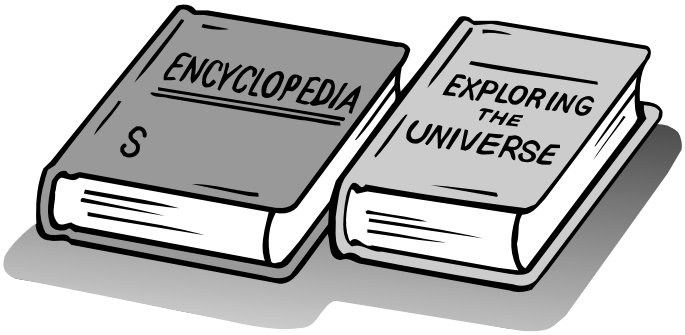
Chapter Science Investigation Name _____

Researching Space Technology

What You Need



reference and nonfiction books on space exploration, or the Internet

Find Out

Do this activity to see what kinds of technology are used to gather different types of astronomical data.

Process Skills

Predicting
Communicating

Time

- 20 minutes each day for two weeks

What to Do

1. Study the chart. **Predict** which tool would be appropriate for each exploration.

2. Select appropriate books on the subject from the library or Internet and look up the areas of study listed either at the left or across the top of the chart.

3. For each exploration listed across the top, determine which type of technology at the left of the chart could be a tool in increasing your understanding of the topic to be studied. There may be more than one tool for each area of study. **Communicate** your ideas with your partners and share ideas.

4. Mark an **X** in the box under the area of study and across from the tool to be used for exploration. Write a reason for selecting each tool.

Researching Space Technology						
	Determine the existence and effects of black holes.	Gather evidence to support the expanding-universe theory.	Analyze signals coming from distant stars.	Assess changes in the amount of light coming from Mira or Omicron.	Consider the possibility of living on Mars.	Analyze other planets.
Earth-based Telescopes						
Space-based Telescopes						
Other Artificial Satellites Orbiting Earth						
Fly-by Space Probes						
Orbital Space Probes						
Lander Space Probes						
Staffed Spacecraft Including Shuttles						
Space Stations						

Conclusions

1. Did the students in your group agree on their predictions? Why or why not?

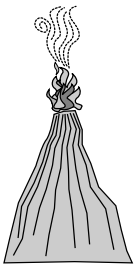
2. What were some advantages of using the Earth-based methods to explore each of the topics?

3. What were some advantages of exploring space from space for each of the topics?

New Questions

1. Which of these topics would you like to investigate further? What sources of information are available?

2. How would you conduct your research?



Name _____

ACTIVITY

Creating an Eclipse Model

Sketch your **model** of a solar eclipse.

Sketch your **model** of a lunar eclipse.

Name _____

Conclusions

1. What is a solar eclipse?

2. What is a lunar eclipse?

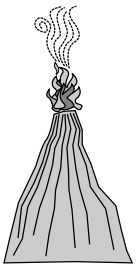
Asking New Questions

1. How would you show a partial eclipse?

   What would be different from a full eclipse?

2. If you lived on the moon and observed Earth from there, would you see any eclipses?

   If so, describe them.



Name _____

ACTIVITY

Comparing Planets

Use this page for your chart about the planets.

Name _____

Conclusions

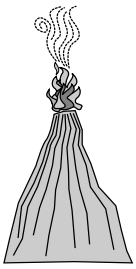
1. Is classification by size a good way to separate the planets?

2. What is the best way to distinguish each planet?

Asking New Questions

1. What are some other facts about planets that would be interesting to find out?

2. What would you tell an imaginary visitor from another galaxy about the planets in our solar system?



Name _____

ACTIVITY

Seeing Stars

Globe Position	Visible Areas
Northeastern America	
Antarctica	
Do you see Sweden?	

Draw a circle to represent Earth and follow the additional steps on page B160 and B161 of your text.

Name _____

Conclusions

1. Do the two shaded areas overlap anywhere?

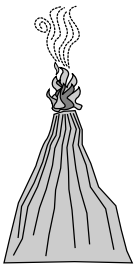
2. Is it possible that some stars would be visible from both places?

3. Are there some stars that could be visible only from one or two places?

Asking New Questions

1. How does Earth's curvature affect what stars you can see?

2. Who would be a good person to talk to if you wanted to learn more about stars?



Name _____

ACTIVITY

Expanding the Universe

Use the chart to **record** the distance between the dots.

Comparison of Dots	**Distances Between Dots**			
	Measurement 1	**Measurement 2**	**Measurement 3**	**Measurement 4**
Dots 1 and 2				
Dots 3 and 4				
Dots 5 and 6				
Dots 7 and 8				
Dots 9 and 10				
Dots A and B				
Dots A and C				

Name _____

Conclusions

1. What happened to the distances between the ten dots as the balloon got bigger?

2. What do you think would happen to the distances if the balloon could stretch forever without popping?

3. Did the distance between dot *A* and dot *B* change the same amount as the distance between dot *A* and dot *C* each time you put more air in the balloon?

4. What would happen to the distances if the inflated balloon was left for a long time? (Think of what happens to balloons left over from parties.)

Asking New Questions

1. What do these models tell you about the way scientists think the universe is changing?

2. What other model might test the same ideas?