

THE SCIENTIFIC METHOD

Name _____

Put the following steps of the scientific method in the proper order.

- _____ Organize and analyze data
- _____ State a hypothesis
- _____ Identify the problem
- _____ State conclusion
- _____ Design and carry out an experiment
- _____ Make observations and record data
- _____ Gather information

Match the term in Column I with its definition in Column II.

Column I

- 1. theory _____
- 2. law _____
- 3. hypothesis _____
- 4. experiment _____
- 5. variable _____
- 6. control _____
- 7. data _____
- 8. conclusion _____
- 9. application _____

Column II

- a. suggested explanation to a problem or observation based upon known information
- b. used to test a hypothesis
- c. anything that can affect the results of an experiment
- d. observations and measurements made during an experiment
- e. part within the experiment that is maintained without change in order to provide a comparison for the part of the experiment containing the variable
- f. hypothesis that has been tested and supported by a great amount of evidence over a long period of time
- g. statement describing (but not explaining) a natural event or phenomenon
- h. new use to which results are put or new technique developed
- i. a summary that explains whether or not the data support the hypothesis

LABORATORY EQUIPMENT

Name _____

Match the following names of lab instruments and equipment with the correct picture.

a. beaker

c. balance

e. test tube

g. funnel

i. tongs

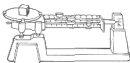
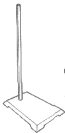
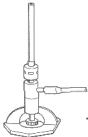
b. graduated cylinder

d. Bunsen burner

f. test tube clamp

h. Erlenmeyer flask

j. ring stand

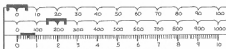
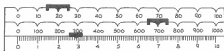


USING THE BALANCE

Name _____

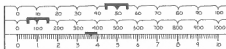
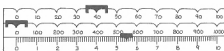
The following balance measure mass is grams. What masses are shown on each of the following balances?

Answer: _____



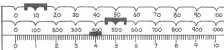
Answer: _____

Answer: _____



Answer: _____

Answer: _____



MEASURING LENGTH

Name _____

What lengths are marked on the following centimeter ruler?



cm

mm

- | | | |
|----|-------|-------|
| a) | _____ | _____ |
| b) | _____ | _____ |
| c) | _____ | _____ |
| d) | _____ | _____ |
| e) | _____ | _____ |

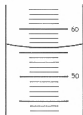
Measure the following lines with a centimeter ruler.

- | | | |
|----|-------|-------|
| f) | _____ | _____ |
| g) | _____ | _____ |
| h) | _____ | _____ |
| i) | _____ | _____ |
| j) | _____ | _____ |
| k) | _____ | _____ |
| l) | _____ | _____ |

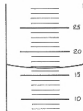
MEASURING LIQUIDS

Name _____

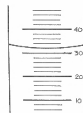
What volume is indicated on each of these graduated cylinders? The unit of volume of is mL.



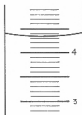
a) _____



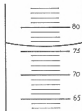
d) _____



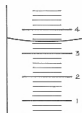
g) _____



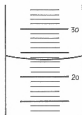
b) _____



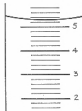
e) _____



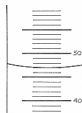
h) _____



c) _____



f) _____

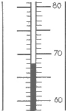


i) _____

READING THERMOMETERS

Name _____

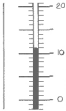
What temperature is indicated on each of these thermometers?



a) _____



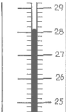
b) _____



c) _____



d) _____



e) _____



f) _____



g) _____



h) _____



i) _____

DENSITY

Name _____

Which has the greater mass, air or lead? Most of you would answer lead, but actually this question does not have an answer. To compare these two things you need to know how much of each you have. A large amount of air could have a greater mass than a small amount of lead. To compare different things, we have to compare the masses of each that occupy the same space, or volume. This is called density.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Solve the following problems.

1. What is the density of carbon dioxide gas if 0.196 g occupies a volume of 100 mL?

Answer: _____

2. A block of wood 3.0 cm on each side has a mass of 27 g. What is the density of this block?

Answer: _____

3. An irregularly shaped stone was lowered into a graduated cylinder holding a volume of water equal to 2.0 mL. The height of the water rose to 7.0 mL. If the mass of the stone was 25 g, what was its density?

Answer: _____

4. A 10.0 cm³ sample of copper has a mass of 89.6 g. What is the density of copper?

Answer: _____

5. Silver has a density of 10.5 g/cm³ and gold has a density of 19.3 g/cm³. Which would have a greater mass, 5 cm³ of silver or 5 cm³ of gold?

