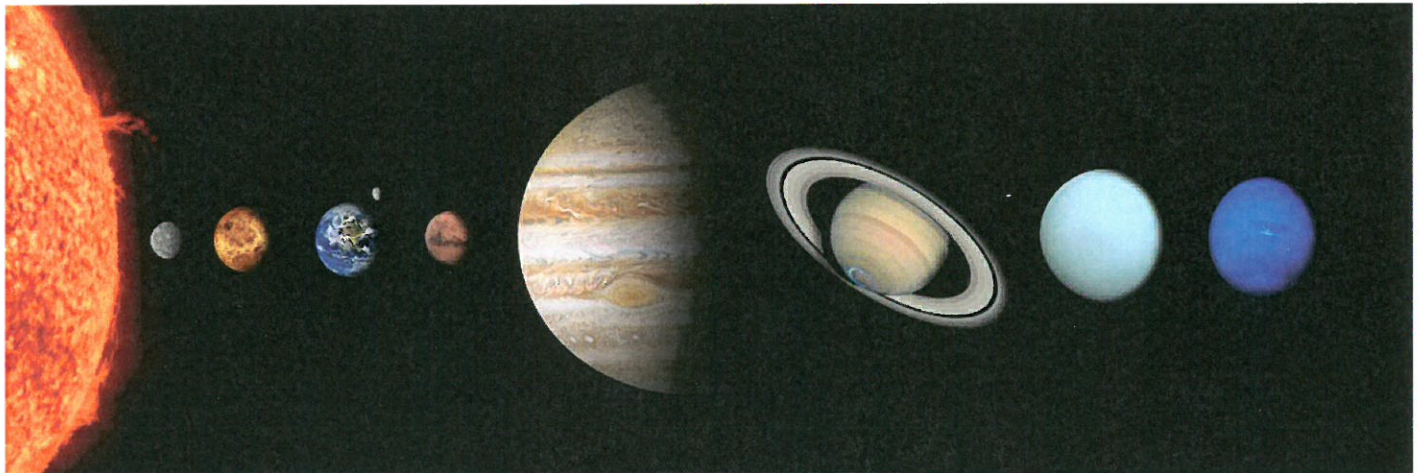


# Noble County Mini 4-H



# Sun, Space, and Stars



## Mini 4-H Helper's page

Welcome to the Mini 4-H Program! Mini 4-H is designed for children in grades K-2 to explore a variety of project activity areas and to interact with caring adults and other children.

Children receive this project activity manual when they enroll in Mini 4-H. This manual and the manuals on various other topics will provide fun, age-appropriate learning activities throughout their year(s) in Mini 4-H.

As a Mini 4-H adult helper, your job will be to guide and encourage each child through the activities. A wide range of activities is provided to allow you to choose the ones most appropriate for the children you are working with. It is strongly suggested that you do not complete the activities for them, instead help them, guide them, work with them and let them do all that they possibly can. 4-H believes in allowing children to learn by doing. The Mini 4-H project activities are hands-on learning opportunities designed to provide a meaningful educational experience for youth.

Additionally, the Mini 4-H program is set up to allow children to display a project activity that is based upon information in this manual. Some children may want to exhibit at the 4-H Fair. The 4-H Fair is an exciting week that allows community youth to showcase their enthusiasm for learning. Children may choose to display a project activity they did by themselves or one they did with a group. Other children may choose to showcase their work in other ways, such as displaying it in a special place in their own home.

Mini 4-H is fun! Children will certainly enjoy it. You can have fun too, by guiding and helping as children participate in the program. Encourage and praise the children as they have fun learning and sharing with you. If you have any questions regarding Mini 4-H or other 4-H programs, please contact the Extension Office in your county.



## Helper's Tips

The Mini 4-H Program can be used with individual children, but it works best when used in a group of 2 or more children. Children working cooperatively in groups develop positive images of themselves and their ideas. Other ways adult helpers can maximize the benefits of Mini 4-H are to:

- **Work on a subject interesting to the child by encouraging children to choose the content area.** Look through this manual and choose the project activities based on the interests and skill levels of the children
- **Relax and have fun.** Some children will want to finished their activities, others may not. There is no need to pressure children of this age to finish an activity, because the real learning takes place while they participate in the activity and interact with others. The finished project should not be the main focus. The knowledge children gain while they explore new areas and experiment with new ideas should be the primary goal.
- **Remain flexible and adapt to the changing needs of the children.** Restlessness or boredom may indicate a need to stop the activity and come back to it later.
- **Encourage children to talk and work with each other.** Children learn best when they are encouraged to freely share their reactions and observations. You may want to ask the children about what they did during an activity, what happened, what was the easiest, and what they like the most.

This manual contains activities for children that allow for a wide range of abilities and provide practice for developing a variety of skills.



## Mini 4-H Page

Mini 4-H'ers have lots of fun! There are many activities for you to explore. You can try new things. You can share them with your friends and family.

Here are some things to know about 4-H.

**The 4-H symbol** is a four-leaf clover with an "H" in each leaf. Clover is a plant that grows in fields, yards and along roadsides. Most clovers have three leaves. Sometimes, if you look very carefully, you may get lucky and find a special clover with four leaves. A four-leaf clover is used as the symbol for 4-H to let everyone know 4-H is a special kind of group.



