Mini 4-H

SUN, STARS, & SPACE

Draft Developed by:

Purdue University Cooperative Extension Service
Area 7 4-H Youth Development Educators from
Blackford, Delaware, Fayette, Franklin, Henry, Jay,
Madison, Randolph, Rush, Union, & Wayne counties

Name _____Year 20____

Club _____

Mini 4-H Parent's Page

Welcome to the Mini 4-H Program! Mini 4-H is designed for youth to explore a variety of project areas.

Your child received this project manual when enrolling in Mini 4-H. This manual will provide fun, age-appropriate learning activities throughout their year(s) in Mini 4-H and their interest in this project.

As a Mini 4-H parent, your job will be to guide and encourage your child through the activity. It is highly 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. The 4-H motto is "learn by doing" and is the best educational tool that we can provide for youth.

Additionally, the Mini 4-H program is set up to allow your child to exhibit a project at the 4-H Fair. This project is based upon information within this manual.

The 4-H Fair is an exciting time for 4-H members and families. It is a time that allows community youth to showcase their talents, interests, and enthusiasm for learning.

Mini 4-H is fun! Your child will certainly enjoy it. You can have fun too, by guiding and helping as your child participates in the program. Encourage and praise your child as he/she has fun learning and sharing with you.

If you have any questions regarding Mini 4-H or other 4-H programs, please contact your local Extension Office.

Mini 4-Her's Page

Welcome to Mini 4-H! You are now a member of the 4-H family. You are a special person.

Mini 4-Hers have lots of fun! There are lots of activities for you to explore. You can try new things. You can share it with your friends and family.

Mom, Dad, or another adult can help you with your project. Bring your project to the 4-H Fair and lots of people will be able to see what you have done. You also get a ribbon made just for Mini 4-Hers.

Things to Know About 4-H

The 4-H Symbol: A four-leaf clover with an "H" in each leaf.

The 4-H Colors: Green and white

The 4-H Motto: To make the best better.

The 4-H Pledge: 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 to Exhibit

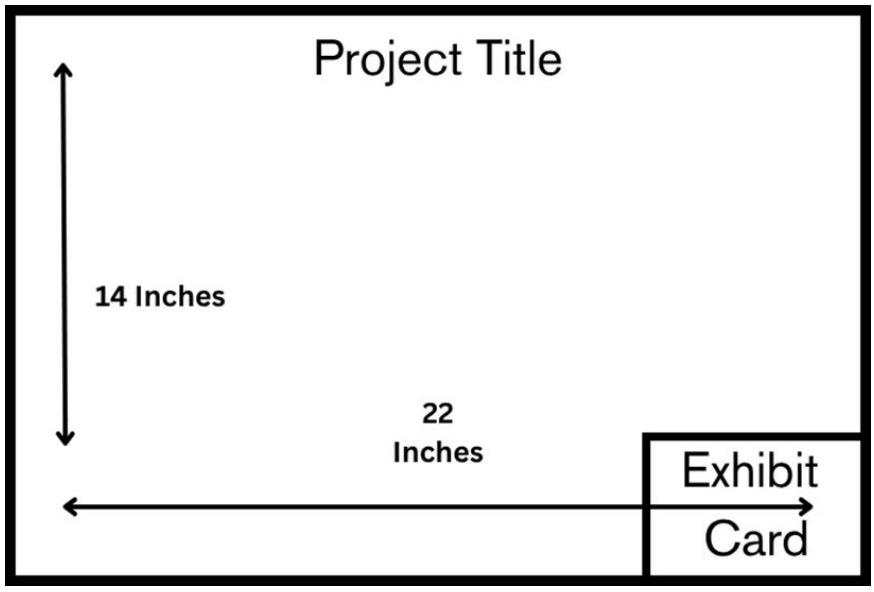
Here is a list of projects that can be shown at the 4-H Fair. Pick *one* of the projects to exhibit at the fair. You do not need to make the projects in a special order. NOTE: Next year choose a different exhibit.

- Make a solar system mobile. You may use any materials that you want. Make sure that you label each planet.
- Exhibit the asteroid you made in Activity 2.
- Exhibit the comet you made in Activity 3.
- Make a model or poster of the shuttle. Label the main parts of the shuttle.
- Make a poster showing one or two different constellations. You can use the ones in this manual or find new ones.
- Make a poster about one or two different planets. Label the planets and tell something about them. You can use the information in this manual or find your own.
- Make a poster about your own make-believe planet. Be creative. If you were going to visit this planet, what would you find?