Answer: _____

6. Five mL of ethanol has a mass of 3.9 g, and 5.0 mL of benzene has a mass of 4.4 g. Which liquid is denser?

Answer: _____

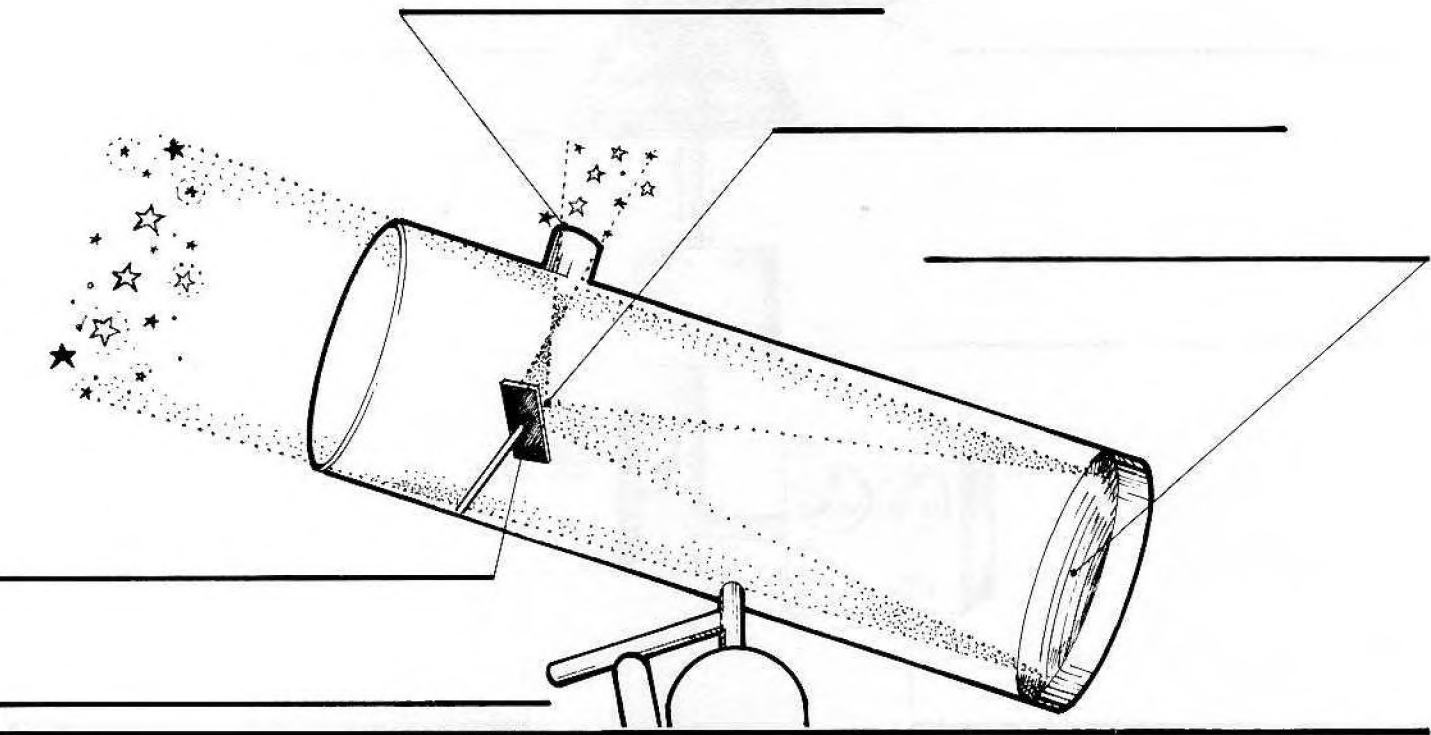
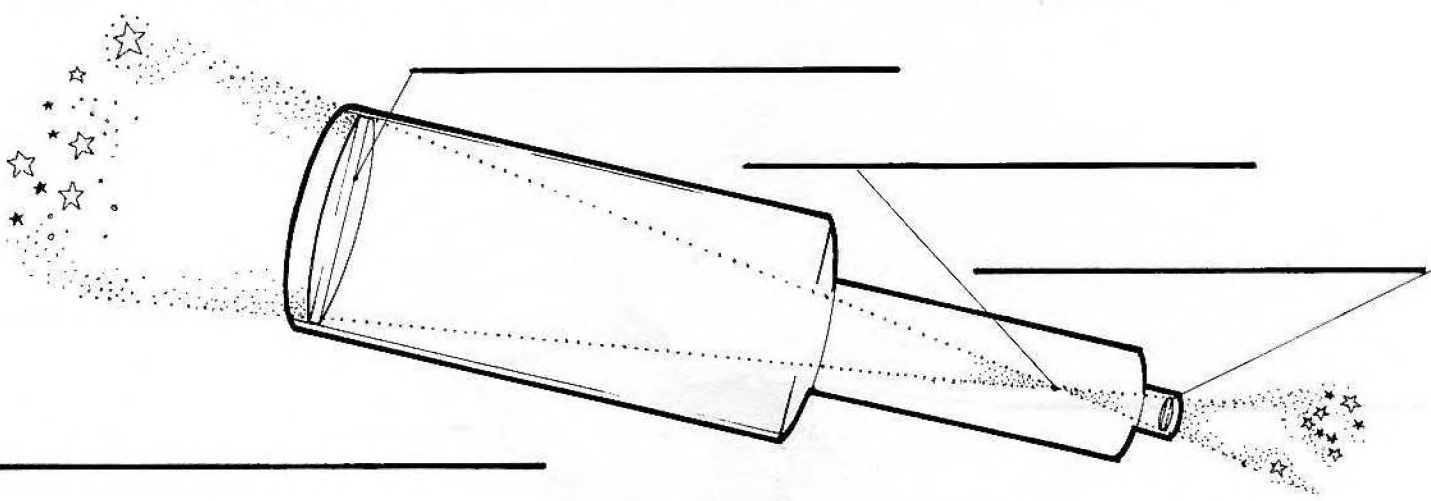
7. A sample of iron has the dimensions of 2 cm x 3 cm x 2 cm. If the mass of this rectangular-shaped object is 94 g, what is the density of iron?

Answer: _____

"Optic Glass"

Name _____

In 1609 the Italian astronomer, Galileo, was the first person to see the heavenly bodies closer than they really were with his "optic glass," or telescope. Label the refractor and reflector telescopes and their parts. Use the words from the **WORD BANK**. You may have to use some of the words more than one time.



WORD BANK

- | | |
|---------------------|---------------------|
| reflector telescope | refractor telescope |
| objective lens | eyepiece lens |
| focal point | flat mirror |
| objective mirror | |

