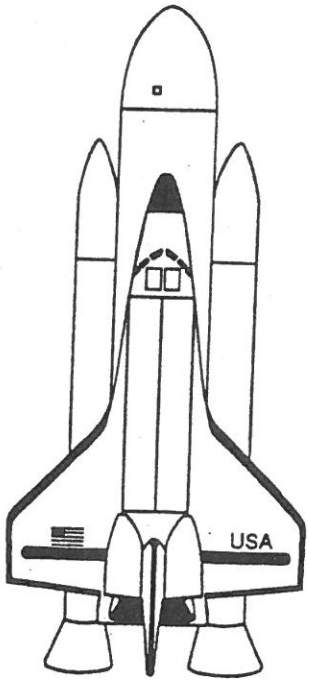
Creativity

1. Make a **mobile** about **space travel** or a **space station**. This stylized art form needs to be informative as well as attractive. (K/V-2) **CL**

2. Build a **model** of a **rocket launching site**. Have two or three different kinds of rockets displayed on the launching pad. You may also wish to place a model of the space shuttle at your site. Work hard to be inventive with recyclable materials (i.e., oatmeal or other cylindrical boxes). Your colorful model should be about 18 inches by 18 inches, and it should help viewers better understand how an actual site might look. (K-3) **CL**



3. Construct a realistic salt-dough **model** of the **moon's surface**. Build a replica of a lunar excursion vehicle (LEV). You may use free materials such as boxes, or you may use building materials such as Legos. Include a placard explaining the functions of the LEV. (K-3) **CL**

4. Use at least 25 of the vocabulary words to make a **crossword puzzle**. Your clues must indicate your knowledge of space and must make the puzzle-worker think. Study several crossword puzzles to become familiar with the format. Suggestion: graph paper will help you with the layout. Provide the answers on a separate sheet of paper. Your teacher may choose to copy your puzzle and distribute it to the class. (W-2)

Space Vocabulary

cosmonaut
lunar eclipse
meteor
orbit
trajectory
velocity

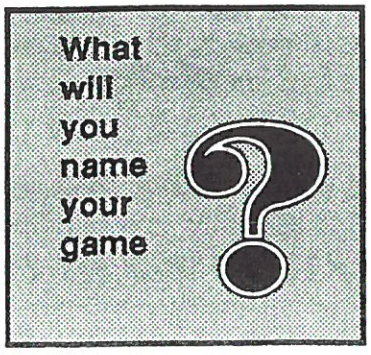
5. Use at least 30 of the vocabulary words to make a **word search.** Turn in the key on a separate sheet of paper. Use graph paper to help make a neat layout. Your teacher may choose to copy and distribute your word search to the class. If so, you will check the other students' completed word search puzzles. (W-1)

6. Use at least 25 of the vocabulary words to make a **scrambled word sheet.** Provide a knowledge-based clue for each scrambled word. Be very neat. Turn in the key on a separate sheet of paper. Your teacher may choose to copy and distribute your word sheet to the class. If so, you will be responsible for checking the students' finished work. (W-1)

7. Make a **papier mache model** of a **planet** of your choice. It is best to begin with a round balloon as your base. You will need to begin well ahead of time in order for three or four layers of papier mache to have time to dry in between layers. Study your planet in order to make your model as accurate as possible. (V/K-3) **CL**