You are encouraged to enter your exhibit at the Cass County 4-H Fair on Saturday prior to the start of the fair. You should enter your exhibit between the hours of 7:30 - 9a.m. Be sure to bring your Mini 4-H Sun, Stars, & Space Record Sheet.

Poster Tips:

1. Poster board should be displayed horizontally.
2. Title should be at the top of the poster.
3. Exhibit items on the poster.
4. Be completely COVERED BY A CLEAR PLASTIC material, not plastic wrap. Poster sleeves are available in the Extension Office.
5. Leave space in the lower right-hand corner for the exhibit card the Purdue Extension staff will provide.



The Solar System

We live on the planet called Earth. The Earth is one of eight planets that *orbit,* or go around, the sun in a 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 close 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
2 — Venus
3 — Earth
4 — Mars
5 — Jupiter
6 — Saturn
7 — Uranus
8 — Neptune

Mercury is the planet that is the sun's nearest neighbor. Neptune is the planet that is the farthest from the sun.

From Earth, the other planets all look like stars. Venus shines very brightly 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. A trip to a planetarium or viewing the solar system through a telescope would make it easier to recognize planets.

Joke Time!

What kinds of songs do the planets like to sing?
Nep-tunes!

Activity 1 — The Solar System

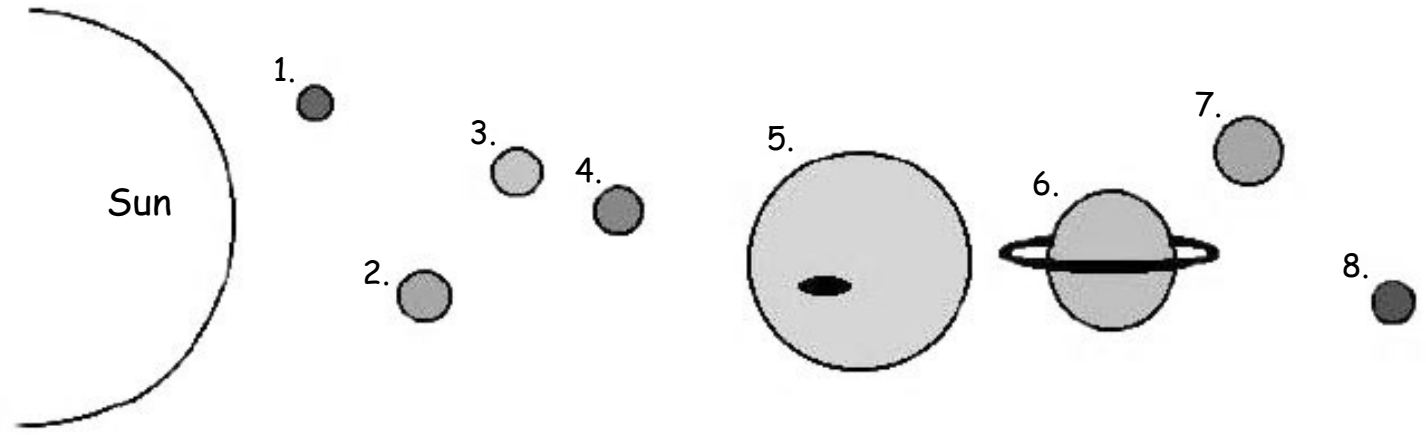
You will need:

- Pencil
- Text box with planet names →

Uranus	Mars
Saturn	Neptune
Earth	Venus
Jupiter	Mercury

Here's what to do:

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



The Planets are…

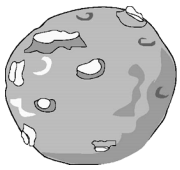
1._____ 2._____

3._____ 4._____

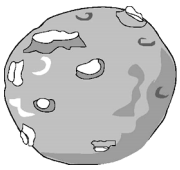
5._____ 6._____

7._____ 8._____

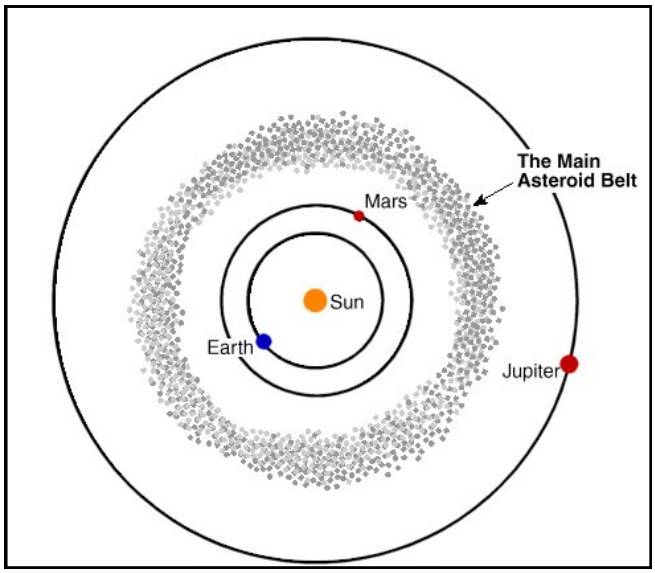
(If you need help, see page 5!)