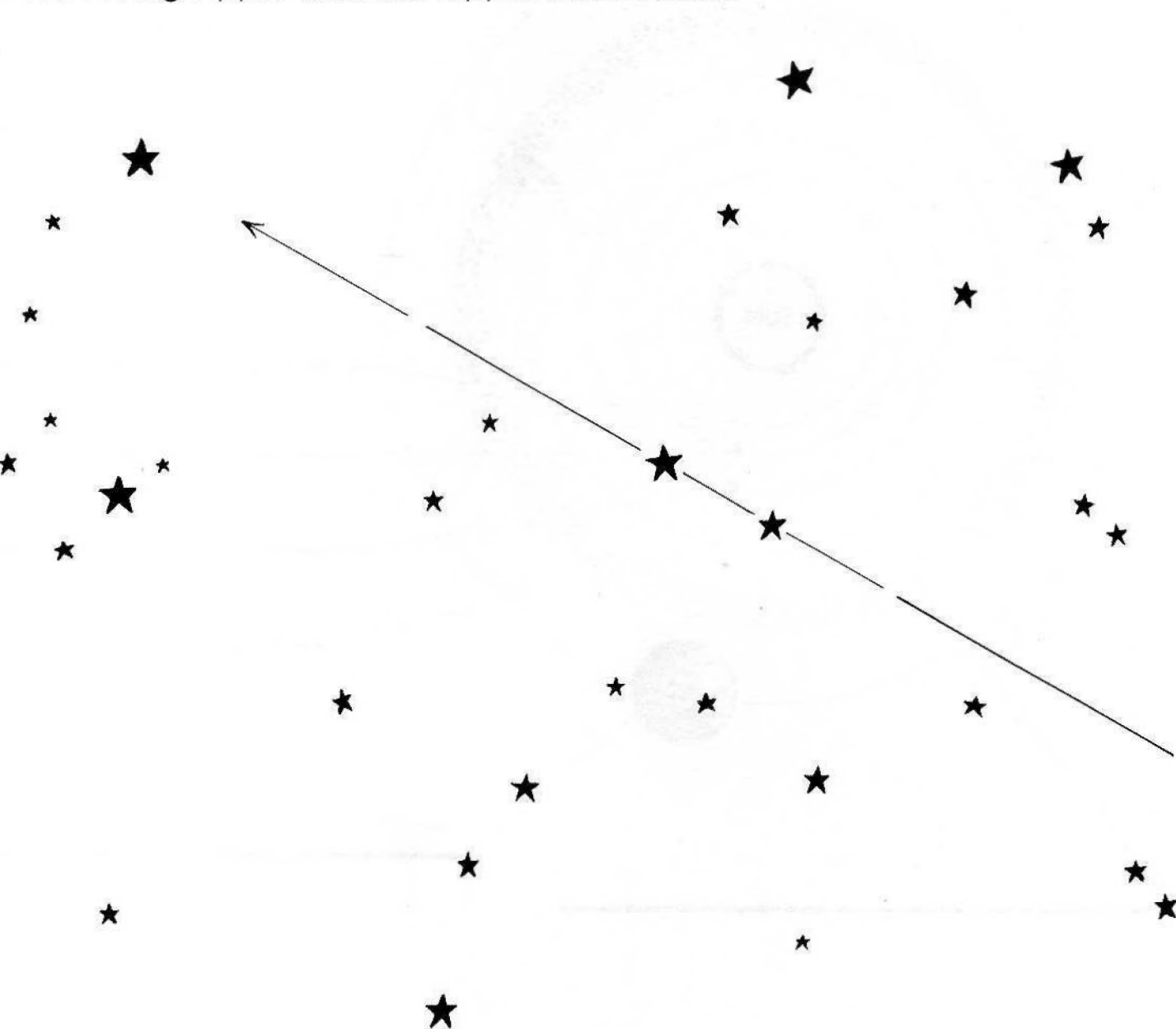
The North Star

Name _____

Because the Earth rotates, all the stars in the sky appear to move from east to west. Because Polaris is directly above the North Pole it does not move, and so it is also called the North Star.

Polaris is found in the constellation Ursa Minor, also called the Little Dipper. The Big Dipper is found in the constellation Ursa Major, also called the Great Bear.

Trace the Big Dipper and Little Dipper. Label Polaris.



WORD BANK

Big Dipper

Little Dipper

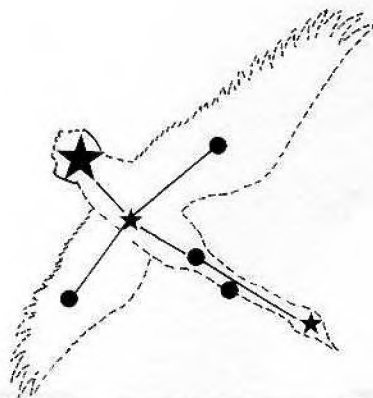
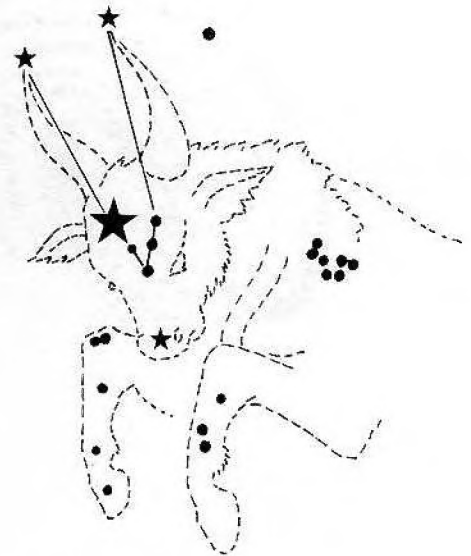
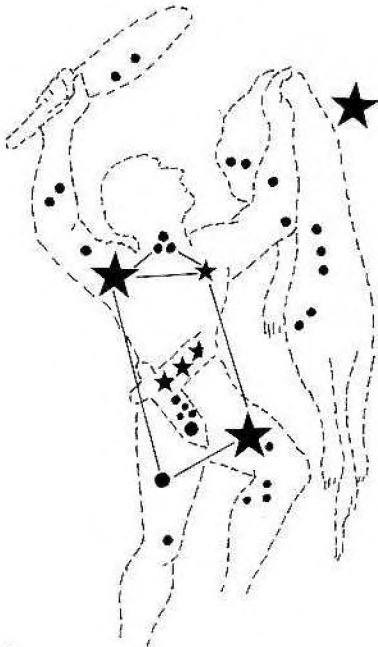
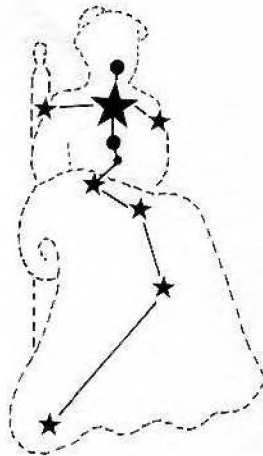
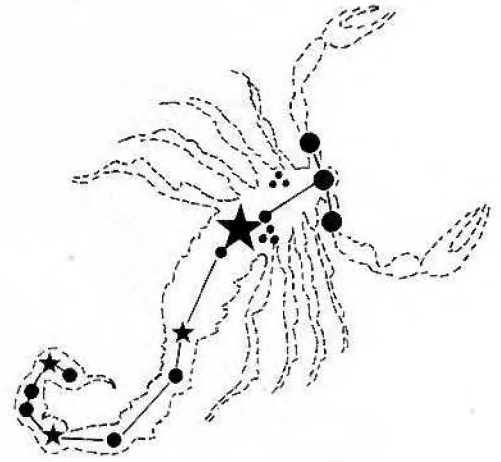
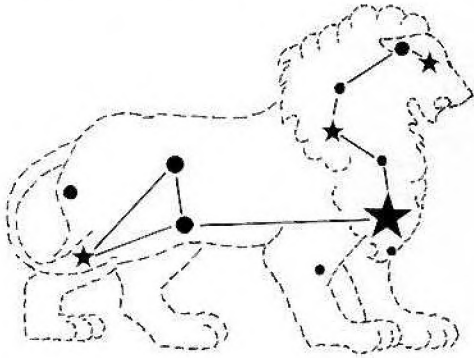
Polaris

