

Five Planets

Vocabulary:

ancient, horizon, telescope, UFO, robot, onboard, atmosphere

Sneaky Preview! True or False??

A NASA spaceship named Cassini will reach Saturn in July. T. F.

Two NASA rovers are exploring Mars, right now! T. F.

Mercury is brighter than Venus. T. F.

The Mars rover Opportunity has discovered life on Mars. T. F.

Europa is a moon of the planet Mars. T. F.

Daytime Planets

Go outside before the sun sets. Look around. Can you see any planets while the sky is still bright and blue? How many?

Circle this date on your calendar: March 29, 2004. That night you can see five planets at the same time: Mercury, Venus, Mars, Saturn and Jupiter. The view won't be as good again for thirty-two years!

Go outside on March 29th just after sunset while the sky is still glowing. Look west toward the setting sun. The first planet you'll see is Venus. It is so bright! Many people think Venus is a UFO or a landing airplane, but if you watch for a few moments, you'll see it doesn't move or blink like a UFO or airplane. It really is a planet.

Below Venus, near the horizon, lies Mercury. It's dimmer than Venus, and pink. Mercury is the planet closest to the Sun. Normally, Mercury is hard to see because of the Sun's glare, but on March 29th, Mercury will be as far from the Sun as it can get. This is your best chance to see Mercury all year.

Above Venus lies Mars. Of all the planets you'll see tonight, Mars is the dimmest. How do you know you're looking at Mars? Because it's red. Some people say Mars is really "orange" or "butterscotch." What do you think?

Mars has been in the news lately. NASA's rovers Spirit and Opportunity are exploring the planet, looking for signs of water and life. A few weeks ago, Opportunity discovered something important: an ancient dried-up lake or perhaps a sea. Does ancient water mean ancient life? Perhaps. Spirit and Opportunity are still looking.

Mercury, Venus and Mars make a line in the sky. Using your finger, trace that line up, up, up... until you're pointing straight over your head. There's Saturn. It looks like a bright yellow star.

If you have a telescope, point it at Saturn. Even a small telescope will reveal Saturn's beautiful rings and its largest moon Titan. A NASA spaceship named Cassini is traveling to Saturn now. It will arrive in July. There are no people onboard Cassini; the spaceship is a robot. Cassini is going to explore Saturn's rings, study Saturn's weather, and drop a probe into the thick orange atmosphere of Titan. What's hiding beneath Titan's clouds? No one knows, but Cassini will find out.

Last but not least is Jupiter, the biggest planet in the solar system. If you're facing Venus, Jupiter is right behind your back. Jupiter is very bright, almost as bright as Venus, so you can't miss it. Like Saturn, Jupiter looks wonderful through a telescope. Using a small telescope, you can see Jupiter's rusty-red clouds and its four largest moons: Io, Europa, Ganymede and Callisto.

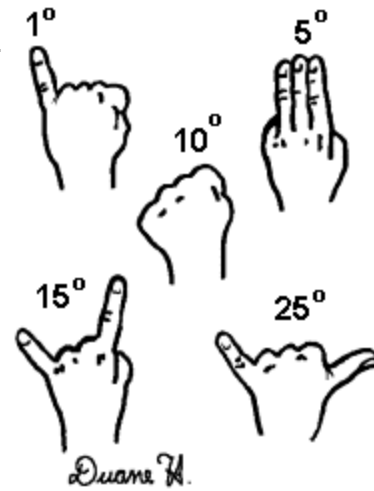
Five planets and their moons are a lot to see in one night, but you can do it on March 29th. In fact, you can see six. Look beneath your feet. There's one more: planet Earth. What a night!

Hands Up! Degrees In The Sky!

Astronomers measure distances in the sky in units of degrees. For example, the Sun is $1/2$ of a degree wide. The bowl of the Big Dipper is about 10 degrees wide. A full circle is 360 degrees.

It is easy for sky watchers to measure degrees. All you need are your hands and fingers. To use your hand as a measuring tool, you need to hold your hand at arm's length in front of you.

Held at arm's length, your pinky finger is about 1 degree wide. Your three middle fingers, held together, are about 5 degrees wide. If you hold out your fist, it will measure about 10 degrees wide. Look at the diagram above, to see how you can measure 15 and 25 degrees, too.



You can now take this awesome tool outside and practice using it on the horizon. Answer the following questions in complete sentences.

1. What two objects on the horizon seem to be one degree apart?
2. What two objects on the horizon seem to be ten degrees apart?
3. What two objects on the horizon seem to be 25 degrees apart?

Next, go outside at night. Find the planets Mercury, Venus, Mars, Saturn, and Jupiter.

4. How far apart are Venus and Mars, measured in degrees?
5. How far apart are Venus and Saturn?
6. How far apart are Mercury and Jupiter?

Teacher Lesson Plans

Hands Up!

Objective:

Students will use the astronomical system of degrees to measure objects on the horizon.

Materials:

This lesson requires a student copy of the activity sheet and a horizon with features. Trees, buildings, or clouds can act as features to be measured. Everyone needs a hand. This diagram might also come in "handy:" <http://www.thursdaysclassroom.com/13oct00/images/cb/hands.pdf>

Estimated Time:

Reading and explaining the activity sheet will take between 15 and 30 minutes. Measuring objects on the horizon may take another 20 minutes.

Procedure:

1. Read over the activity sheet. Review any new vocabulary. As you read each paragraph, practice hand measurements. Have the kids practice using their hands to measure objects on the ceiling.
2. Review your behavior standards for going outside. You might want to have students work in pairs.
3. Before having the students measure, do the first problem together.
4. Monitor students as they measure. Encourage students to compare answers.
5. While you are still outside, go over the student responses.

Rationale:

This exercise will prepare students to locate stars in the sky. It will motivate and prepare students to go out at night on their own.