Mini-Planets



There are a lot of other "planets" that orbit with us in our solar system. These mini-planets are called *asteroids*.



Graphic courtesy of NASA

What are asteroids? They are large rocks and metal. These asteroids are as small as 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.

Asteroids hit 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 see it has *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.

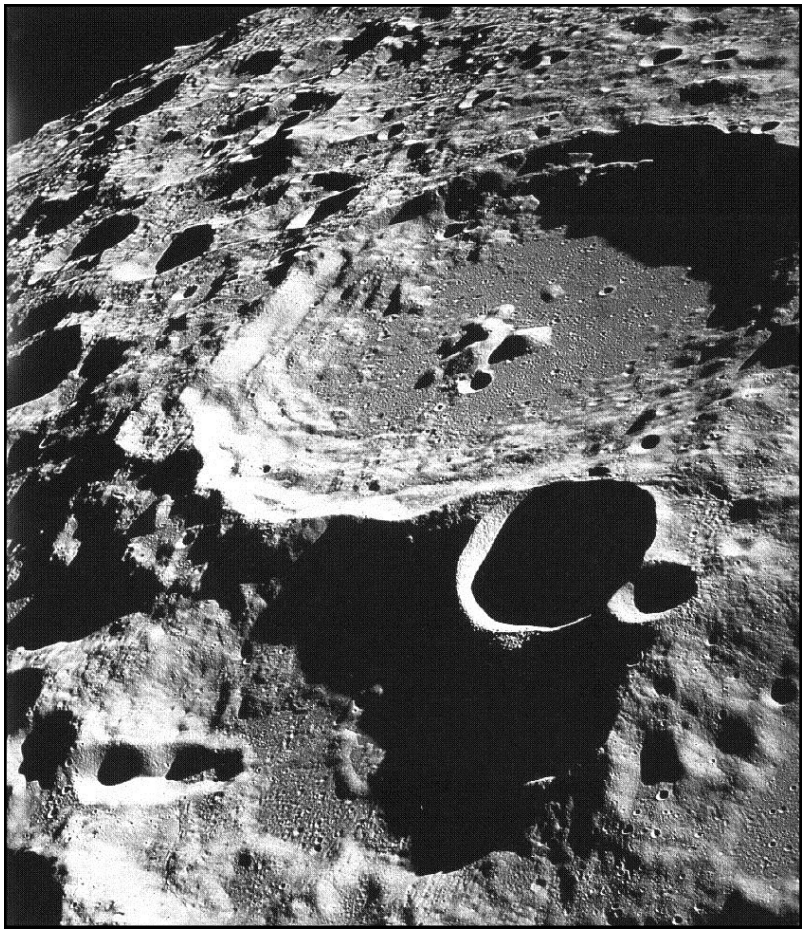
Barringer Meteor Crater

Meteorites are a small type of asteroid. They can be as small as a grain of sand and are difficult to find. When meteorites crash through our atmosphere, they burn up and are called "falling stars." You can see pieces of meteorites in museums.

Activity 2 — Asteroids Hit the Moon

You will need:

- Foam ball (any size)
- Paper
- Brown paint
- Pencil
- Paintbrush
- Pins
- Scissors



A portion of the surface of the moon. Photo courtesy of Pennsylvania State University

Here is what to do:

1. Take the foam ball and pinch craters into it with your fingers. 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 names for the craters. The biggest crater on the moon is called "Ceres."
4. Make small labels of the names of your craters. Cut each label so that it is small. Pin the labels in the craters.

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, comets orbit the sun.

What makes a comet different from an asteroid or meteorite? As the comet travels close to the sun, the ice gets hot. The ice turns into water and then into a gas. This gas makes a long tail.

As the comet moves away from the sun, it gets cold. The tail gets small and goes away — until the comet travels close to the sun again.

The most famous comet is called Halley's Comet. It went by Earth in 1986. Its orbit around the sun takes 75-76 years. How old will you be when we can see it from Earth in 2061?

