



## The Tilt of Mercury's Orbit Teacher Fact Sheet



Below is a list of the upcoming Mercury transits.\* Transits do not happen every time Mercury passes between the Earth and Sun because their orbits are not in exactly the same plane, as we will see in this activity.

Nov 8, 2006  
May 9, 2016  
Nov 11, 2019  
Nov 13, 2032  
Nov 7, 2039  
May 7, 2049  
Nov 9, 2052  
May 10, 2062  
Nov 11, 2065  
Nov 14, 2078

\* Let students discuss the questions on their worksheets before giving them these dates.

**Extra Question for Students:**  
How old will you be when you see Mercury transit on November 9, 2052?

### Answers to Students' "To Think About" Questions:

It takes the Earth 365.24 days, or one year, to orbit the Sun.

If Mercury orbits the Sun every 88 days, it would go whizzing between the Sun and the Earth four times every Earth year.

Transits of Mercury only occur in May and November because those are the places on Earth's orbit where Mercury can be directly between us and the Sun.

For more information and activities on transits and eclipses see NASA's Sun-Earth Connection website  
<http://sunearth.gsfc.nasa.gov/>

## Mercury Transit Questions

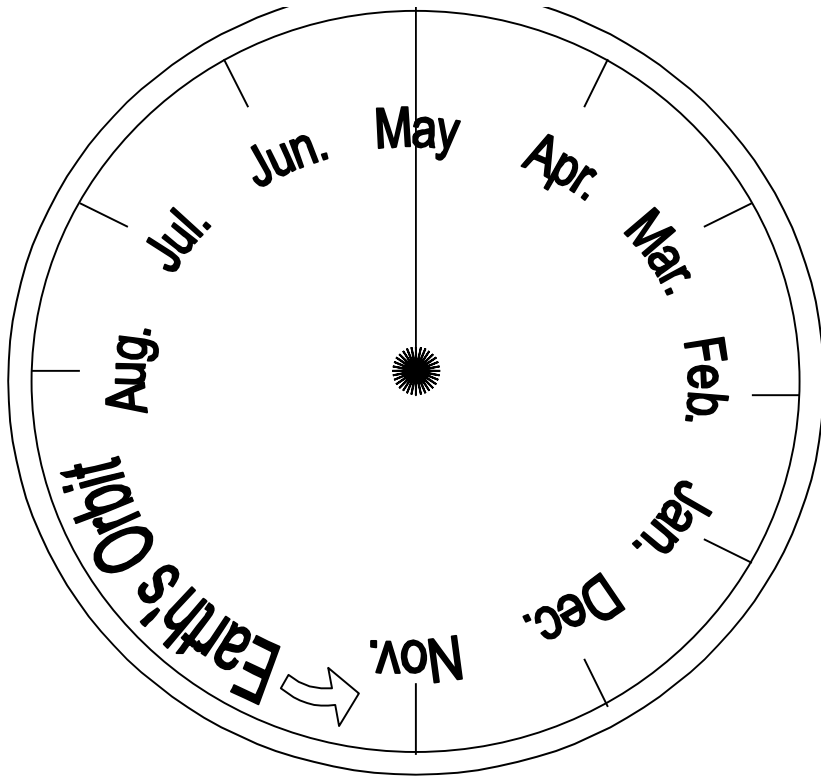
Name \_\_\_\_\_

1. Mercury takes 88 days, or a little less than 3 Earth months to orbit the Sun once. How long does it take the Earth to orbit the Sun once? \_\_\_\_\_ months
2. How many times would Mercury pass the Earth each year?  
\_\_\_\_\_
3. There is a  $7^\circ$  difference in their orbits, which you can show by tilting the smaller disk up just a tiny bit. Does Mercury's orbit line up with the Earth's orbit all the time now? \_\_\_\_\_
4. Transits of Mercury occur at only two times during the year (but not every year). Can you tell which two months the orbits of Earth and Mercury are in line with the Sun?  
\_\_\_\_\_ and \_\_\_\_\_