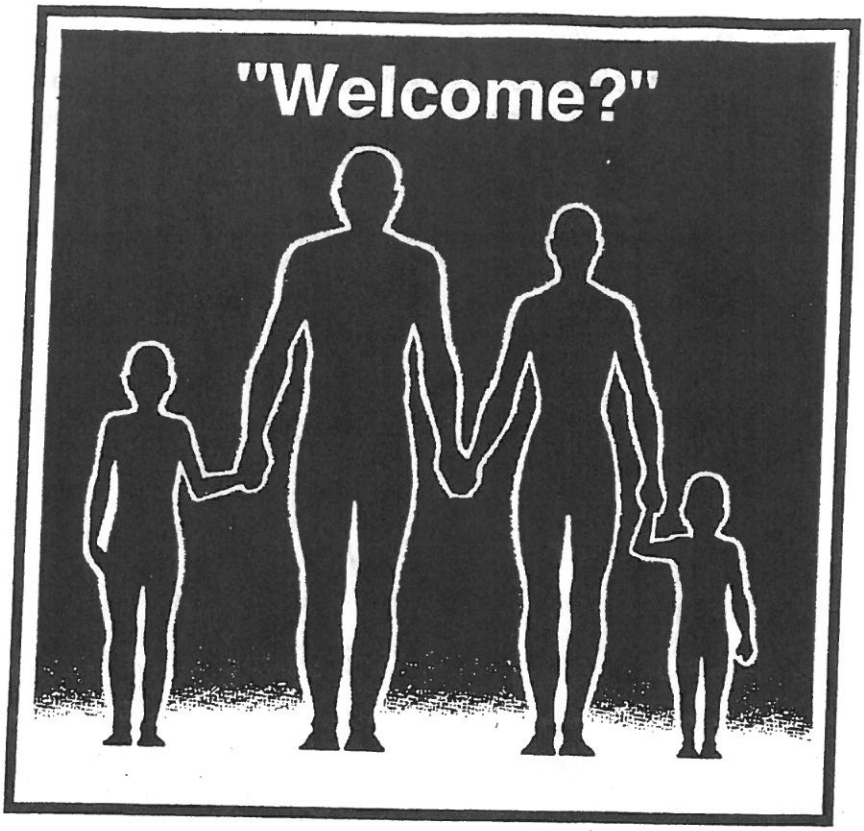
8. Make a **shadow bow** of the **solar system.** Planets should be placed in the correct order. While it is impossible to accurately depict relative size and distance, at least make an attempt to let the viewer see the differences. (V-2) **CL**

9. Make a **collage** of **space exploration.** This should be a poster on heavy-weight paper (tag board, or similar). Be sure to attend to artistic considerations (i.e., color, balance) and avoid large empty space. Old news magazines and *National Geographics* are sources for pictures and drawings. (V-1) **CL**



10. Create a **board game** using the theme of **inter-planetary travel.** Be sure to incorporate space facts and information. The players should have to think and make choices based on knowledge. The final product should be large, durable, attractive, and have clear directions. It should be able to be played by two to four players. You may want to consider use of dice, spinners, or cards to draw as a means of advancing the game. Old games (from your closet or a thrift shop) are an excellent source for a game board you can re-cover or paint. (V-3) **CL**

11. Build a **model space station** or a **"moon city."** (Or make a bulletin board showing your design.) Design it in such a way that people do not have to wear space suits. Consider the needs of an extended stay in space (i.e., food, health, medical, exercise, recreation, etc.). Label and explain items for the viewer. (K/V-4) **CL**



12. Prepare and present a **skit** of **landing on another planet** and meeting the residents there. Think about your fears, their fears, your reactions, their reactions, and your attempts to communicate. How will you (remember the language barrier) explain who you are and where you are from? (Be sure you plan how to communicate with body language as well as spoken words.) Use two to four people. This skit should be a minimum of five minutes in length. It would be wise to videotape this for presentation at the Open House. (K-4) **CL**

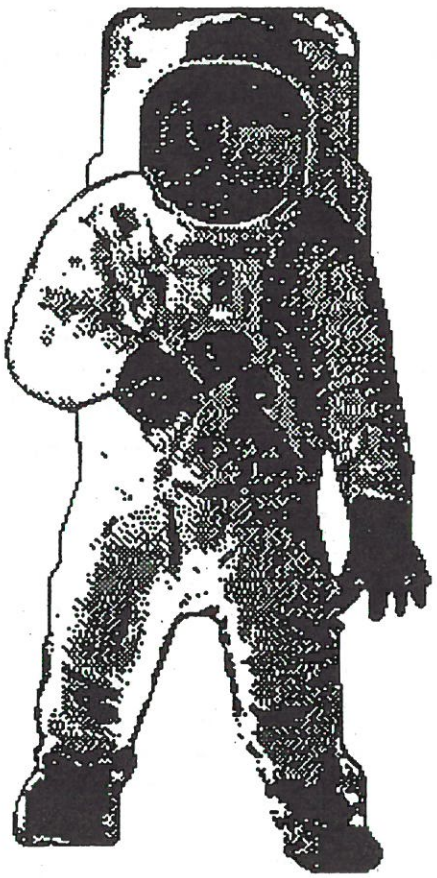
13. Make a **space suit** and demonstrate it to the class. Consider using recyclable materials such as a milk jug or bleach bottle for the helmet, paper or plastic bags, a hose to a power pack. Make controls, straps, etc. Draw symbols. (K-4) **CL**