Pictures in the Night Sky

Name _____

For thousands of years people from every culture have gazed into the night sky and imagined groups of stars outlining a picture. These star pictures, called **constellations**, are like giant dot-to-dot puzzles in the night sky.

Name these well-known constellations.



WORD BANK

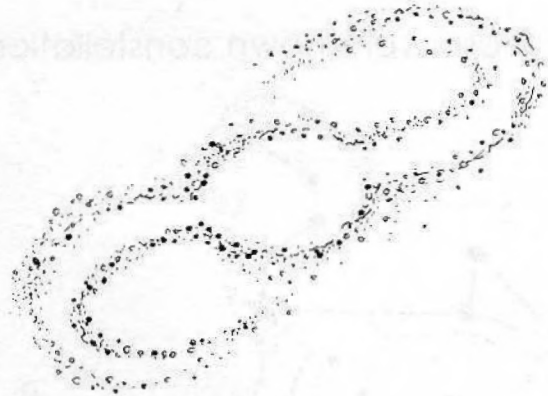
Orion
Scorpio

Cygnus
Taurus

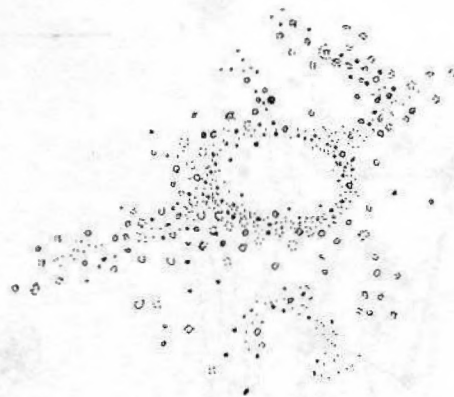
Leo
Cassiopeia

Beyond our galaxy lie billions of other galaxies. Use the **WORD BANK** to label the shapes of some of these galaxies.









WORD BANK

elliptical

spiral

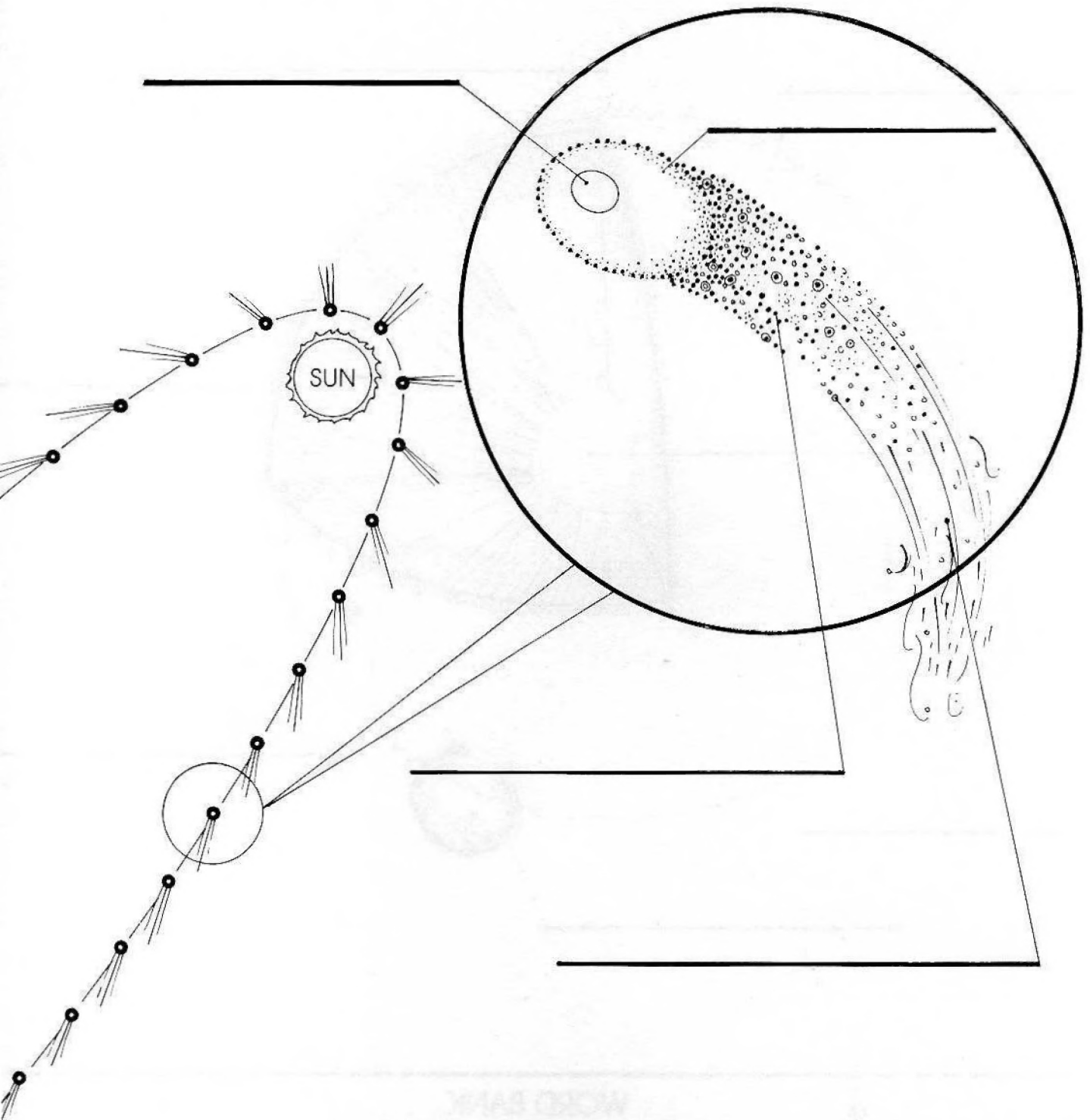
barred spiral

irregular

Dirty Snowballs

Name _____

Comets are like "dirty snowballs." Use the words from the **WORD BANK** to label the parts of these frozen masses of gas and dust particles.