**The 4-H colors** are green and white. The four-leaf clover is green and the "H" in each leaf is white.

A group motto is a saying that tells people what is important to the group. **The 4-H motto** is "To make the best better." When something is better than all the others it is the best. Think about a time when you did your best. Maybe you threw a ball farther than you have ever thrown it before. Now, think about some ways you could do better. You may be able to throw farther by practicing for a while or by watching someone who can throw farther than you, to see how they throw so far. Even if you throw the ball farther than you have ever thrown it before. There are still ways that you can do better the next time. 4-H encourages you to always try to do better, even if you are doing the best you have ever done.

*"To make the  
best better"*



## The 4-H Pledge

A pledge is a promise you make to yourself and to the people around you. The 4-H pledge is a bold print below.


I pledge...


my **head** to clearer thinking,  
my **heart** to greater loyalty,  
my **hands** to larger service, and  
my **health** to better living for  
my **club**, my **community**,  
my **country**, and my **world**.


What do these words mean?

I Pledge my Head  to clearer thinking, means I promise to use my head to make good choices.

My heart  to greater loyalty, means to use my heart to be a good friend.

My hands  to larger service, and, means to use my hands to do helpful things for others.

My health  to better living, means to take care of my body and to show others how to live in a healthy way.

For my club, my community, my country  and my world, means to help my group, my community, my country and my world be happy and safe for everyone.



# The Solar System



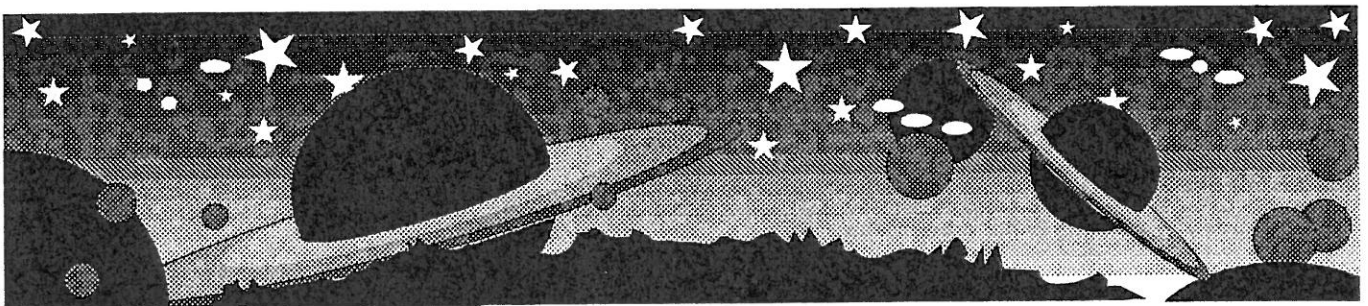
We live on the planet called Earth. The Earth is one of nine planets that *orbit* or go around the sun in circle. Most planets, like Earth have a moon. Some planets have more than one moon. The sun, the planets and the moons make up the *solar system*.

The planets in our solar system are very different. The ones closest to the sun are very hot. The ones that are far from the sun are very cold. Here is a list of the planets and their order from the sun.

- |            |            |
|------------|------------|
| 1. Mercury | 6. Saturn  |
| 2. Venus   | 7. Uranus  |
| 3. Earth   | 8. Neptune |
| 4. Mars    | 9. Pluto   |
| 5. Jupiter |            |

Mercury is the planet that is very close to the sun. Pluto is usually the planet that is the farthest. Sometimes Pluto is closer than Neptune ... it all depends on their orbit.

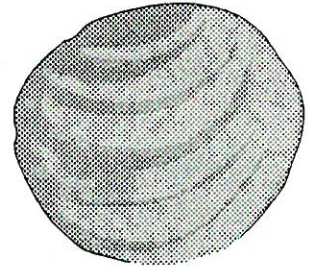
From Earth, the other planets all look like stars. Venus shines very bright and is close to the ground or *horizon*. It is usually the first "star" that you can see. You can sometimes see Mars and Jupiter. Mars has a red glow to it and Jupiter has a yellow glow. These planets usually are high in the sky.





# Activity 1 -- Name Those Planets!

You will need these things:  
-pencil



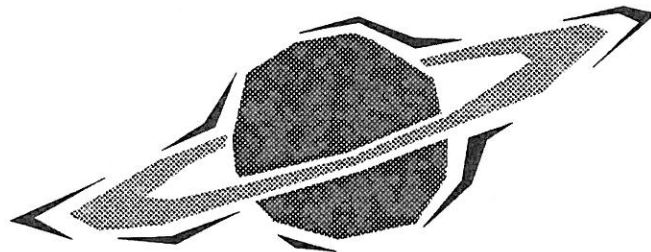
Here's what you do:

1. Read the following information about planets. Each box has information about 1 planet.
2. Match the information with a planet name.