Activity 3 — Comets

You will need:

- Foam ball (any size)
- Paper
- Cotton balls
- Pins
- Glue
- Scissors

Here's what to 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 strips of paper. They can be long or short. Try to make them thin, about 1/2-inch or 1 inch.
3. Pin these to one side of the foam ball. This will make your tail. If you want to make a longer tail, glue some of the pieces of paper together to make long strips.
4. Don't forget to name your comet!

The Sun & Stars

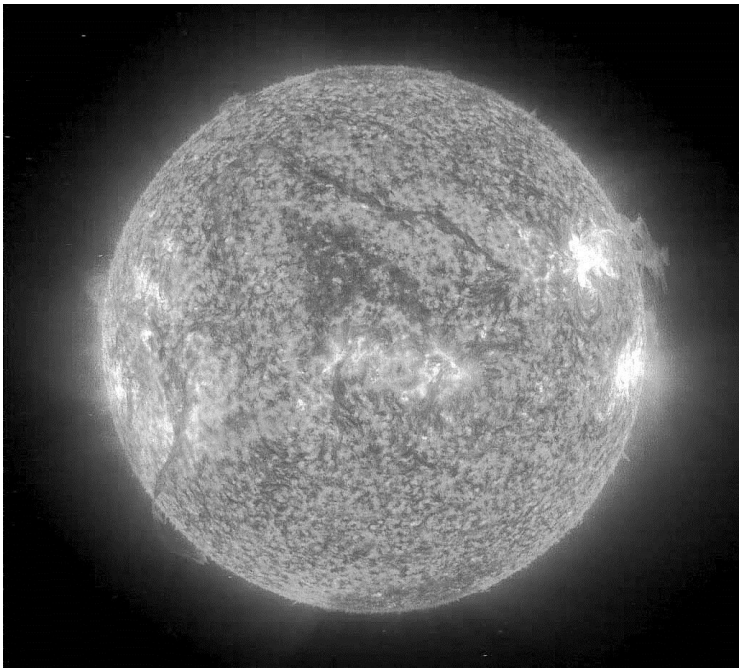


Photo courtesy of NASA

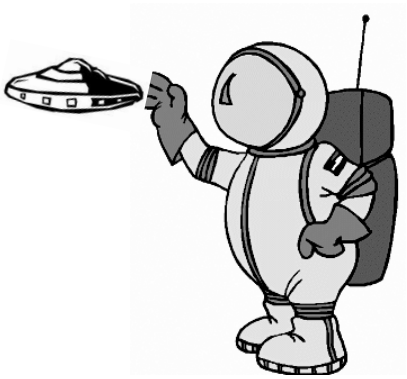
A very important part of our solar system is the sun. The sun is a *star*. Stars are big balls of hot gas. Like the Earth, they also spin.

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 about 11,000 degrees Fahrenheit on the surface, and about 27 million degrees at its core. 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 the time. So why do we have day and night? The Earth rotates, or *spins*. During the day, the part of the Earth where we live faces the sun. During the night, we face away from the sun.

Joke Time!

What kind of plates do astronauts serve food on in outer space?
Flying saucers!



Activity 4 — Check Your Shadow

You will need:

- A sunny day
- Rocks
- Shadow table
- A helper
- Tape measure
- Shadow chart

Here's what to do:

1. At about 10 a.m., 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 your shadow.
   Measure the length of your shadow. You can do this by measuring between the rocks.
3. At noon, go back outside. Stand in the same pla you did before. Mark the end of the new shado the new length.
4. At 2 p.m., go back outside. Stand in the same place as you did before. Mark the end of the new shadow. Measure the new length.
5. At 4 p.m., go back outside. Stand in the same place as you did before. Mark the end of the new shadow. Measure the new length.
6. Keep track of your information in this shadow chart.

Time of Day	Time of Day	Time of Day
10 a.m.	10 a.m.	10 a.m.
Noon	Noon	Noon
2 p.m.	2 p.m.	2 p.m.
4 p.m.	4 p.m.	4 p.m.

Activity 4, Continued

What happened to your shadow during the day? Did it stay in the same place or did it move?_____

_____

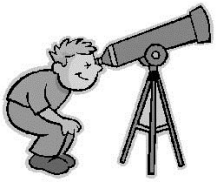
Did your shadow length change? What was happening with the sun?

