

Astro Adventures

The STARLAB News Kid's & Teacher's Page

Astro Astronomy
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The **Dirtmeister**®
Radically Different Science

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Greetings and welcome to Astro Adventures. This insert is designed to be a fun activity page for kids and teachers including games, puzzles and a few astro facts. Feel free to copy and use this material, or share it with a friend!

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Astro Try-It!

They Call Me the Wanderer!

Have you ever seen a planet in the night sky? Perhaps you were one of the millions of folks who checked out the planet Mars as it made its close approach to Earth this summer. Maybe you're one of the lucky people who has seen the rings of Saturn in a telescope or watched the moons of Jupiter cruise around the king of all planets. For even an experienced observer, planet watching can be fun and exciting. There's always something new to see and something exciting to discover. In fact, if you have a little time on your hands, you can even discover your own planet and you don't need a telescope to do it!

Long before there were telescopes and binoculars, people were looking up at the stars, and it didn't take them long to notice that not all stars move the same way. Watching the stars night after night, people realized that most of the stars were "fixed" in patterns that always stayed the same. Each night, these patterns of stars, (called **constellations**), would rise and set as a group. But, for some reason, not every star belonged to a constellation. Five bright stars appeared to "wander" back and forth through the different constellations. They became known as **planets**. Why planets? Because it's the ancient Greek term meaning "wanderer".

At first, early observers didn't know what to make of these strange objects. They knew that because of their different motion they had to be special. By making careful observations over the years, they noticed some other differences between planets and stars. While most of the planets were brighter than stars, their brightness would change over time. Most stars usually stayed the same brightness. Also, when the planets wandered past the other stars, they didn't all travel at the same speed. Some moved fast, some moved slowly and every once in a while, some of the planets would appear to stop and actually back up (something that astronomers call **retrograde motion**)! After literally thousands of years of observing and with the help of inventions like the telescope, scientists were finally able to put the pieces together.

Today we know that the planets aren't stars at all, but are objects like the Earth, moving around the sun in regular, predictable orbits. The five original planets are joined by three more that can only be seen using a telescope. Each planet has its own unique set of characteristics — some have rings, some are made of gas. And, if you know where to look, you can discover them in the night sky



for yourself, just like the ancient astronomers did! Here's what to do:

Start off by getting a star chart for the month you want to observe. These can be found in many local newspapers and in magazines like **Astronomy**, **Sky & Telescope**, and **Science & Children**. You can also find them on many different internet Web sites by searching under "star maps". Star charts also show which planets are currently visible and where to look for them. Go out on a clear night with a flashlight, a clipboard, a pencil and a piece of blank paper and use the chart to find the part of the sky where the planet is. When you think you've got the right location, use the pencil to make a map of the stars in the area where you think the planet is. Draw the bright stars as big dots and draw the dim stars as little dots. Write the date and the time on the paper and then head back home. Wait a few days and do the exact same thing, making sure that you look in the same part of the sky. After about a month or so, you'll have a collection of maps showing the position of the stars. By carefully comparing the different maps, you should be able to see which one of the stars wandered — that's your planet!

Using A STARLAB to Find the Planet

If you have access to a STARLAB Portable Planetarium, you can do the same "Find the Planet" activity under the dome. Begin by setting the night sky for the date you want to observe. Using the appropriate planet projector, place the planet in the constellation where it's to be found. Have the class draw the sky and then dim down the projector. Move the lever on the planet projector slightly and then bring the projector lights up again. Have them draw the second picture and repeat the procedure one more time. They'll have three pictures each with the planet in a different position. Finding the planet should be a snap!

Twinkle, Twinkle Little Planet

Over the years, there have been a number of false notions circulating about the planets that many people have assumed to be correct. One such statement has to do with the way you can tell the difference between a planet and a star in the night sky — that stars twinkle and planets don't. The truth is, both planets and stars can appear to twinkle in the night sky and it has nothing to do with their light. It has to do with our atmosphere! We live at the bottom of an "ocean of air" and just like the real ocean, the atmosphere has many layers and currents moving the air around. As light passes through these different layers, it is often bent or **refracted**. It's this refraction that causes the light from both stars and planets to appear to twinkle. Because planets are much closer than stars, they appear to be bigger and brighter and we see more light coming from them. Even though individual light rays are still refracted, because there are more of them, a planet appears to be more steady than a star. When there is a great deal of turbulence in the atmosphere, (like after a rainstorm), the light from a planet is refracted so much that it, too, can twinkle.

To learn more about the planets of our solar system and to get some great closeup views, you can log onto Introduction to the Nine Planets at:

<http://seds.lpl.arizona.edu/nineplanets/nineplanets/intro.html>

One of the best sources for simple star maps to help you find the planets is the Abrams Planetarium. You can get an annual subscription to their Sky Calendar by sending \$10.00 to Abrams Planetarium, Michigan State University, East Lansing, MI 48824-1324.



Naming the Planets

The planets were named for characters from ancient Greek and Roman mythology. Can you match the name of the planet with the description of the character?

Character Description ▼

1. god of war
2. messenger of the gods
3. goddess of beauty
4. king of the gods
5. god of the underworld
6. god of the sea
7. god of the harvest
8. father of the Titans

Planet Name ▼

- Jupiter
- Uranus
- Mercury
- Pluto
- Saturn
- Mars
- Venus

Word Scramble

Unscramble the names of these five planets

1. NARUUS
2. NATSRU
3. NEVSU
4. TEPNNEU
5. CREMYRU

If you want to learn about how the constellations were developed, look for my new book entitled **Stars** which was recently published by National Geographic!

Answers to Naming the Planets
1. Mars 2. Mercury 3. Venus
4. Jupiter 5. Pluto 6. Neptune
7. Saturn 8. Uranus
Answers to Word Scramble
1. Uranus 2. Saturn 3. Venus
4. Neptune 5. Mercury