<p>Planet _____ (a)</p> <ul style="list-style-type: none"> <li>★ So small you can barely see it with a telescope</li> <li>★ Known as the tilted planet - it looks like it is lying on its side</li> <li>★ Has 15 moons and a ring</li> <li>★ Looks like the planet is covered by a blue-green fog.</li> <li>★ Is 1.8 billion miles from the sun</li> <li>★ Third largest planet</li> <li>★ Takes 84 years to orbit the sun</li> <li>★ Temperature is <math>-350^{\circ}</math></li> </ul>	<p>Planet _____ (b)</p> <ul style="list-style-type: none"> <li>★ Half the size of Earth</li> <li>★ Does not have any moons</li> <li>★ The surface is a rocky desert - so hot that nothing can live on it</li> <li>★ Is 36 million miles from the Earth</li> <li>★ So close to the sun, that you cannot look at it, even with a telescope, it will damage your eyes</li> <li>★ The second smallest planet</li> <li>★ Takes 88 days to orbit the sun</li> <li>★ Temperature is <math>660^{\circ}</math> during the day</li> </ul>
<p>Planet _____ (c)</p> <ul style="list-style-type: none"> <li>★ 11 times bigger than Earth</li> <li>★ Has 16 moons and a thin ring</li> <li>★ Covered with colorful storm clouds</li> <li>★ Is known for the Great Red Spot</li> <li>★ Was hit by a comet in 1996</li> <li>★ Is 480 million miles from the sun</li> <li>★ The largest planet</li> <li>★ Takes 11.9 years to orbit the sun</li> <li>★ Temperature is <math>-240^{\circ}</math></li> </ul>	<p>Planet _____ (d)</p> <ul style="list-style-type: none"> <li>★ The last planet to be discovered</li> <li>★ The smallest of all planets, even smaller than Earth's moon</li> <li>★ Will be the furthest planet (again) in 1999</li> <li>★ Has 1 moon</li> <li>★ Is 3.6 billion miles from the sun</li> <li>★ Takes 248 years to orbit the sun</li> <li>★ Temperature is <math>-360^{\circ}</math></li> </ul>



<p>Planet _____ (e)</p> <ul style="list-style-type: none"> <li>★ Our home planet</li> <li>★ Has 1 moon</li> <li>★ Is 93 million miles from the sun</li> <li>★ Takes 365 days, 6 hours to orbit the sun</li> <li>★ The axis is tilted and gives different seasons</li> <li>★ Average temperature is 70°</li> </ul>	<p>Planet _____ (f)</p> <ul style="list-style-type: none"> <li>★ This planet spins backwards</li> <li>★ Almost the same size as Earth</li> <li>★ The surface is mostly flat</li> <li>★ Has yellow clouds and traps in heat</li> <li>★ Does not have a moon</li> <li>★ Is 67 million miles from the sun</li> <li>★ Takes 243 days to orbit the sun</li> <li>★ Average temperature is 870°</li> </ul>
<p>Planet _____ (g)</p> <ul style="list-style-type: none"> <li>★ The second largest planet</li> <li>★ Has a lot of wide rings and is known as the most beautiful planet</li> <li>★ Rings are made up of ice bits, rocks, and dust</li> <li>★ Has 20 moons</li> <li>★ Is 900 million miles from the sun</li> <li>★ Takes 29.5 years to orbit the sun</li> <li>★ Average temperature is -300°</li> </ul>	<p>Planet _____ (h)</p> <ul style="list-style-type: none"> <li>★ The fourth largest planet</li> <li>★ Known as the blue planet</li> <li>★ Very difficult to see in the sky</li> <li>★ Is the furthest planet from 1990 to 1999</li> <li>★ Has 2 moons and a very small ring</li> <li>★ Is 2.8 billion miles from the sun</li> <li>★ Takes 165 years to orbit the sun</li> <li>★ Average temperature is -360°</li> </ul>
<p>Planet _____ (i)</p> <ul style="list-style-type: none"> <li>★ About half the size as Earth</li> <li>★ Has a white ice cap on its North Pole and gas freezes on its South Pole and looks like it is snowing.</li> <li>★ Known as the red planet</li> <li>★ Was explored by a small rover in 1997</li> <li>★ Has 2 moons</li> <li>★ Is 141 million miles from the sun</li> <li>★ Take 687 days to orbit the sun</li> <li>★ Average temperature is -9°</li> </ul>	<p><i>Planet X</i></p> <p>★ <i>Some scientists think there is another planet. Special satellites show heat rays coming from space. These heat rays are like the ones coming from other planets. If a planet does exist, it would be further from the sun than Pluto.</i></p>