14. **Read** several Greek, Roman, Norse, or Native American **myths**. Determine the characteristics of myths. Create your own myth about meteors. Tell it to an audience. You may want to videotape it for a later showing at Open House. (O/W-3)

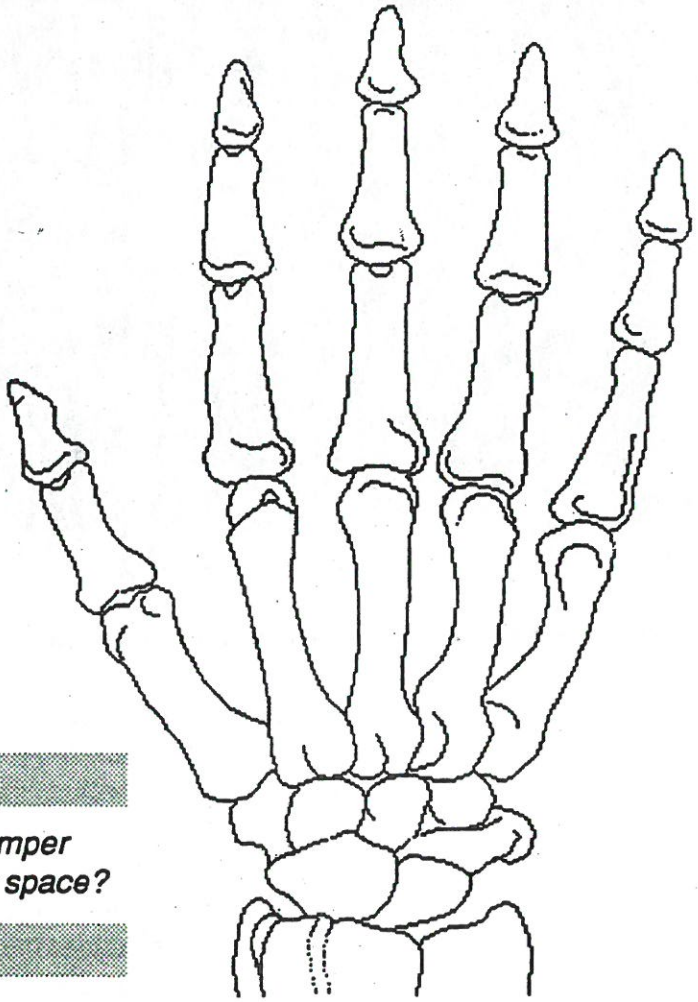
15. **Read** several kinds of **poetry**. Discuss poetry with your teacher before beginning. Choose any two forms (i.e., cinquain, haiku, limerick, couplet, triplet or other forms as your teacher may suggest). **Write** at least four **poems** about the Milky Way, the moon, the solar system, or space travel. Options: a) carefully letter and mount the poetry for a bulletin board display; b) carefully letter or type, copy and distribute to the class; c) read your poems to the class (audio-tape for Open House). (O/W-3)

When I look up
and watch the stars
That also look at me ...