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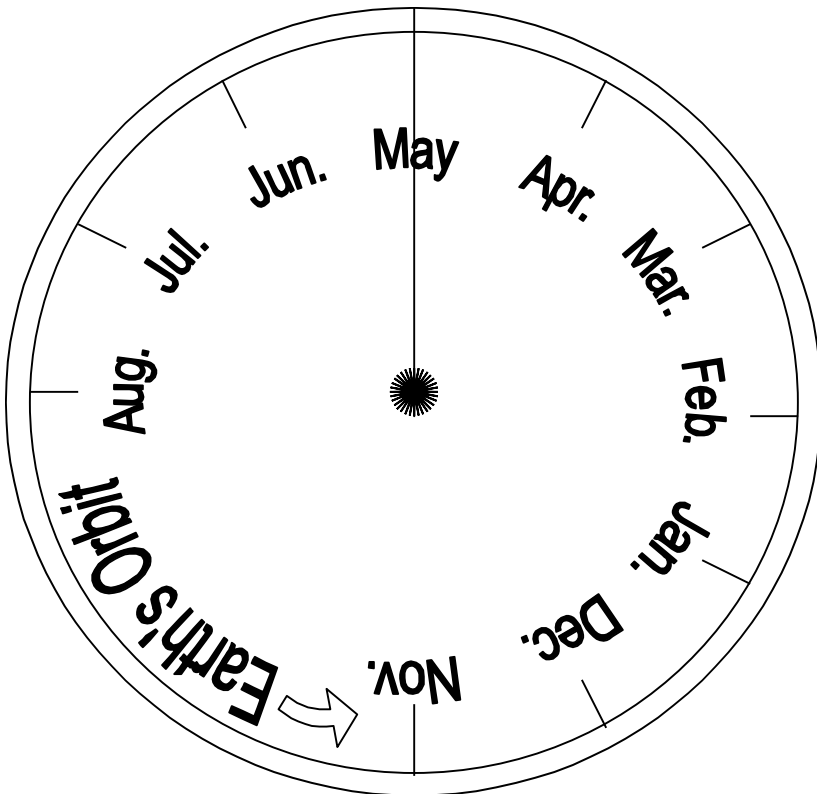
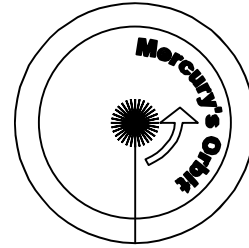
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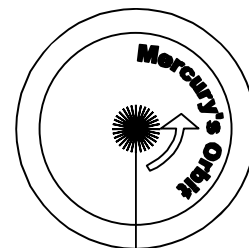
**Instructions:**

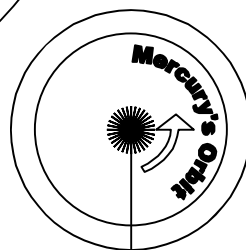
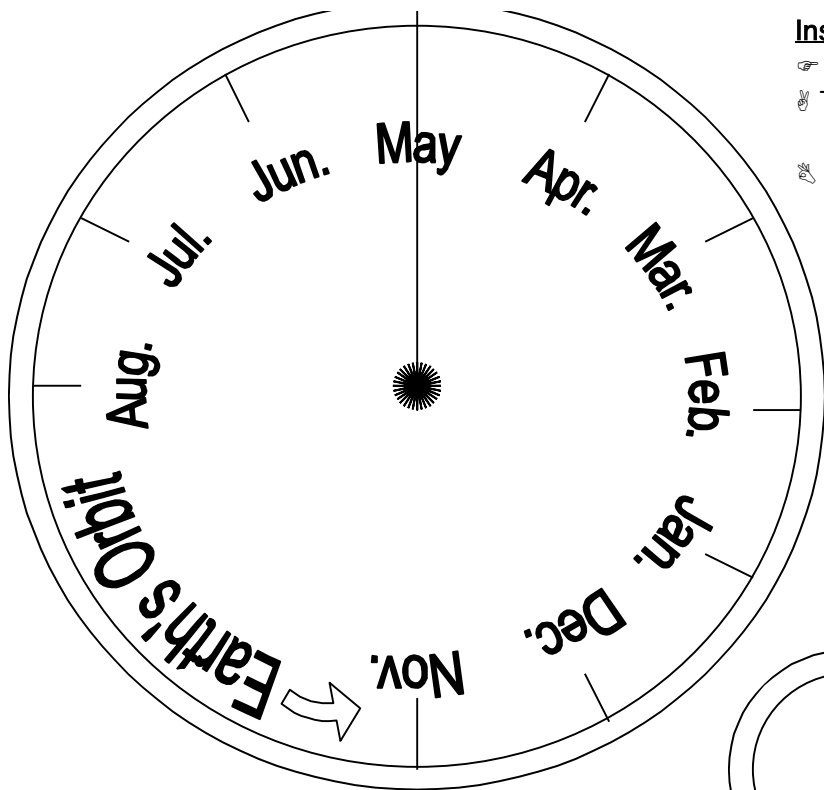
- ✂ Cut these two disks out along the dotted lines.
- ✂ Then cut along the dotted lines into the middle of both circles.
- ✂ Slip the two orbits together so that the suns in the middle of each match up and you can still see the words "Mercury's Orbit" on top.