WORD BANK

nucleus

coma

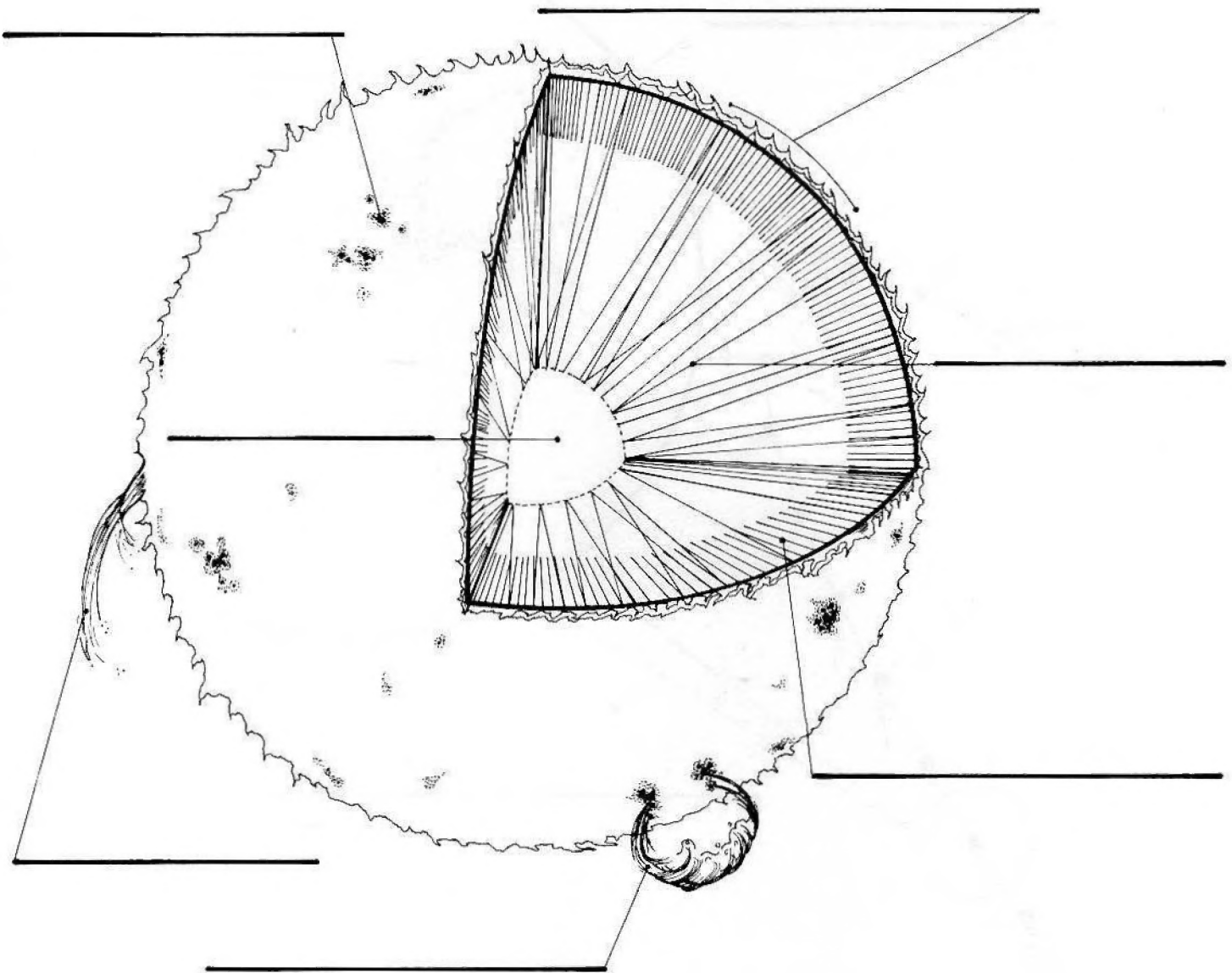
gas tail

dust tail

Our Closest Star-The Sun

Name _____

The sun is the closest star to the Earth. Use the **WORD BANK** to label the different layers and features of the sun.