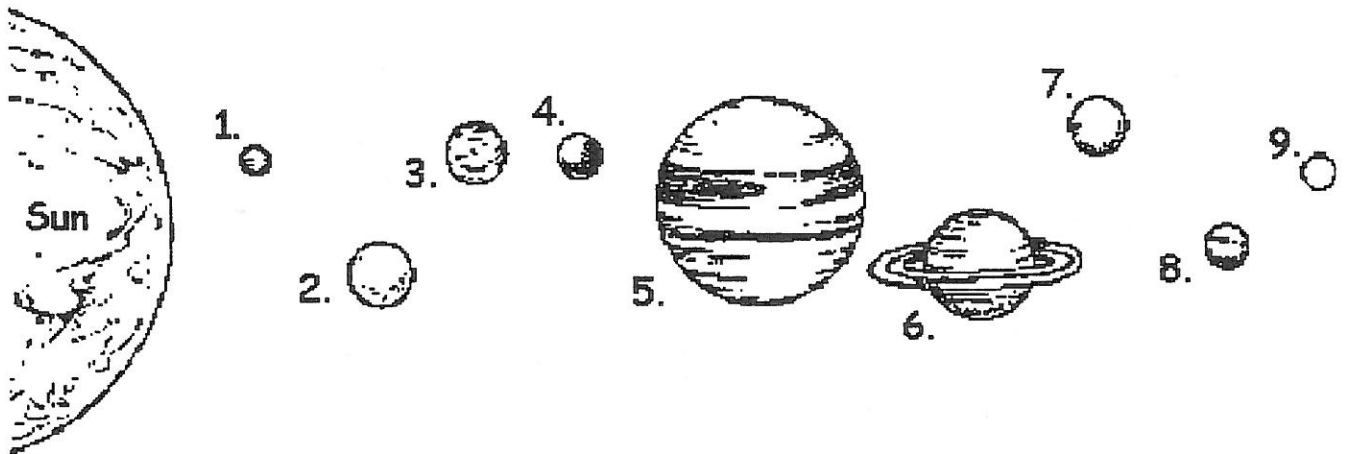
## Activity 2 -- The Solar System

*You will need these things:*

-pencil

*Here's what you do:*

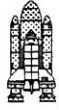
1. Now that you know more about each planet ... let's see if you can label them in their correct order!
2. Match the planet with a planet name.



The Planets are ....

1. _____	2. _____	3. _____
4. _____	5. _____	6. _____
7. _____	8. _____	9. _____

(If you need help, see page 3!)

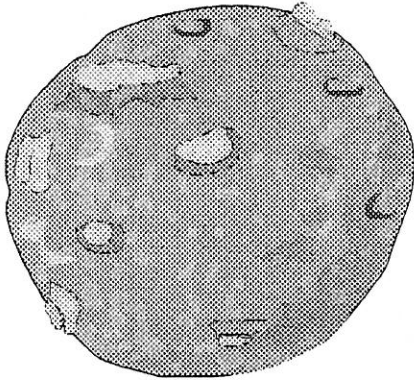


# Mini Planets



There are a lot of other "planets" that orbit with us in our solar system.

These mini planets are called *asteroids*. What are asteroids? They are large rocks and metal. These asteroids are as small as a 1/4 mile across to as large as 685 miles across. Astronomers can keep track of about 3,000 asteroids.



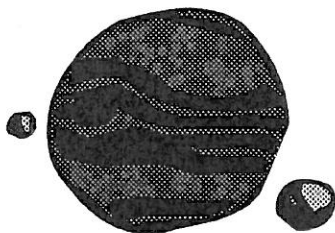
Most asteroids are found in an *asteroid belt*. This belt is located between Mars and Jupiter. Like planets, asteroids travel in an orbit around the sun.

Sometimes asteroids bump into each other. They also can leave their orbit. When this happens, asteroids can fly into planets or moons. If you look at pictures of our moon, you will find that it is covered with *craters*. Craters are "holes" in the ground. The Earth has also been hit by asteroids. Barringer Meteor Crater near Winslow, Arizona, is an example of a hit. This crater is 1.2 kilometers (0.75 miles) across and 200 meters (650 feet) deep.

Meteorites are a small type of asteroid. Meteorites can be as small as a grain of sand. Finding meteorites are difficult. When the rock crashes through our atmosphere, they burn up. Meteorites are our "falling stars". You can see meteorites in museums.



## Activity 3 -- Asteroids Hit the Moon



*You will need these things:*

- foam ball (any size)
- brown paint
- paintbrush
- scissors
- paper
- pencil
- pins



*Here's what you do:*

1. Take the foam ball and pinch craters into it with your finger. You can push in the foam for a little crater or remove part of the foam for a large crater.
2. Paint the foam ball brown.
3. Create your own name for the craters. The biggest crater on the moon is called "Ceres".
4. Make small labels of the name of your craters. Cut the label so that it is small. Pin the label in the crater.
5. Now you have your own moon model complete with craters ... just like the real moon!

---



# Comets



Comets have been popular these past few years. A comet is a ball of dust and ice. Like planets, it orbits the sun.

What makes a comet different than an asteroid or meteorite? As the comet travels close to the sun, the ice begins to boil. As the ice turns to water and then to gas, it streams out behind the head of the comet. This makes a long tail.

As the comet travels away from the sun, it cools down. The tail shrinks and even disappears ... until it travels close to the sun again.

The most famous comet is called Haley's Comet. It went by the Earth in 1986. Its orbit around the sun is 76 years? How old will you be when we can see it from Earth in 2061?



## Activity 4 -- Comets

*You will need these things:*

- foam ball (any size)
- cotton balls
- glue
- scissors

- paper
- pins



*Here's what you do:*

1. Glue cotton balls to your foam ball. This will give your foam ball a snowy or icy look. This will be the head of your comet.
2. Cut strip of paper. They can be long or short. Try to make them thin. About a 1/2 inch or 1 inch.
3. Pin these to one side of the foam ball. This will make your tail.
4. If you want to make a longer tail, glue some of the pieces of paper together to make long strips.
5. Don't forget to name your comet!