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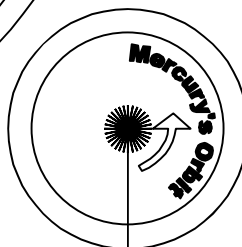
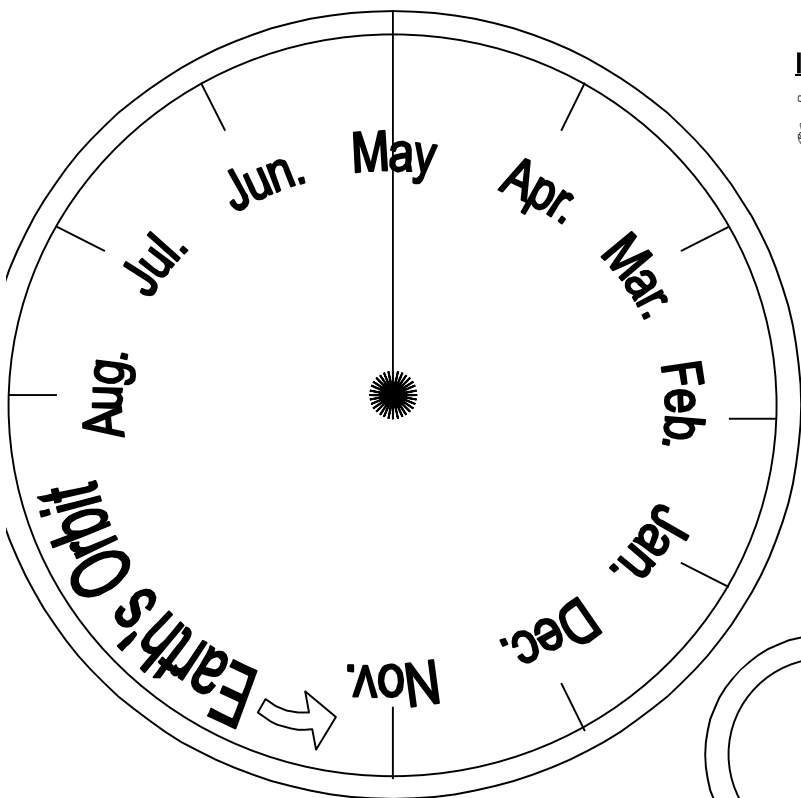


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**To Think About:**

- ♊ Mercury takes 88 days, or about 3 Earth months to orbit the Sun once.
- ⌚ How long does it take the Earth to orbit the Sun once?
- 👉 How many times would Mercury pass the Earth each year?
- 🕒 There is a 7<sup>∞</sup> difference in their orbits, which you can show by tilting the smaller disk up just a tiny bit.
- ✂ Transits of Mercury occur at only two times during the year (but not every year).
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