WORD BANK

core
photosphere
flare

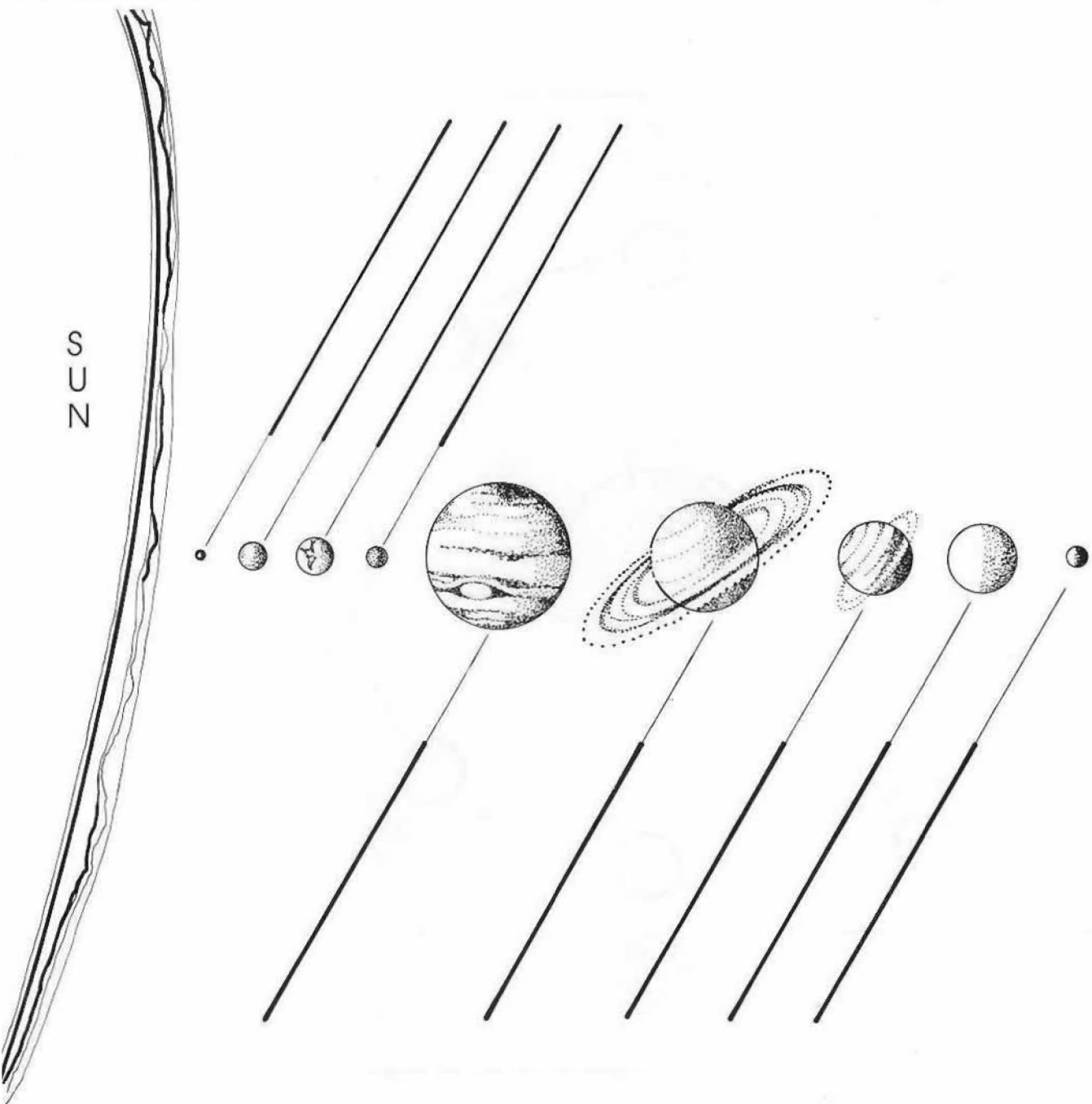
radiative zone
chromosphere
sunspot

prominence

Planets of the Solar System

Name _____

All of the planets of the Solar System travel around the sun. Label the planets.



WORD BANK

Mercury
Mars
Uranus

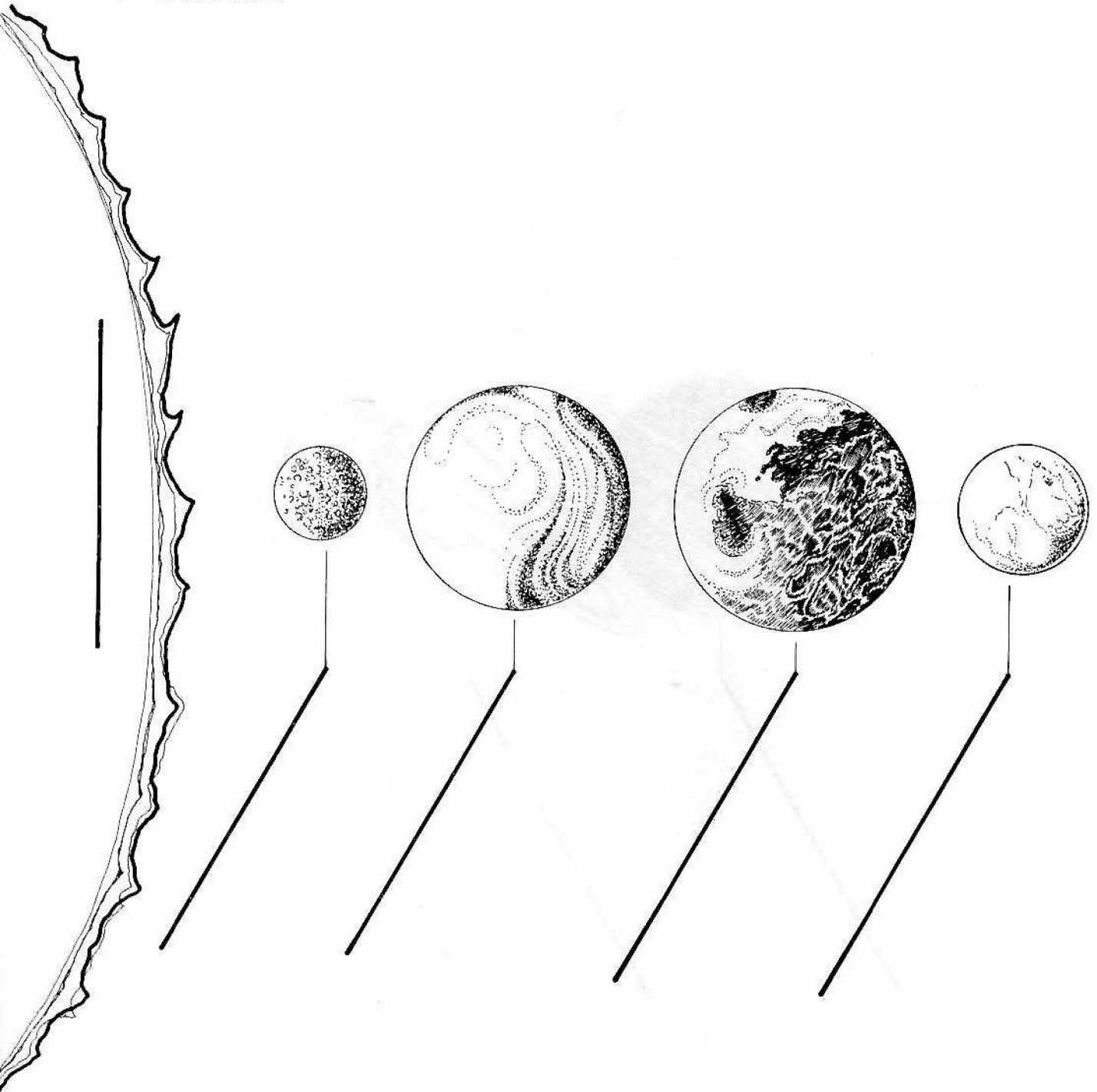
Venus
Jupiter
Neptune

Earth
Saturn
Pluto

The Inner Planets

Name _____

The planets that are closest to the sun are called the Inner Planets. Label the Inner Planets and the sun.