## The Sun & Stars



A very important part of our solar system is the sun. The sun is a *star*. Stars are big balls of hot gas. Like the Earth, they also spin.

The sun is very large. You can put more than 1 million Earths into our sun. The sun is also very hot. Scientists think its temperature is 27 million°. The sun is



so big and so hot that it gives the Earth plenty of heat and light. The sun gives so much light that you should NEVER look directly at it. It will hurt your eyes.

Stars, like the sun, shine all of the time. So why do we have a day and night? The Earth rotates or *moves around*. During the day, the part of the Earth where we live faces the sun. During the night, we face away from the sun.



## Activity 5 -- Check Your Shadow

*You will need to find these things:*

- a sunny day
- shadow table
- tape measure
- rocks
- a helper
- shadow chart

*Here's what you do:*

1. At about 10am, go outside and stand in an open area. With a rock, mark where you are standing.
2. With a second rock, have your helper mark the end of you shadow.
3. Measure the length of your shadow. You can do this by measuring between the rocks.
4. At noon, go back outside. Stand in the same place as you did before. Mark the end of the new shadow. Measure the new length.
6. At 2pm, go back outside. Stand in the same place as you did before. Mark the end of the new shadow. Measure the new length.



7. At 4pm, go back outside. Stand in the same place as you did before. Mark the end of the new shadow. Measure the new length.
8. Keep track of your information in this shadow chart.

time of day	length of shadow	where was the sun in the sky?
10am		
12pm(noon)		
2pm		
4pm		

Question: What happened to your shadow during the day? Did it stay in the same place or did it move? \_\_\_\_\_

Question: Did your shadow length change? What was happening with the sun?  
\_\_\_\_\_

Question: Why did things change? \_\_\_\_\_



# Stargazing



One fun thing you can do is look for patterns in the stars. These patterns are called *constellations*.

Hundreds of years ago, people from Greece looked at the stars and picked our constellations. They named them after animals and heros. There are 88 constellations that are known to stargazers.

Some of the popular constellations are Leo,



the Lion and Orion, the Hunter. In the United States, many people look to the sky for the Ursa Major, the Great Bear and Ursa Minor, the Little Bear. These are easy to find because they use the Big Dipper and Little Dipper constellations ... most people can find the Dippers in the night sky.



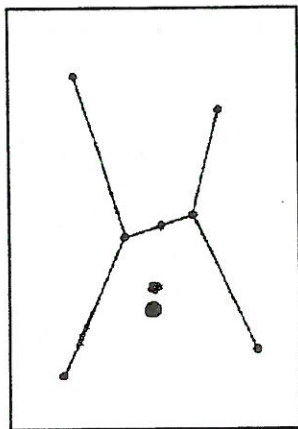
## Activity 6 -- Constellations

*You will need to find these things:*

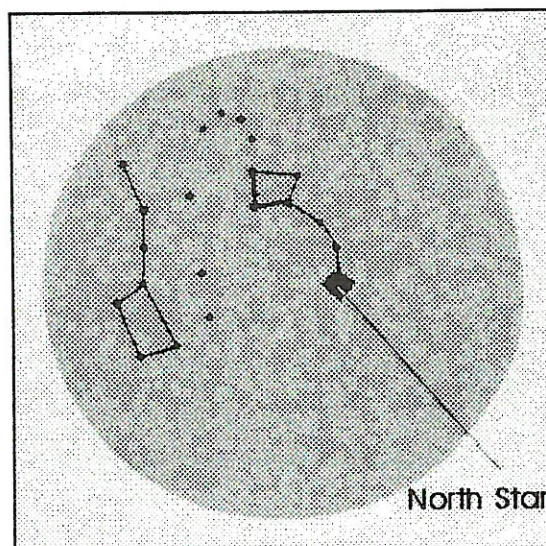
- a clear night
- constellation chart below

*Here's what you do:*

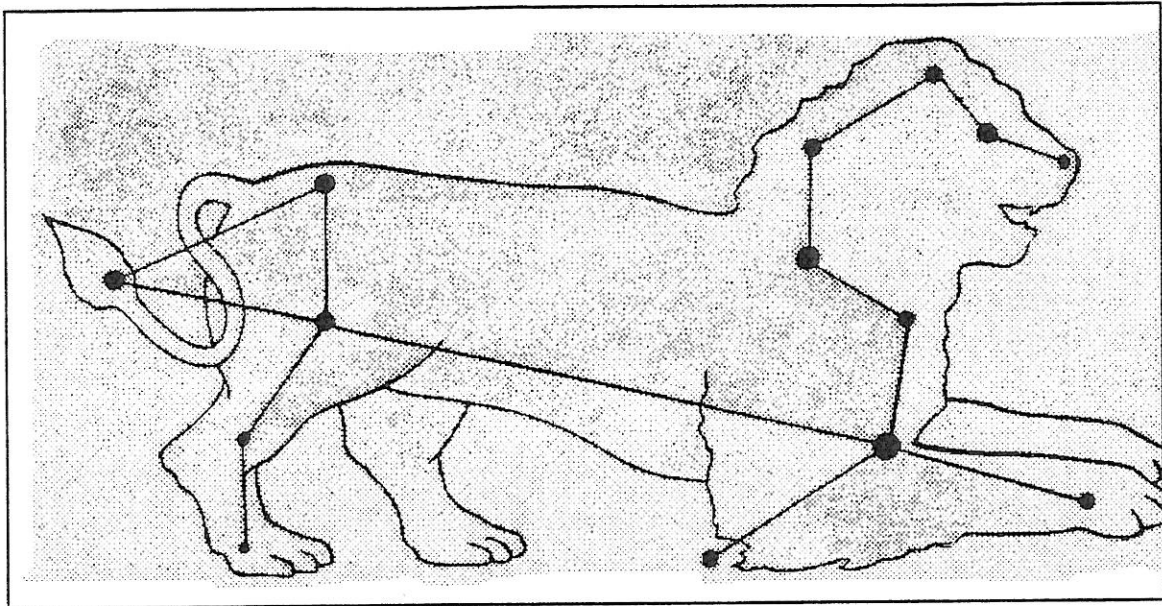
1. Wait until you have a good, clear night. You will want to pick a night when the stars are bright.
2. Use the constellation charts below.
3. See if you can find the Big Dipper, the Little Dipper, and the Great Bear.
4. If you are ready for a more difficult constellation, learn the Lion and Orion, the Hunter.