_____

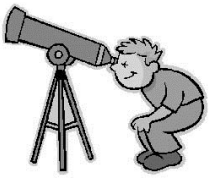
_____

Why did things change?_____

_____



Stargazing

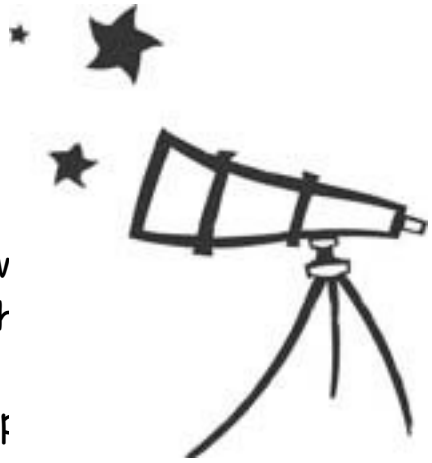


One fun thing you can do is look for patterns in the stars. These patterns are called *constellations*.

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

Two 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 5 — Constellations

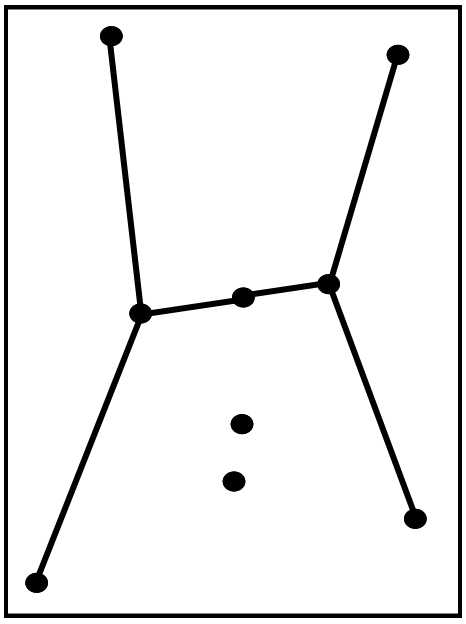


You will need:

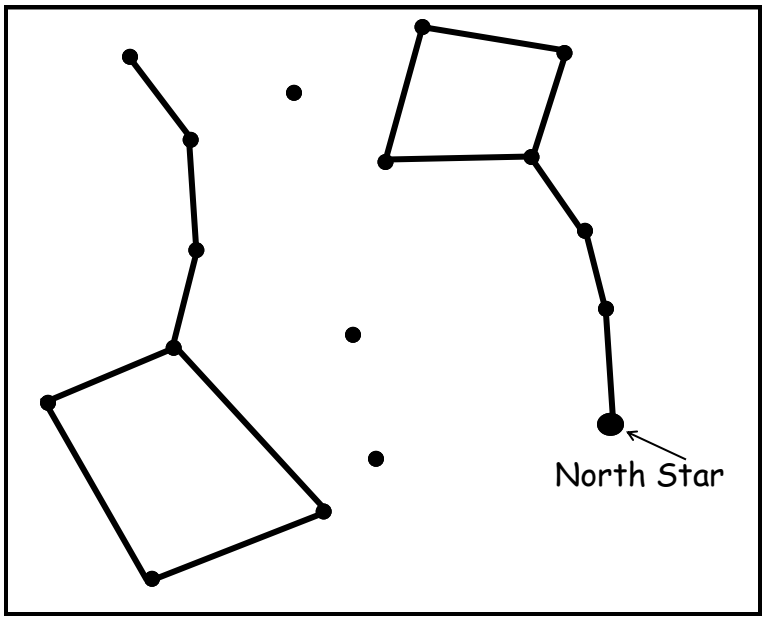
- A clear night
- Constellation chart below

Here's what to do:

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

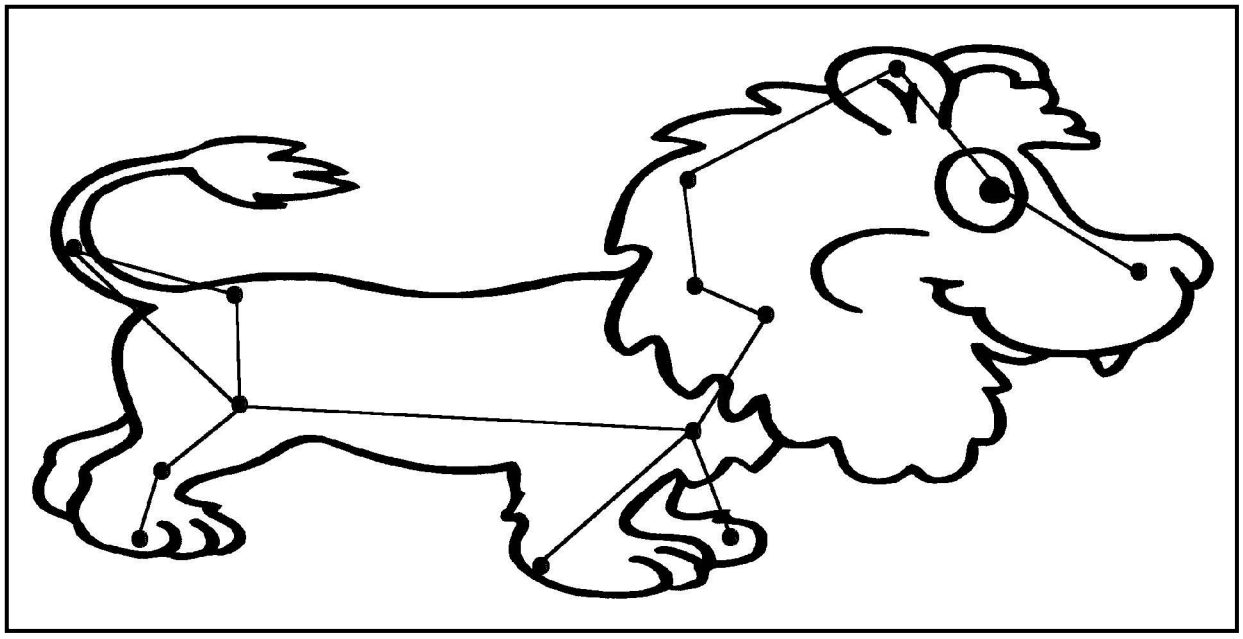


Orion the Hunter

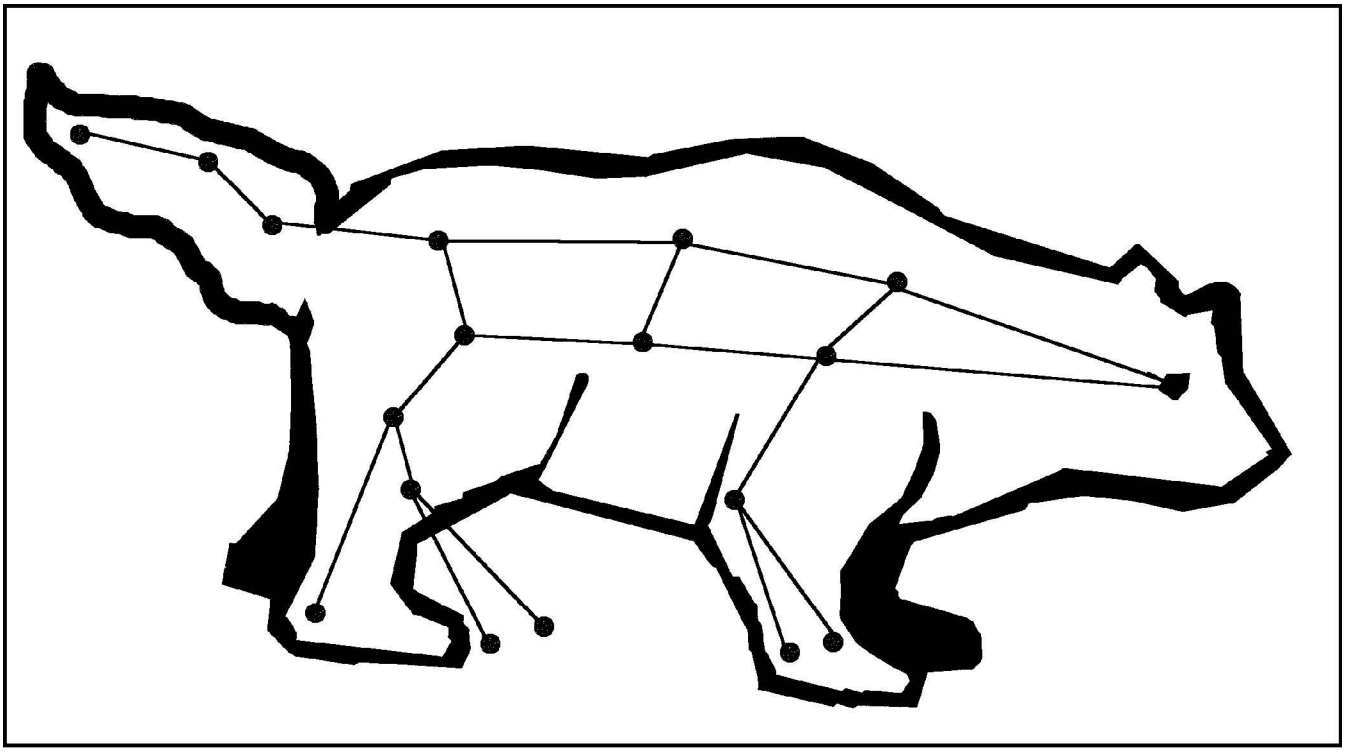


Little & Big Dippers

Activity 5, Continued



Leo the Lion



The Bear

Exploring Space

Space travel is new to people. We have been leaving Earth for only 50 years. We have explored the land and oceans for thousands 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 1900s. Today, man travels to space almost every eight weeks. Some people live in space for a short time.

Each year we learn new things about space travel. As man gets better at science, we will travel further in space. Who knows where we might travel 50 years from now!