WORD BANK

sun
Earth

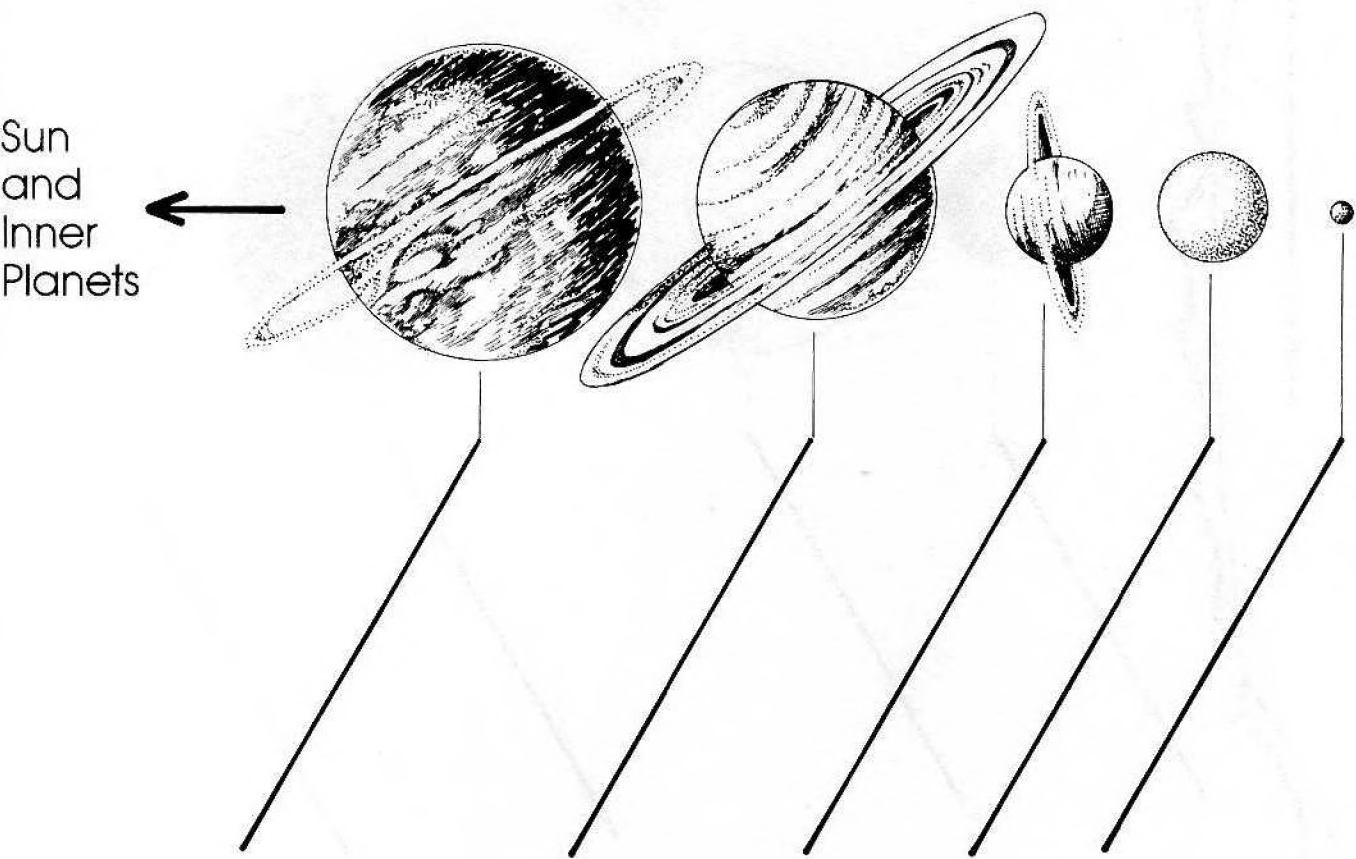
Venus
Mars

Mercury

The Outer Planets

Name _____

The planets that are farthest from the sun are called the Outer Planets. Label the Outer Planets.