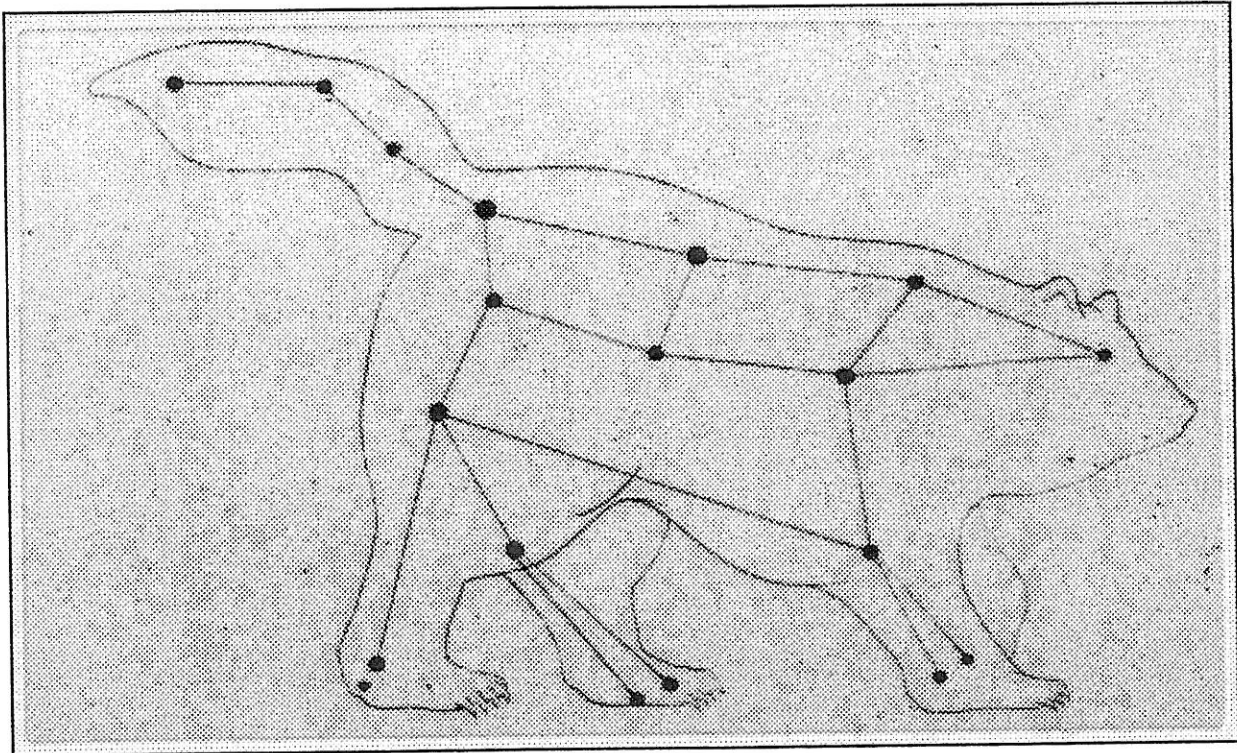
Orion the Hunter



Little & Big Dippers



Leo the Lion



The Bear





# Exploring Space



Space exploration is new to people. We have only been leaving Earth's atmosphere for 30 years. We have explored the land and ocean for thousand of years!

Man could not leave Earth's ground until he discovered a way to "fly". The Wright brothers were the first to do this in the early 1900's. Today, man travels to space almost every 8 weeks. Some individuals are living in space now.

Each year we discover new things about space travel. As man gets better at science and technology, we will be able to travel further in space. Who knows where we might be 50 years from now.



