the planet 164.8 Earth years to orbit the Sun. Our planet orbits the Sun almost 165 times before Neptune orbits it once, and we have not even seen an entire orbit since the planet was discovered.

SUMMARY

15. What did you notice about your reading and your partner's reading?

16. Where was the text challenging?

17. Pretend you had to create a planet that had a very short day but extremely long year. What would you do to make sure your planet did both of these things?

18. Pretend you had to create a planet that had a very long day but extremely short year. What would you do to make sure your planet did both of these things?