THE UNIVERSE IN THE CLASSROOM

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A Flag for Mars

by Michael Orelove
Juneau, AK

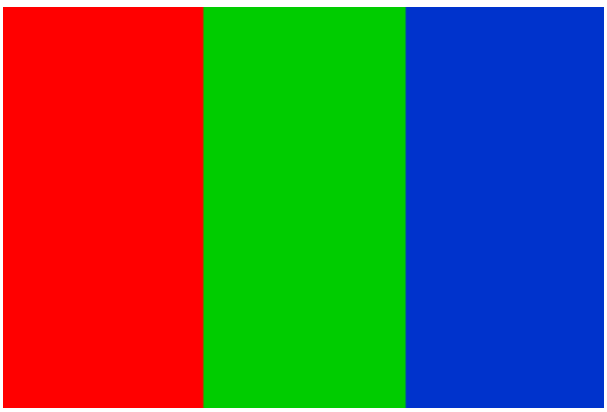
"Symbols are sacred things, and one of the chief ones that every man holds dear is the national flag. Deep down in our nature is the strong emotion that swells the heart and brings the tear and makes us follow the flag and die round it rather than let it fall into the hands of the enemy. This is no new emotion, no growth of a few generations, but an inheritance from the ages before history began." W. J. Gordon, *Flags of the World*, London, 1915.

I am a member of the North American Vexillological Association, which is dedicated to the study of flag history and symbolism.

I am also a member of the Mars Society, whose purpose is to further the exploration and settlement of the planet Mars.

At a recent Mars Society Convention I purchased a Mars flag which I first mistook to be the flag of France. This confusion motivated me to design and produce an alternative flag.

During a mission to refurbish and repair the Hubble Space Telescope, the Space Shuttle Discovery carried a Martian flag into orbit. This Mars flag was a red, green, and blue tricolor. It was originally suggested to Mars Society president Robert Zubrin by Mars Arctic Research Station task force leader Pascal Lee, during their summer 1999 site selection expedition to Devon Island.



The red, green, and blue colors derive from the stages of Mars' transformation from barrenness to life depicted in the epic "Red Mars," "Green Mars," "Blue Mars" trilogy written by Kim Stanley Robinson. Red stands for the current desert, green for a 2nd step planet with vegetation and blue for the fully terraformed blue planet Mars. Red, green, and blue are also the primary components of the spectrum, symbolizing unity in diversity, as well as light itself and thus reason and enlightenment. The tricolor form also traditionally represents the republican values of liberty, equality, and justice.

I had not read the books and did not know the significance of the elements of this Mars flag.

I started thinking about flags.

What is a flag?

A flag is a symbol of a nation, territory, office, corporation, organization, or group.

A flag's purpose is to represent a place, organization or person, generally on a rectangular piece of cloth, to be seen at a distance, often moving, and to be reproduced in quantity and in many sizes.

A good flag design should be simple, yet distinctive and meaningful. As a medium of communications, a flag must be easily recognizable, with the divisions chosen not only for aesthetic value but also to enhance the flag's symbolic meaning. The emblems need to be large and as simple as possible.

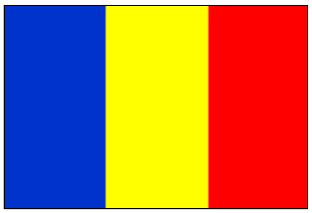
The simple Mars tricolor flag creates emotions and feelings to those who see it and know its meaning.

I had not read the books.

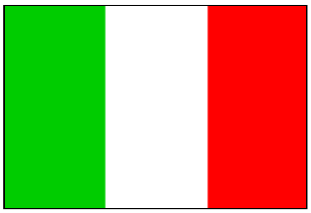
The tricolor flag design is similar to the flags of many nations, including the following flags that have two of the three colors of the red, green, and blue tricolor Mars flag:

Chad	blue	yellow	red
France	blue	white	red
Guinea	red	yellow	green
Italy	green	white	red
Mali	green	yellow	red
Romania	blue	yellow	red

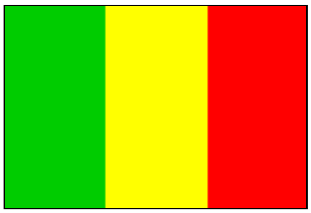
A flag to represent a planet should be distinct and not easily mistaken for a national flag.