## Activity 6 -- The Space Shuttle

*You will need to find these things:*

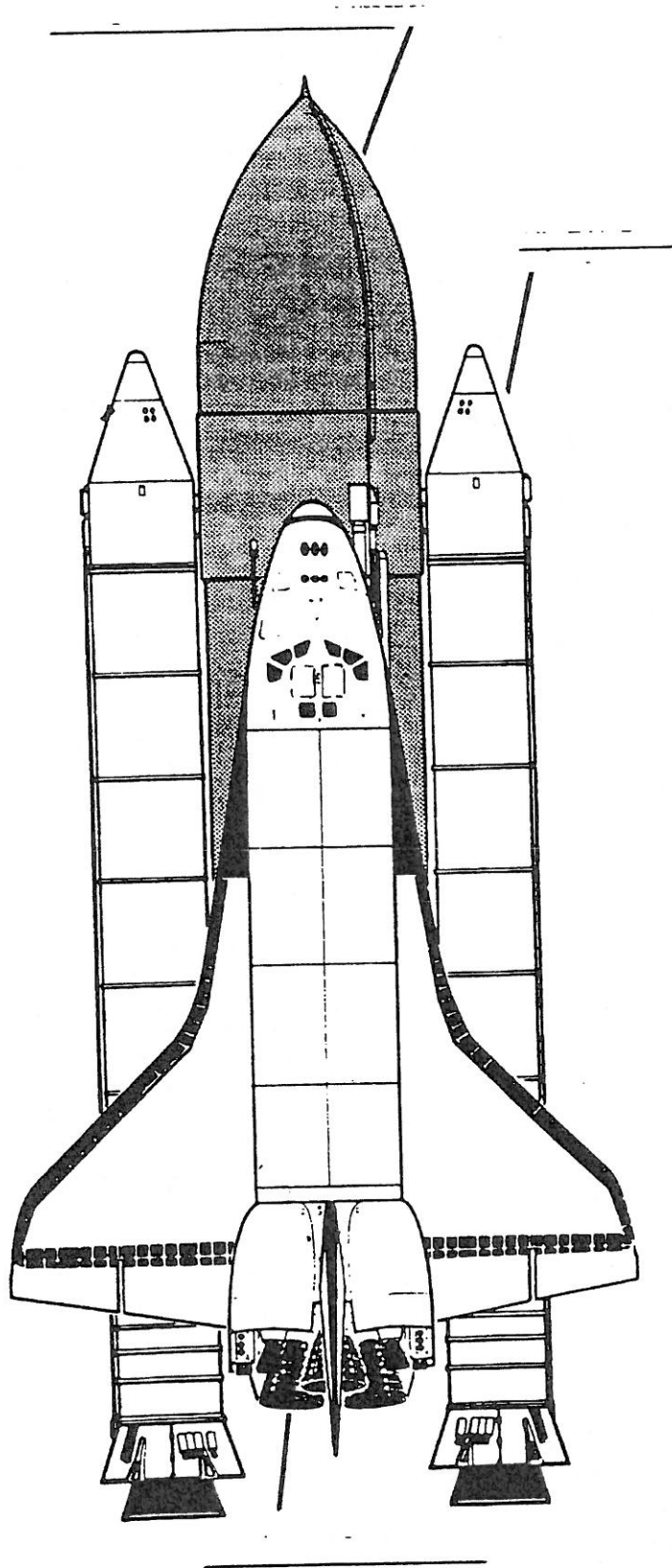
- pencil
- picture of the shuttle

*Here's what you do:*

1. Look at the Shuttle picture.
2. Label the three parts of the shuttle from the word list.

### Shuttle Parts

Space Shuttle Main Engine  
External Tank  
Solid Rocket Booster





## Activity 7 - Shuttle Word Search

Here's what you need:

- pencil
- the word search and word list on the next page

Here's what you do:

1. Look at the word list below. Find and circle the words in the Search puzzle on the next page.

### SHUTTLE WORD SEARCH WORD LIST

Search for the words that are in all CAPITAL letters.

#### Parts

AIRLOCK  
EXPERIMENTS  
EXTERNAL TANK  
FLIGHT DECK  
MIDDECK  
ORBITAL MANEUVERING SYSTEM  
ORBITER  
PALLETS  
PAYLOAD BAY  
SOLID ROCKET BOOSTERS  
SPACE SHUTTLE MAIN ENGINES

#### Orbiters

ENTERPRISE  
PATHFINDER  
COLUMBIA  
ATLANTIS  
DISCOVERY  
ENDEAVOUR

#### Shuttle Firsts

BOB CRIPPEN (First Shuttle Pilot)  
JOHN YOUNG (First Shuttle Commander)  
SALLY RIDE (First American Woman in space)  
MAE JEMISON (First African-American Woman in space)  
Guion "GUY" BLUFORD (First African-American Man in space)  
KATHRYN SULLIVAN (First American Woman to perform an EVA)

#### Topics of Study

LIFE Sciences  
MATERIALS Processing  
COMBUSTION Science  
MEDICAL Research  
PHYSICS  
CRYSTALS  
MICROGRAVITY Science

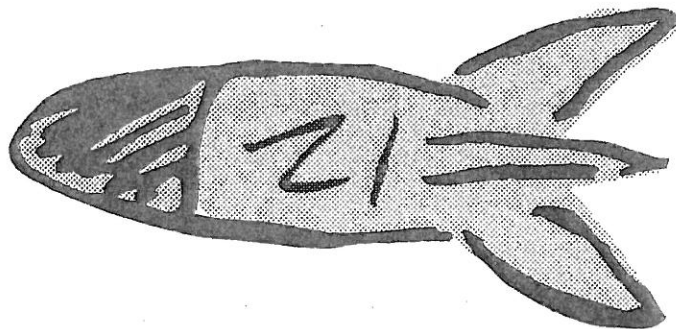
#### Space and Research Centers

MARSHALL Space Flight Center  
JOHNSON Space Center  
KENNEDY Space Center  
GODDARD Space Flight Center  
STENNIS Space Center  
JPL (Jet Propulsion Laboratory)  
LANGLEY Research Center  
LEWIS Research Center  
AMES Research Center

