

# Astro Adventures

## The STARLAB News Kid's & Teacher's Page

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

Steve "The Dirtmeister"  
Tomecek

**G**reetings 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!

Steve "The Dirtmeister" Tomecek is a geologist and science educator who currently serves as a science consultant and writer for the Discovery Channel, National Geographic, Scholastic Inc., and The Jason Academy. He has written over a dozen science books for kids and teachers and is one of the stars of the WNYC New York Kids radio show. His most recent books entitled *Sun and Stars* are available from National Geographic. If you would like to find out more about the Dirtmeister and try some more of his "dirt cheap" science experiments, log onto:

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### Astro Try-It! A Sign of the Times!

**S**omewhere along the way, most of us have discovered that we have our own zodiac sign which, according to astrologers, is supposed to help predict our future. While most astronomers don't believe in astrology, they have long used these special "birthday constellations" to predict the movement of the sun, planets and moon across the night sky. While many people know what their zodiac sign is, few know the true meaning of these symbols and why they were created in the first place.

The whole thing got started thousands of years ago with the astronomers in ancient Babylon. These observers of the night sky discovered that as the sun appeared to move through the sky, it would rise and set in front of a different group of stars each month. In order to remember which group of stars were which, they played a little game of "connect the dots" turning the star patterns into pictures which eventually became the zodiac constellations. Simply put, the zodiac constellations mark the path that the sun appears to follow through the sky over the course of a year. The word zodiac comes from the Greek term "zoo" meaning animals, because most of these constellations are either animals or people or a combination of the two.

Originally, there were only six zodiac constellations but as time went on, six more were added so that over the course of the year, the sun spends approximately one month in front of each one. Before there were written calendars, people would remember when they were born by the name of the constellation in which the sun rose on their birthday. For example, instead of saying that you were born in mid October, you would say that you were of the "House of Libra." You see, your zodiac sign is your "sun sign," which means that the constellation that the sign represents is up in the sky during the daytime on your birthday. Over the years, this has gotten many people confused because they expect to be able to see their constellation at night on their birthday! If you want to see your zodiac constellation at night, you have to wait for six months or go out on your half birthday.

If this all sounds confusing, here's a little activity that you can try to help make sense of the whole zodiac dilemma. You can either do it in a big empty room or even better, in a STARLAB planetarium. Start by making up 12 zodiac constellation signs by copying the name of each constellation onto a separate piece of paper. You can get the names of the signs from the chart on the next page. Place the 12 signs in a big circle on the floor or if you're working with a group of people inside the STARLAB, have them sit in a circle around the projector with each one holding a different sign. Make sure that the signs are arranged in their proper order based on the dates found on the chart.

Place a lamp with a bare bulb in the middle of the circle or if you're in a STARLAB, turn on the projector lamp to full brightness and then turn off all the lights. The light will represent the sun and you will be the earth. Stand facing the lamp (projector) so you are directly opposite the constellation Scorpius. From where you are standing, you should have a hard time seeing the sign that says Scorpius because the glare from the lamp should be right in front of the sign. In other














words, the sun is in the constellation Scorpius. Now slowly walk in a counterclockwise direction so that the light is in front of the constellation Sagittarius. In your model, you have moved about one month in time and now it appears that the sun has moved into the constellation Sagittarius — only the sun has not moved at all, you have! If you continue moving in a counterclockwise direction, you'll see that each month it will appear that the light will shift one zodiac sign to the left until you complete one circle and you're back to where you started from. In other words, because the earth is orbiting the sun, it appears that over the course of the year, the sun moves through all 12 zodiac signs. Once you try this activity, understanding the zodiac should be a snap!

*This activity is adapted from Activity 15: What's Your Sign? found in PASS Volume 2 by Gerald Mallon.*

## A Zodiacal Dilemma!

If you were born on the 25<sup>th</sup> of December 2000 years ago, the sun would have risen in the constellation Capricornus and your sign would have been Capricorn. If you go out this year and watch where the sun rises on December 25<sup>th</sup>, you will find that it comes up smack in the middle of the constellation Sagittarius! What's the deal? Has the zodiac shifted? Well in a way it has, but not because the stars have moved, it's the Earth at play again. You see, in addition to the rotation that gives us day and night and the revolution of the earth around the sun that gives us the seasons, we also have one more motion ... the earth wobbles on its axis like a top that's running out of energy. Because of this wobble, during the last 2000 years, the zodiac has shifted one full month. This has really led to confusion because astrologers, the people who tell fortunes based on a person's zodiac sign, still use the old dates for figuring out what sign you have, even though the stars show that they're wrong!

The chart below gives you the 12 zodiac constellations and lists both the astrologers dates and the dates when the sun is actually in the sign. So what's your sign? It's really up to you to decide!

Constellation Name	Astrologer's Dates	Actual Dates
 Aries	Mar 21 – Apr 20	Apr 19 – May 13
 Taurus	Apr 21 - May 21	May 14 – Jun 19
 Gemini	May 22 – Jun 21	Jun 20 – Jul 20
 Cancer	Jun 22 – Jul 22	Jul 21 – Aug 9
 Leo	Jul 23 – Aug 23	Aug 10 – Sep 15
 Virgo	Aug 24 – Sep 23	Sep 16 – Oct 30
 Libra	Sep 24 – Oct 23	Oct 31 – Nov 22
 Scorpius	Oct 24 – Nov 22	Nov 23 – Nov 29
 Ophiuchus	Not Recognized	Nov 30 – Dec 17
 Sagittarius	Nov 23 – Dec 21	Dec 18 – Jan 18
 Capricornus	Dec 22 – Jan 20	Jan 19 – Feb 15
 Aquarius	Jan 21 – Feb 19	Feb 16 – Mar 11
 Pisces	Feb 20 – Mar 20	Mar 12 – Apr 18

## Mix & Match!

**Draw a line connecting the name of the zodiac constellation with the symbol that it represents.**

### Name ▼

Aries  
Taurus  
Gemini  
Cancer  
Leo  
Virgo  
Libra  
Scorpius  
Ophiuchus  
Sagittarius  
Capricornus  
Aquarius  
Pisces

### Symbol ▼

Scales  
Twin Brothers  
Ram  
Two Fish Tied Together  
Maiden  
Crab  
Boy Carrying a Water Jug  
Bull  
Lion  
Scorpion  
Goat with a Fish Tail  
Centaur the Archer

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

Aries/Ram • Taurus/Bull • Gemini/Twins • Cancer/Crab • Leo/Lion • Virgo/Maiden • Libra/Scales • Scorpius/Scorpion • Sagittarius/Centaur • Capricornus/Goat • Aquarius/Boy & Water Jug • Pisces/Two Fish

**Answers to Mix & Match**