16. Create 10 **story problems for math** concerning **interplanetary travel**. Include fractions, decimals, time or money in more than five of the problems. Turn in an answer sheet. If your teacher chooses to copy and distribute to the class, you will be responsible for correcting these papers. (W-3)



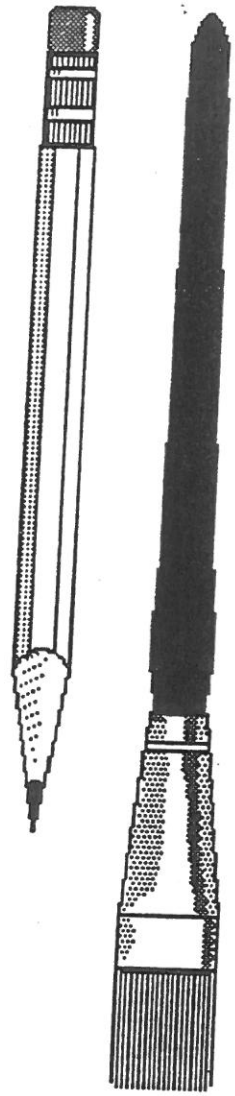
17. Research the **medical dangers in space travel.** Devise plans for protecting astronauts. Draw and label the protective devices. Use a piece of poster board at least 15" x 20". (V-3)



For example, would gravity problems hamper doctors setting smashed fingers in outer space?

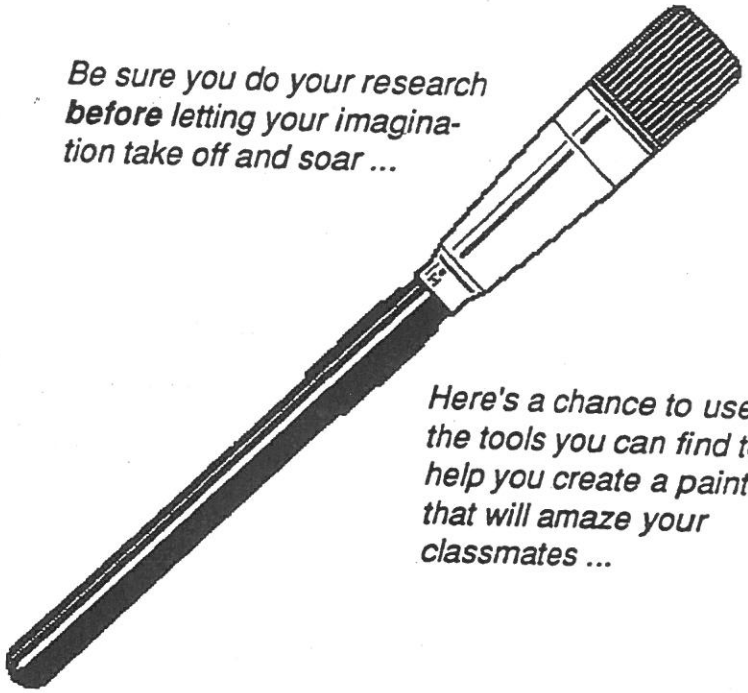
18. Imagine that space exploration has led to a landing on another planet. All the developed nations on Earth have united to make this undertaking a success. Design a **flag** that Earth's explorers placed on this planet when they landed. You may use posterboard (minimum 10"x15"), or you may sew fabric. Be sure to consider the importance of symbols and artistic work to convey the meaning of this event. And of course, wouldn't it be challenging to create a Pledge of Allegiance to this flag? If you write one, think of how you will attempt to write its ideas so that other nations' leaders will agree to what it says. (V-3) **CL**

19. Imagine you have discovered a **solar system** (with a minimum of 10 planets) and you have been given the honor of **naming the planets.** *Before you name them, research how the planets in our solar system were named.* The names you choose should describe the planets. Present as a map and include your list and any explanations needed. (V-3)



20. Make a **painting** (minimum 12"x16") of your impression of the way the surface and atmosphere might look on any one of the planets of our solar system. You must show knowledge of your chosen planet. This work should reflect research as well as time spent painting. (A-2)

*Be sure you do your research **before** letting your imagination take off and soar ...*



Here's a chance to use all the tools you can find to help you create a painting that will amaze your classmates ...