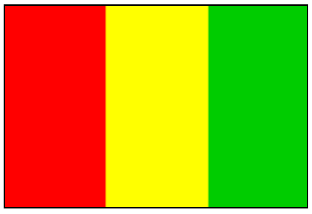
Chad

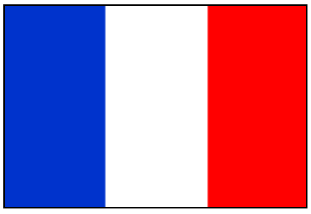


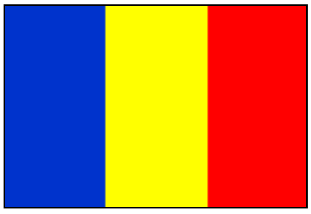
Italy



Mali

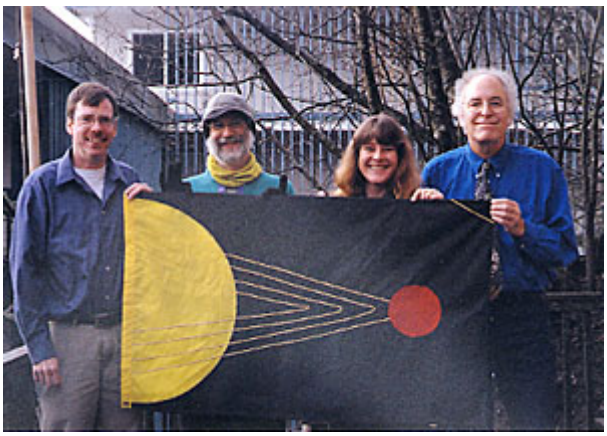






Guinea France Romania

I propose a new Mars Flag for consideration.



A flag for a planet should be easily distinguished from most state and national flags in shape, color, symmetry, and other flag design elements.

Shape

The width of a flag is measured along the hoist edge, the side that is affixed to the pole. The length is measured from the hoist edge to the fly end of the flag.

Although most state and national flags are rectangular, they are rectangles of different ratios. The official proportions of the U.S. flag are 10 x 19. The proportions of the Alaska flag are 125 x 177.

In general, to my people, a flag with the proportions of 1 x 2 appears a little longer and thinner than most flags in common use.

The proportions of the Mars Flag are 1 x 2. The length is exactly twice the width. When the Mars flag is folded in half, the shape will be a perfect square. No matter what size flag is made, the proportions are always 1 x 2 and there is no distortion of the design.

The proportions are easily divisible into quarters which provide for distinct astronomical elements in each quarter.

Obverse Side of the Flag

The more important, front side of a flag. It is the side to the observer's right from the staff.

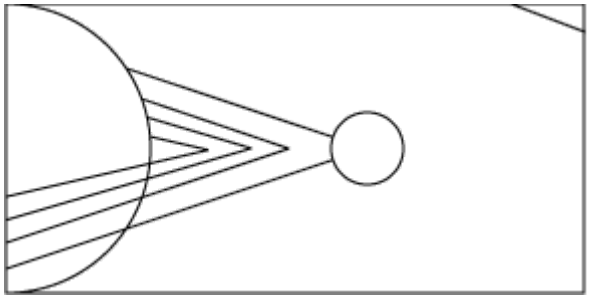
Reverse Side of the Flag

The less important side of the flag. It is the side to the observer's left from the staff.

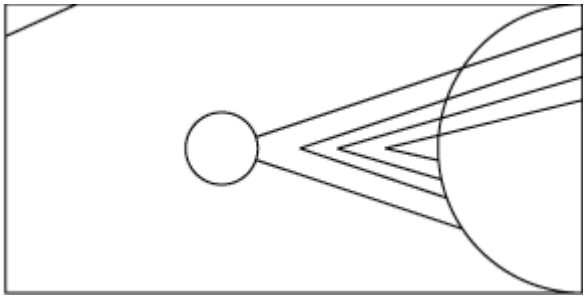
In most cases, the reverse is a mirror image of the obverse, but some flags have different obverse and reverse and are really two different flags sewn back to back. The Oregon state flag has the state seal and the name "Oregon" on the obverse and a beaver on the reverse.