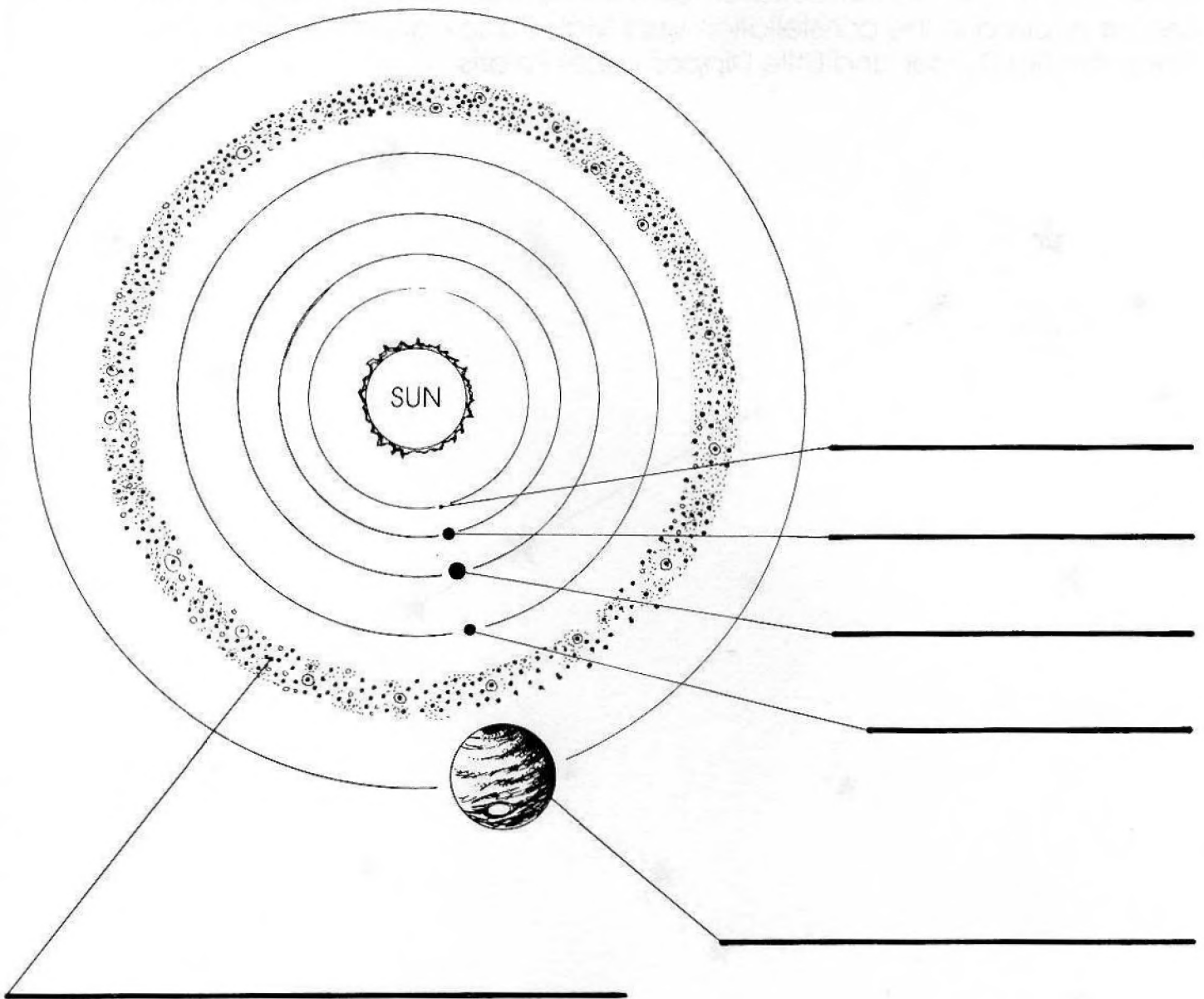
WORD BANK

Jupiter Saturn Uranus
Neptune Pluto

The Asteroid Belt

Name _____

Scientists believe that asteroids may be pieces of a planet that was torn apart millions of years ago. Thousands of large asteroids have been tracked, but hundreds of thousands of smaller asteroids are in the asteroid belt. Label the asteroid belt and the planets in the illustration below.



WORD BANK

Mercury
Mars

Venus
Jupiter

Earth
asteroid belt

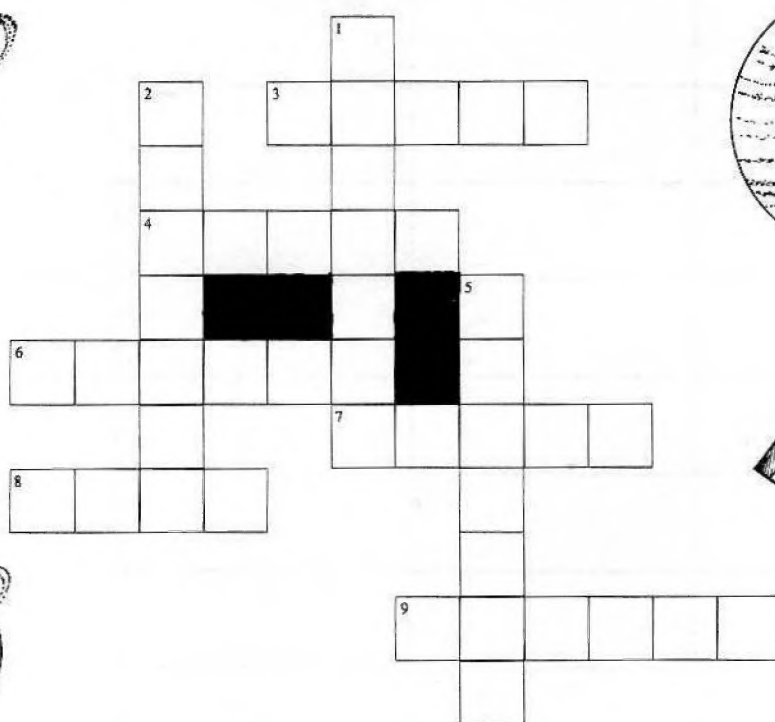
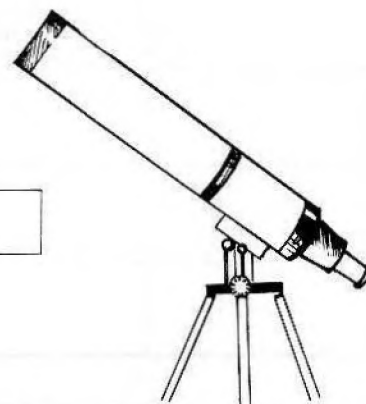
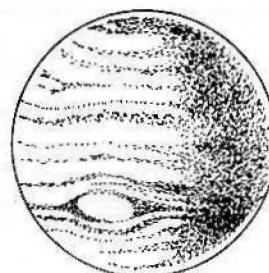
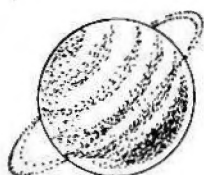
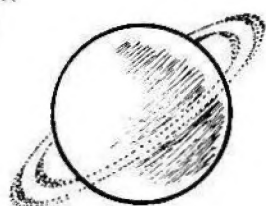
Puzzling Planets

Name _____

Use what you have learned about the planets of our solar system to complete the puzzle. You may need to refer to your science book or an encyclopedia.

Across

3. I am the closest in size to the Earth.
4. I am the smallest planet.
6. I have the greatest number of natural satellites.
7. I am the only planet known to support life.
8. I am the Red Planet.
9. I am the most distant planet that can be seen without a telescope.



Down

1. I am usually the 8th planet from the Sun, but every 248 years I move inside Pluto's orbit for 20 years.
2. I am a large planet known for my "Great Red Spot."
5. I am the closest planet to the Sun.

WORD BANK

Mercury
Mars
Uranus

Venus
Jupiter
Neptune

Earth
Saturn
Pluto