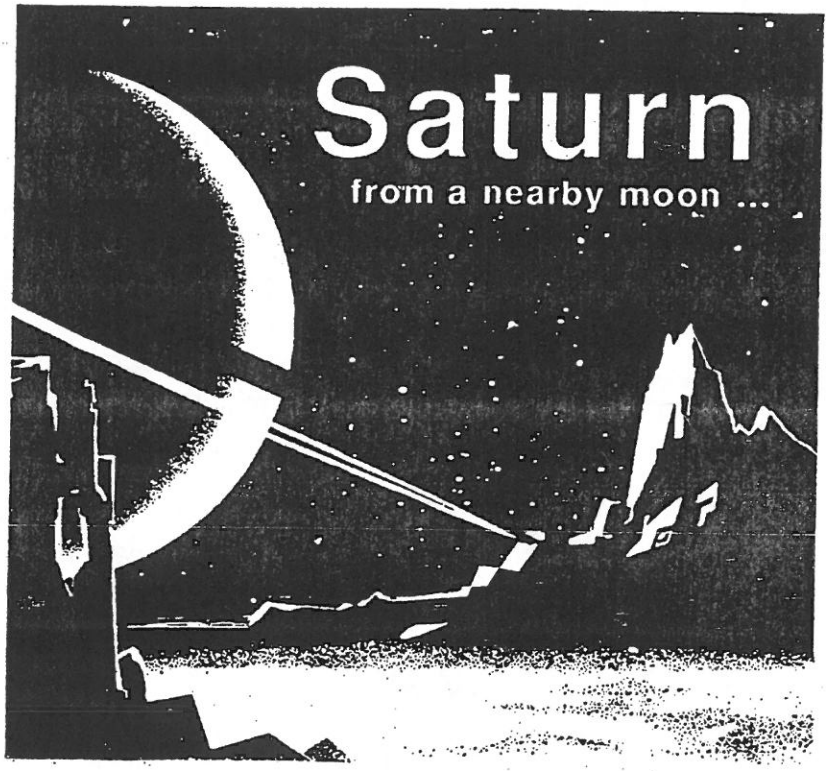
21. Select a planet. Write a **song**, using original music and words. If you play an instrument, accompany yourself. Present in person or on tape for an audience. The song should represent knowledge about the planet as well as the planet's spirit. Don't simply hurry throught this project. Work to create a *quality* song you are proud to present. (M-3)

"Oh Jupiter, mighty Jupiter,
When I see all thy moons
So bright and strong ..."

Research

1. Read 10 newspaper or magazine articles on space. Make a **scrapbook** of these articles. Use one page to discuss what you have learned about the problems being faced by astronauts and space scientists. How are those problems being solved? (K-2) **CL**

2. Read about **the legend of Saturn**. Write and present a play that will reflect your knowledge and will re-enact that legend. This play will involve two to four people and must take close to five minutes. Plan to videotape it to show at Open House. (K-4) **CL**

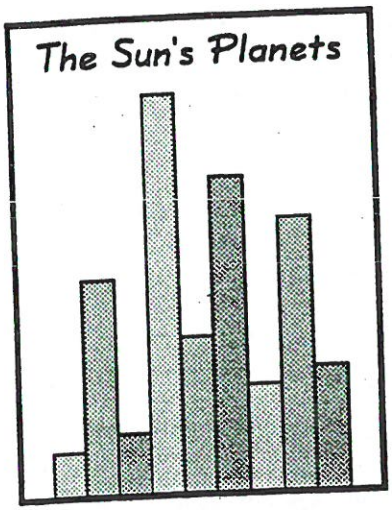


3. Select a famous **astronomer**. Read at least three different resources about that person. Write a one-page report. You might also like to dress up as this person and appear in front of your class to answer questions. (W/O-2)

4. Find out who **Aristarchus** was and learn about his amazing idea? Either write a one-page report or give an oral report to the class. Or you might like to *be* Aristarchus. (W/O-2)

5. Read, research, and write a two-page report about the various **scientists** who, over many years, have contributed to the world's understanding of **space and rocketry**. (W-3) **CL**

6. Find out about **solar energy**. Find pictures of buildings heated by solar energy. Make a bulletin board that explains the process and label the pictures and components. (V-2) **CL**