Activity 6 — Space Shuttle

You will need:

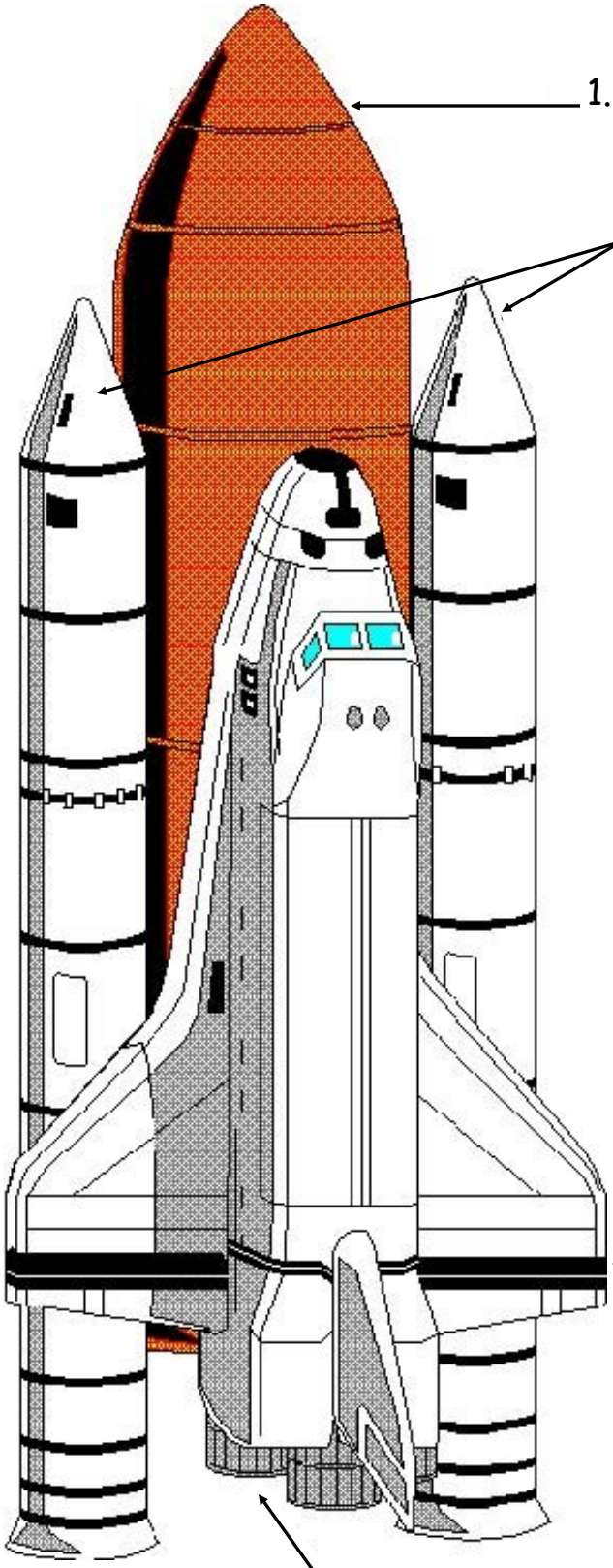
- Pencil
- Picture of the space shuttle on page 16

Here's what to do:

1. Look at the shuttle picture.
2. Label the four parts of the shuttle from the word list below.

Shuttle Parts
1. Main engine
2. External tank
3. Solid rocket boosters
4. Orbiter

Activity 6, Continued



1. _____

2. _____

3. _____

4. _____

Hint — The shuttle **Main Engine** is made up of a group of 3 engines and is on the back of the orbiter.

Hint — The **External Tank** is the biggest or tallest part of the shuttle and contains liquid fuel.