A Flag for Mars

The Mars Flag has a different design on the reverse side.



obverse side of flag



reverse side of flag

The Mars Flag is meant to be viewed from the back as well as the front.

The design on the reverse side is a continuation of the design on the obverse. The orbit lines on the obverse cross the Sun on the lower half of the flag and appear to go behind the Sun on the upper half of the flag. The reverse side has the orbits lines continuing around the Sun on the upper half of the flag.

This gives you the view as you pass the flag, as if you are traveling through space and passing through the Solar System. As you approach the Sun, you see the orbit lines of the planets pass behind the Sun and as you pass the Sun and look back, you see the continuation of the orbit lines on the reverse side.

This is one of the most unique aspects of the Mars Flag as compared to other flags. The Mars Flag reverse side is a continuation of the obverse side and not just a different design on the back and not a mirror image of the obverse.

Main Flag Background Color

The main background color of the state flag is blue. There are no state or national flags with black as the main background color.

The Mars Flag main background is black to represent the blackness of space.

Astronomical Design Elements

The Mars Flag is an astronomy lesson. The flag design elements represent the orbits of Mercury, Venus, Earth, Mars, and Jupiter, their relative distance from the Sun.

The 1st quarter of the flag contains the **Sun** represented by a yellow half circle.

The 2nd quarter of the flag contains orbit lines for **Mercury**, **Venus**, and **Earth**, indicating the relative distance of the planets from the Sun.

The 3rd quarter of the flag contains the planet **Mars**, represented by a red circle, with the planet's relative distance from the Sun.

The 4th quarter of the flag contains a line representing the orbit of **Jupiter**, calculated at the planet's relative distance from the Sun.

General Comments on Flags

The Northern American Vexillological Association (dedicated to the study of flag history and symbolism) has 5 basic principles of flag design which are summarized as follows:

1. Keep It Simple

The flag should be so simple that a child can draw it from memory. Flags flap. Flags drape. Flags must be seen from a distance. Under these circumstances, only simple designs make effective flags. Furthermore, complicated flags cost more to make, which often can limit how widely they are used.

Ideally the design will be reversible or at least recognizable from either side. Don't put a different design on the back.

The Mars Flag has simple components, various elements of symmetry, yet complicated astronomical units and a different design on the back.

2. Use Meaningful Symbolism

The flag's images, colors, or patterns should relate to what it symbolizes. Symbolism can be in the form of a main graphic element, in the colors used, or sometimes even in the shapes or layout of the parts of the flag.

The Mars Flag contains many symbolic elements, including symbols of the Sun and Mars, and the orbits of the planets their relative distance from the Sun.

3. Use 2-3 Basic Colors

Limit the number of colors on the flag to three, which contrast well and come from the standard color set.

The Mars Flag employs three basic colors (black, yellow, and red) with gold highlights.

4. No Lettering or Seals

Words defeat the purpose. A flag is a graphic symbol. Lettering is nearly impossible to read from a distance and is not reversible.

The Mars Flag has no lettering or seals and no elements that would detract from the design when viewed from the reverse. The Mars Flag is meant to be viewed from the reverse to see the continuation of the orbits.

5. Be Distinctive or Be Related

Avoid duplicating other flags, but use similarities to show connections. Sometimes the good designs are already taken. However, a flag's symbols, colors, and shapes can recall other flags–a powerful way to show heritage, solidarity, or connectedness. This requires knowledge of other flags.

The Mars Flag is distinctive. It is the flag for a planet and stands out among flags from states or nations.

The Mars Flag meets many of the basic principles of flag design and differs on others.

The Mars Flag is meant to be different.