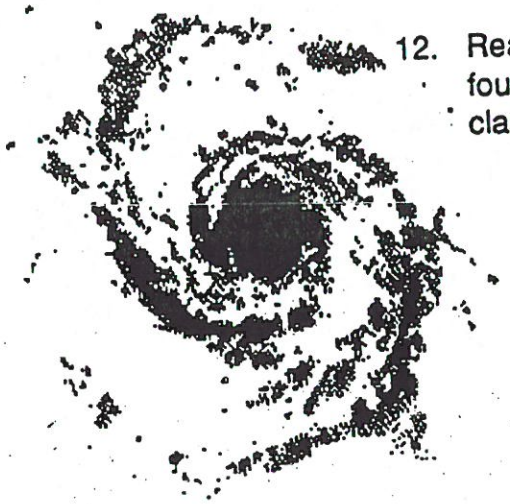
7. Prepare a graph that will show the sizes of all the **planets in our solar system**. Letter everything *carefully* before putting your graph on display. (V-2) **CL**

8. Conduct an experiment for the class that will demonstrate that the **sun** is a **heat source.** Videotape your experiment to show at the Open House. (K-2) **CL**

9. Demonstrate and explain an **eclipse** of the **sun** and **moon**. (K-1) **CL**

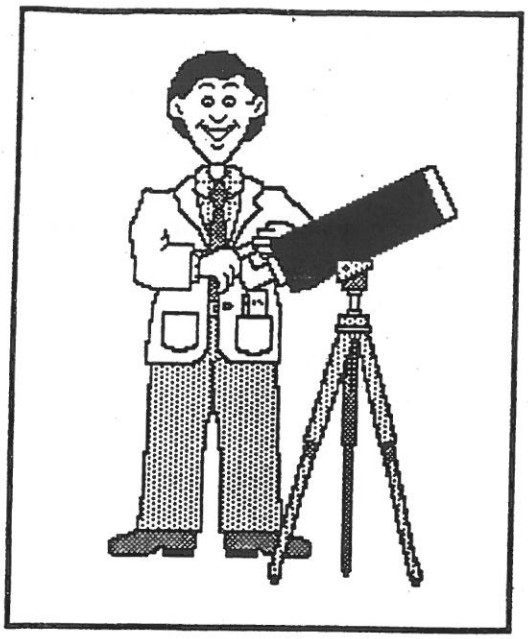
10. What do space scientists mean by the term **"escape velocity"**? Read, research, and devise a demonstration for the class. (K-1) **CL**

11. Read and research Sir Isaac **Newton's law** "for every action there is an equal and opposite reaction." Test the law. Demonstrate it for the class. (K-1) **CL**



12. Read and research about **black holes**, then present a two-to-four minute report, including some visual materials, to the class. (O-3) **CL**

What can we discover in the depth of the mysterious universe?



13. Read and research about **radio telescopes**. Where are the major ones located? What are some of the significant discoveries they have made? Give a two-to-four-minute oral report. Include some visual materials. (O-3) **CL**

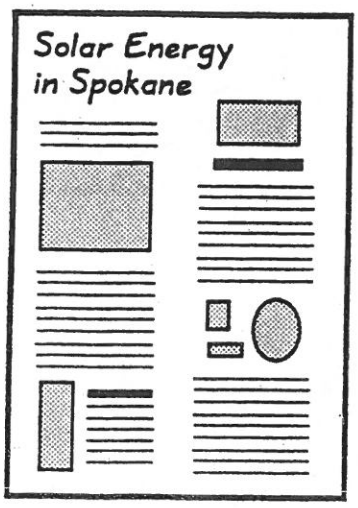
Can you answer the question below?

How does a radio telescope differ from the small portable telescope at the left?

14. Find out about discoveries made by the **spacecraft Voyager II**. Give a two-to-four-minute report. (O-2) **CL**

15. Read about **sunspots**. Prepare a two-to-four-minute oral report. Explain what sunspots are and how they affect the Earth. (O-2) **CL**

16. There are several famous **comets**. Select one. Find out all you can and write a report. Include illustrations which you draw yourself. (A/W-2)