# SHUTTLE WORD SEARCH

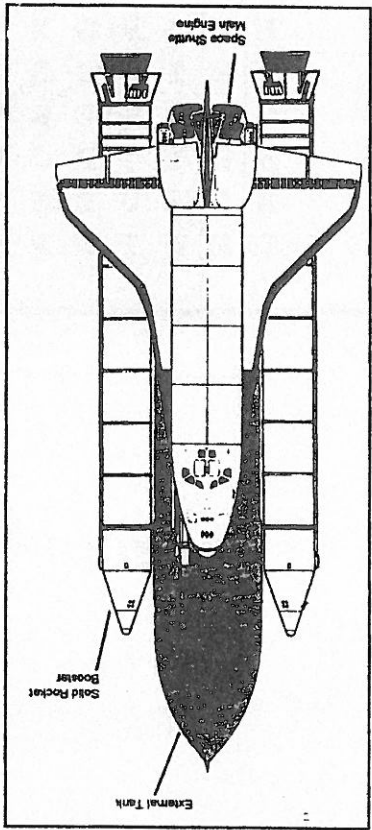
ORBITER AR THE VY CUNAYS INNETS  
IRLFAHNKISYBUYSEM RXVGYGWOP  
JTBLFDWTESYAKYTUEDSITNALTA  
RAMINPAMEDIOUESMDREHTAIEFC  
MYNGTKATHRYNSULLIVANYDNRRE  
AIOHPAETLRPRYWALCEDIRYLLAS  
ERDTEDLOHCIRNMNVALNOCGHETH  
JRIDJECMNFONIFEOLHCRSTDURU  
EAJEEKAIANILRSROIKSLSHIRCT  
MHECACTHENRNUGEAETURHORANT  
ILLKOTKCIREFDMUTIASTASAYNL  
STNEMIREPEXEUREBYHGDUJMPREE  
OWOSTYAHNOTHVORIBNIABUQEPM  
NCTOSBYERCIROEK TALZURMAVPA  
TRATMSLAWNYSKLR OJYUYKSOOII  
MIASISELRITNBRAITVEFHEACRN  
NLMCLKJHGEAFDSCINCRPOTRSC  
SYSIPOIURT Y TRE VWQ GASDRFIBN  
ZDFXCVB SLNMLKAJHNGSDRADD  
YEQWERTAYUIORPKUSJHYGFESBI  
ENJRDXNCBVNGILOUTYTRSEWQAN  
LNIGSRRYUKOTNYKLEIOPSTETA  
GENDEAVOURIMNRKHLGYDFREYQS  
NKITDJKICLBHVYJSLAIRETAMJH  
ASXUESYIKPONINDRAYIYTFJYIG  
LEWISRM Y M JOHN SONPAYLOADBA

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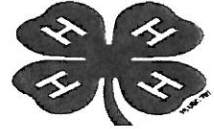
- Name Those Planets Answer Key
- a. Uranus
  - b. Mercury
  - c. Jupiter
  - d. Pluto
  - e. Earth
  - f. Venus
  - g. Saturn
  - h. Neptune
  - i. Mars



**November 1997**



# 4-H Fair Exhibit



## **Exhibit – Kindergarten**

Design and make your own rocket using materials found in your house, like paper towel tubes and construction paper.

## **Exhibit – 1<sup>st</sup> Grade:**

Make a poster of the solar system. Label all the planets.

## **Exhibit – 2<sup>nd</sup> Grade:**

Make a poster with information about a famous astronaut.

## **Poster Construction Rules:**

All posters are to be covered with clear plastic and have a stiff, non-flexible backing. All posters are to be **14” HIGH x 22” WIDE**. You may use any color of poster board. Each poster project should have a title.

All projects are to have a name label on them. You will receive a Mini 4-H newsletter in the mail prior to the Fair that will contain name labels.

If you have any questions about your project, please call the Extension Office at 636-2111 or 1-800-601-5826.





# Noble County Mini 4-H Record Sheet

Name \_\_\_\_\_ Grade in School \_\_\_\_\_

Address \_\_\_\_\_

4-H Club \_\_\_\_\_ Township \_\_\_\_\_

Number of years in Mini 4-H \_\_\_\_\_ Number of years in project \_\_\_\_\_

Member's Signature \_\_\_\_\_

Parent's Signature \_\_\_\_\_

Leader's Signature \_\_\_\_\_

A. Project: \_\_\_\_\_

B. Estimated number of hours worked to complete project \_\_\_\_\_

C. Money spent on project:

Cost of supplies: (list) \_\_\_\_\_

OR

Foods – number of \_\_\_\_\_

times made \_\_\_\_\_

D. List the things that you learned while you were doing Mini 4-H:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