> "A flag should be simple, readily made, and capable of being made up in bunting; it should be different from the flag of any other country, place, or people; it should be significant; it should be readily distinguishable at a distance; the colors should be well contrasted and durable; and lastly, and not the least important point, it should be effective and handsome."
> National Flag Committee of the Confederate States of America, 1861

The Mars Flag stands this test.

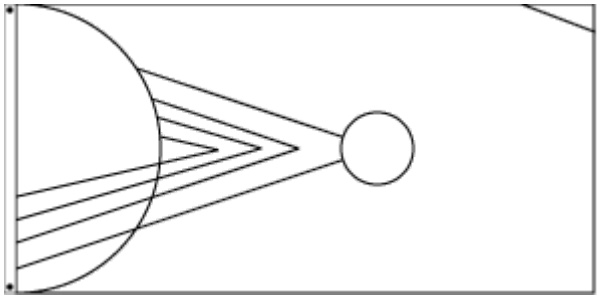
Sources:

The World Encyclopedia of Flags by Alfred Znamierowski

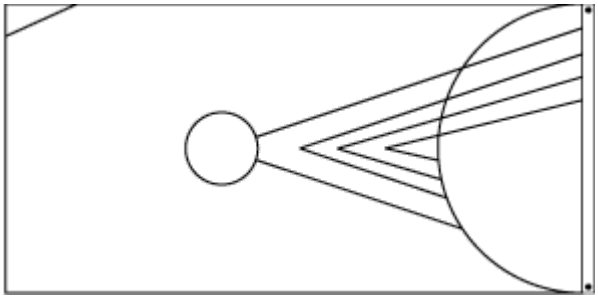
The North American Vexillological Association.

http://flagspot.net/flags/mars.html

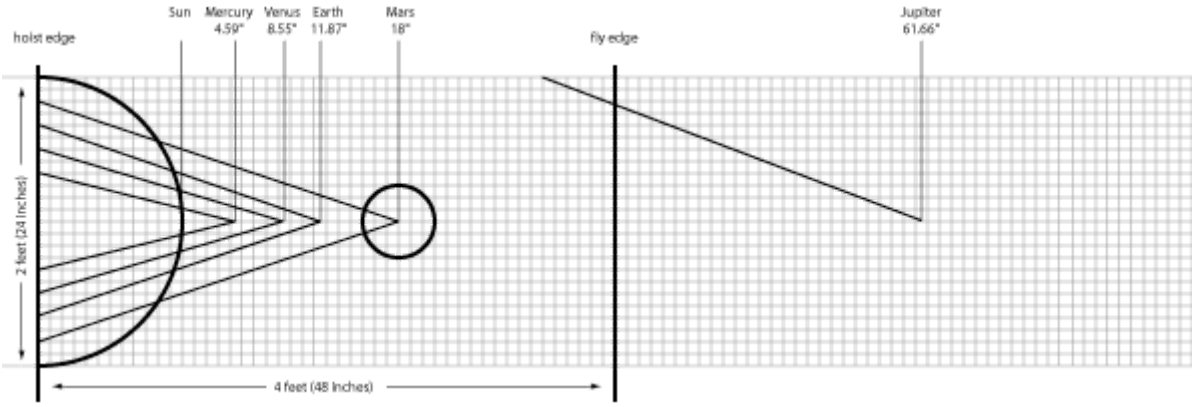
Flag Specifications



Obverse (front)



Reverse (back)



Scale: 2 feet x 4 feet flag: each small square is 1 inch x 1 inch

Flag Sections–Astronomical Components

1st quarter:	the Sun
2nd quarter:	Mercury/Venus/Earth
3rd quarter:	Mars
4th quarter:	Jupiter

Sun:	24 inch diameter (1/2 of the Sun on the flag 12 inches)
Mars:	6 inch diameter

Jupiter orbit line placement

top edge:	6 inches from fly edge

fly edge: 2 1/3 inches down from the top

Colors

Background: Black

Sun: Yellow

Mars: Red

Orbit lines: Gold

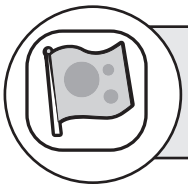
Planet Placement

	miles from the sun	%	2" x 4" flag inches from the Sun
Mercury	36,000,000	.255	4.59"
Venus	67,000,000	.475	8.55"
Earth	93,000,000	.659	11.87"
Mars	141,000,000	100	18.00"
Jupiter	483,000,000		61.66"

A Flag for Your Planet

BY ANDREW FRAKNOI

An Activity for the Whole Family from Project ASTRO™



- **Recommended for Ages:** 8 and up
- **Type of Activity:** Facilitated
- **Time to Do:** 30 minutes

What's This About?