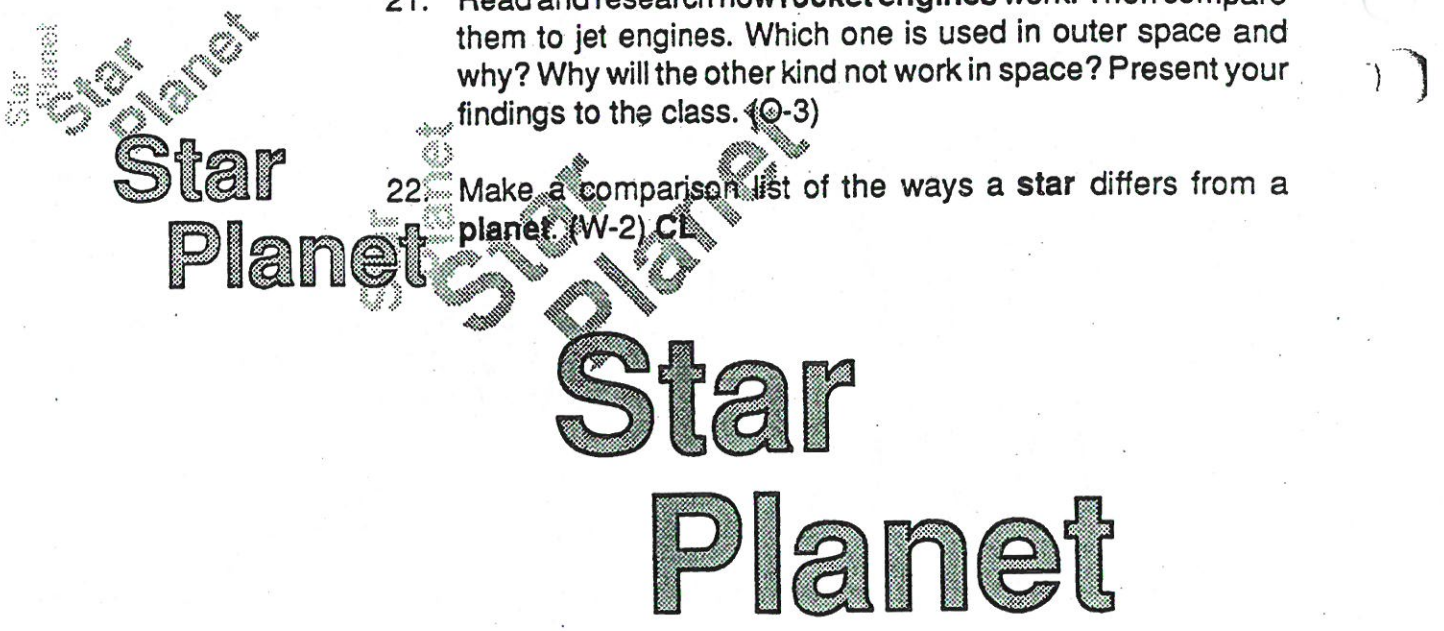


17. Find out where **solar energy** is being **used in your city** or area. Make a list of 10 or more locations. Take photographs of three or four. Write a report and mount it and several photographs on poster board. (A/W-4) **CL**

18. During the history of humanity, the moon and its phases have been used as a measure of time. Write a report to explain **the moon's use by early people**. Possibly you can also create a skit to dramatize some of the most interesting things you discovered in your research. (W/O-2) **CL**

19. Select and research **10 constellations**. How were they discovered and named? Make a display of your favorite three. (V/K-2)

20. Make a **scale model** of the **nine planets** in our solar system. Use a compass to make the sizes on paper, then cut them out and mount on a display or make a mobile. (V/K-2) **CL**