Hint — There are 2 **Solid Rocket Boosters** that contain solid fuel and help the shuttle leave Earth.

Hint — The winged **Orbiter** carries the crew members known as astronauts.

Indiana Academic Standards

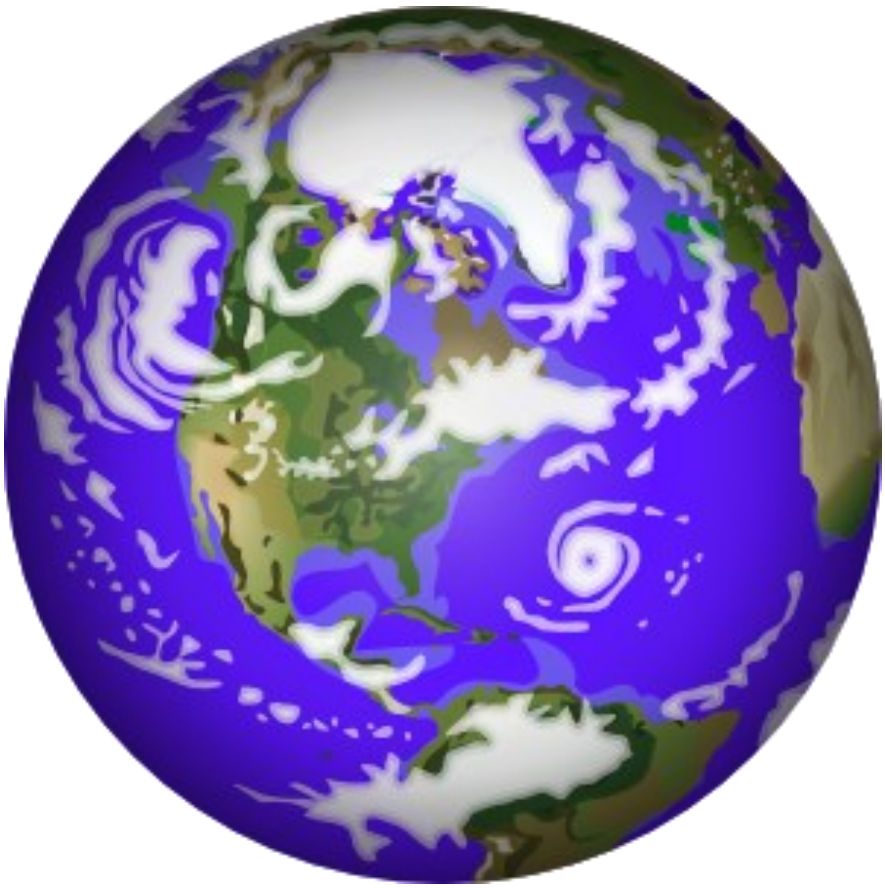
This project will address the following Indiana Academic Standards:

The Nature of Science and Technology

- 2.1 Students are actively engaged in exploring how the world works. They explore, observe, count, collect, measure, compare, and ask questions. They discuss observations and use tools to seek answers and solve problems. They share their findings.

Listening and Speaking: Skills, Strategies, and Applications

- 2.7.3 Paraphrase (restate in own words) information that has been shared orally by others.
- 2.7.9 Report on a topic with supportive facts and details.



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Revised January 2024
Revised, November 2025

PURDUE AGRICULTURE

MINI 4-H SUN, STARS, & SPACE RECORD SHEET

EXHIBIT YOUR POSTER OR MODEL. FILL OUT THIS MINI 4-H SUN, STARS, & SPACE RECORD SHEET AND BRING IT WITH YOUR EXHIBIT TO THE 4-H FAIR.

NAME _____

YEAR IN MINI 4-H SUN, STARS, & SPACE PROJECT _____ GRADE IN SCHOOL _____

CLUB ATTENDED _____

1. WHAT DID YOU LEARN MOST FROM YOUR MINI 4-H SUN, STARS, & SPACE PROJECT?

_____

_____

2. HOW LONG DID IT TAKE YOU TO MAKE YOUR MINI 4-H SUN, STARS, & SPACE PROJECT?

_____

3. WHO HELPED YOU WITH YOUR MINI 4-H SUN, STARS, & SPACE PROJECT?

_____

4. HOW DID THEY HELP YOU?

_____

_____

5. DESCRIBE THE MINI 4-H SUN, STARS, & SPACE PROJECT YOU COMPLETED.

_____

_____

_____

Leader Signature _____ Date _____

MINI 4-H SUN, STARS, & SPACE RECORD SHEET

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Leader Signature_____ Date _____