Participants use their knowledge of the solar system to design a flag for one the planets. This is an open-ended activity that allows families to use their creativity and to apply their knowledge. We provide a version for your family event, below, and there is a version included in the *Race to the Planets* game.

Materials Included

- Planet cards from the *Race to the Planets* game
- Handout pages

Materials You'll Need to Get

- 8-1/2 x 11 sheets of white paper and/or construction paper for the flags
- Magic markers, colored pencils, or crayons
- (Optional) Books about flags
- (Optional) Some sticks and tape to attach the flags.

Setting up the Activity

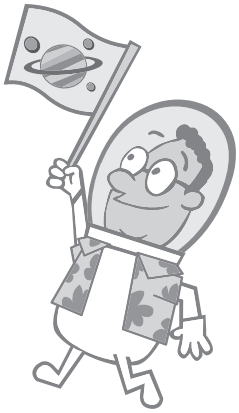
Before the family event, put out the materials on each table. Decide what you will do to introduce the activity (see below) and make sure you are ready to do the introduction. This is a good activity to do at the end of a family event on the planets.

Suggestions for Introducing the Activity

The biggest challenge in doing this activity is figuring out how to give families enough information about the planets so that they can make a flag that really reflects their planet's characteristics. You may choose to do this activity at the *end* of the first or second family event you do about the planets, and let the earlier activities be the source of flag information (together with what families already know from school or the media).

We have also included in the leader's kit some of the planet cards from the *Race to the Planets* game that all the families will be taking home. These cards include a wealth of information about each planet, and can be a great source of ideas for the flags. You may want to put one of these cards on each table and ask the family to do the flag for that planet or place them all on a single table and have the families choose a planet on their own.

In addition, many family members may not be familiar with flags besides the U.S. and the local state flag. Some flags are very abstract and tell their story through colors and shapes only, while others include pictures and symbols. If possible, it may help to show some flags or books with pictures of flags. There turn out to be several good inexpensive paperback books with many colored flags in them. We recommend some in the resources section.



Doing the Activity

After families have chosen or been assigned their planet, suggest they read the instruction sheet, look at the materials on the table, and discuss what kind of flag they want to make. Have enough paper available so that each child in a family could make his or her own flag (just in case the kids don't all want to work together.)

Remind them about flags on Earth – not just flags for countries and states, but flags for cities, religious and civic organizations, and even sports teams. If there is time, have the family members describe some flags they have seen. Can they tell you any flags that have astronomical symbols on them. (For example, the Alaska state flag shows the Big Dipper, with its pointer stars pointing to Polaris, the North Star. Alaska is the northernmost of the U.S. states, and thus the state where the North Star is seen highest in the sky.)

Emphasize that, since there are no rules for planet flags yet, they can use their imaginations and knowledge to create the most interesting flag possible. You might challenge them by saying that it would be great if the other families could tell which planet the flag was for just by looking at it. The planet cards from *Race to the Planets* show the colors of the Sun and all the planets (except Pluto), as well as some possible "tourist sights" on each world.

When everyone is done, ask each family to hold up their flag or flags and describe what is on them without naming the planet. Then have the other families guess which planet the flag is designed for. If they don't have enough time to finish, or want to try other approaches, you can remind them that a version of this activity is in the *Race to the Planets* game that they will be playing with at home.

Family Challenges

1. An Anthem for Your Planet

Now that each family's world has a flag, doesn't it need an anthem? An anthem is the official song, something that tells the universe why your world is special. This can be a fun thing to try, even if they only compose one verse (and it doesn't have to be very good, just good enough to make everyone laugh or applaud.)

For example: Mars is the planet that is so red,
Without a spacesuit, you'd be dead.
There was water there in the past,
With low gravity, it didn't last.

Rap songs about planets are fun too. For an example of a "rap song" about the planets, written by a professional astronomer (but not a threat to any real rap artists) see: ***http://www-astro.phast.umass.edu/directory/people/rap.html***

If you intend to bring the group together in another session, you might give them the (optional) assignment of making a planet anthem between the two planet events. A web site with flags and anthems for several countries is: ***http://www-math.mit.edu/~igorvp/FlagsAnthems/flagsanths.html***

2. Who Will Own the Moon or the Planets?

If you have time, you might want to have a short discussion about whether the planets should become private property eventually. In the old days, when explorers planted a flag, they were usually claiming the territory for the country they represented. Sometimes wars were fought when two or more countries wanted the same desirable territory.

Do we want the same thing to happen when we explore the Moon, or the planets and their satellites? Or are we ready to regard these other worlds as the territory of all humanity?

In 1967, the U.S. and many other countries put together the Outer Space Treaty, which says "…outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or other occupation, or by any other means." This means that no country can claim another world for itself. Ninety-six countries have officially ratified this treaty and 27 others have signed it.

How do the families feel about this? You might ask them a question like this: Suppose that your family's grandchildren or great grandchildren gets to go to another world that has a surface to stand on (not all the planets have solid surfaces). Should they be able to own land there, just as people can own land on Earth? Or should these other planets be jointly owned by all of humanity?

These are interesting topics to think about as we move into the second century of the space age.

Resources

Some Books on Flags:

Devereaux, Eve: *Identifying Flags: The New Compact Study Guide and Identifier*. 1998, Book Sales (80 pp).
Znamierowski, Alfred: *The World Encyclopedia of Flags: The Definitive Guide to International Flags, Banners, Standards, and Ensigns*. 1999, Lorenz Books (256 pp).
Eyewitness Handbooks: Flags. 1999, Dorling Kindersley (240 pp).
Ultimate Pocket Flags of the World. 1997, Dorling Kindersley (240 pp).

Web Sites:

Flags of the World: ***http://www.fotw.net/flags/***
An amazing site with more than 9100 pages about flags and more than 16,400 images of flags, maintained by dedicated volunteers interested in "vexillology," the study of flags.

The Flag Detective: ***http://www.flags.av.org/flags/***
This site allows you to figure out an unknown flag by the elements of its design. It's also great as a way of learning about the different elements that go into flags.

World Flags Database: ***http://www.flags.ndirect.co.uk/***
A nice basic site in which each country's flags are accompanied by information about that country.

Quinn Flags and Banners: h***ttp://www.qflags.com/index.html***
Big commercial site selling flags from all over the world. Has illustrations of many different types of flags, from countries, states, military organizations, religious groups, sports, etc.

Mars Society Suggestion for a Mars Flag: ***http://www.marssociety.org/bulletin.asp?id=20***
The Mars Society, a group of Mars exploration advocates, has made one simple suggestion for a flag for Mars.

A Flag for Your Planet

BY ANDREW FRAKNOI *(Foothill College & Astronomical Society of the Pacific)*

An Activity for the Whole Family from Project ASTRO™

Someday, when people have begun to live on other planets or their moons, these worlds might develop their own flags. In this activity, you get to design a flag for your favorite world.

There are no rules yet for how to design a planet flag. The flag can just have colors and symbols, like many Earth flags do, or it might highlight some of your planet's most interesting places to visit.

For example, a Mars flag might have a red background, because the rusty sands of Mars look red from space. It could have some symbols representing weapons on it, because Mars was the god and planet of war in ancient mythology.

Or, if you hope the planet's future will be more peaceful, you could one of the red planet's most spectacular tourist sights on the flag, such as the giant volcano called Mount Olympus, which is almost three times the height of Mount Everest, the tallest mountain on Earth.

If you picked a world with no solid surface to stand on (such as Jupiter or Neptune), you might also come up with a scheme for displaying your flag? Is a flag without a flagpole OK? What would be some ways to show the flag that don't involve having solid ground?

Books on Flags

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