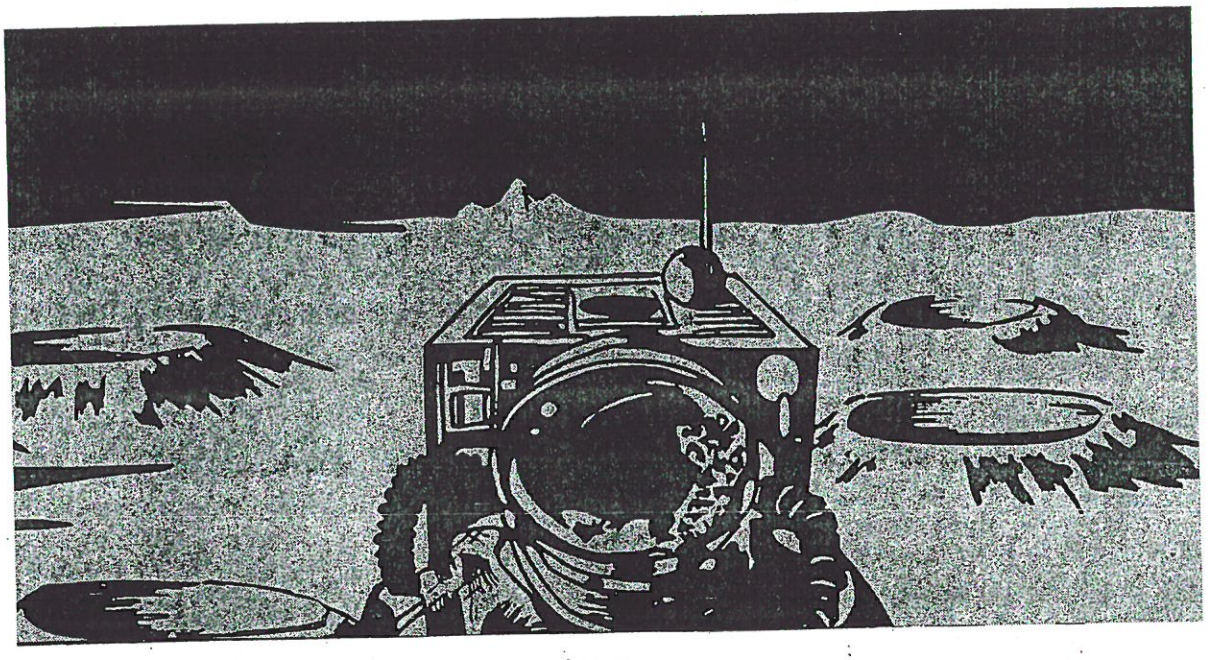


21. Read and research how **rocket engines** work. Then compare them to jet engines. Which one is used in outer space and why? Why will the other kind not work in space? Present your findings to the class. (O-3)

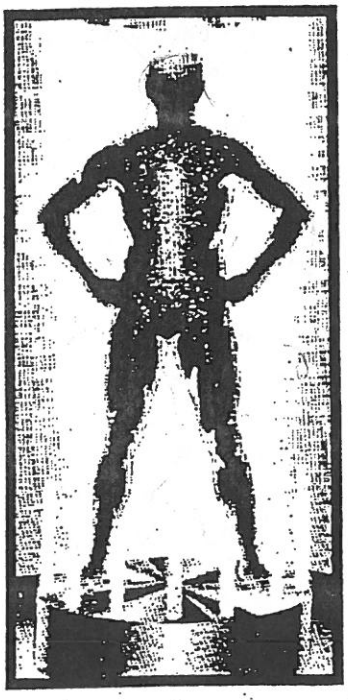
22. Make a comparison list of the ways a **star** differs from a **planet**. (W-2) CL

23. What is a **meteor**? How does it differ from a comet? Write a two-page report on meteors. (W-2)

24. After reading about all the planets in our solar system, prepare an oral report explaining **which planet is the most interesting** to you and explain why. In the report, share your knowledge about the planet with the class. (O-3)



Planning ... Communication ...



1. Interview 15 people. Find out what they remember about first hearing the news of the **explosion of the space shuttle *Challenger***. These people should represent a variety of ages (but they should be eight years or older as of January 1986). Turn in your log. (W-4)

2. Read the history of the **first flight to the moon**. Write and perform a **skit** of a re-enactment of that event. The performance must reflect knowledge of the actual event. Up to four people may be involved. The skit should last at least five minutes. You may want to videotape it for showing at the Open House. (K-4) **CL**

3. Make a display that will explain all **the phases of the moon**. (V-1)

4. Make a bulletin board display of the United States' development of **rockets, missiles, satellites**, and **space shuttles**. (V-2) **CL**

5. Construct **a list of nine questions** that you would ask **beings from another planet**. These should reflect careful thought as well as knowledge of space. (W-1)

Nine questions for beings from another planet . . .

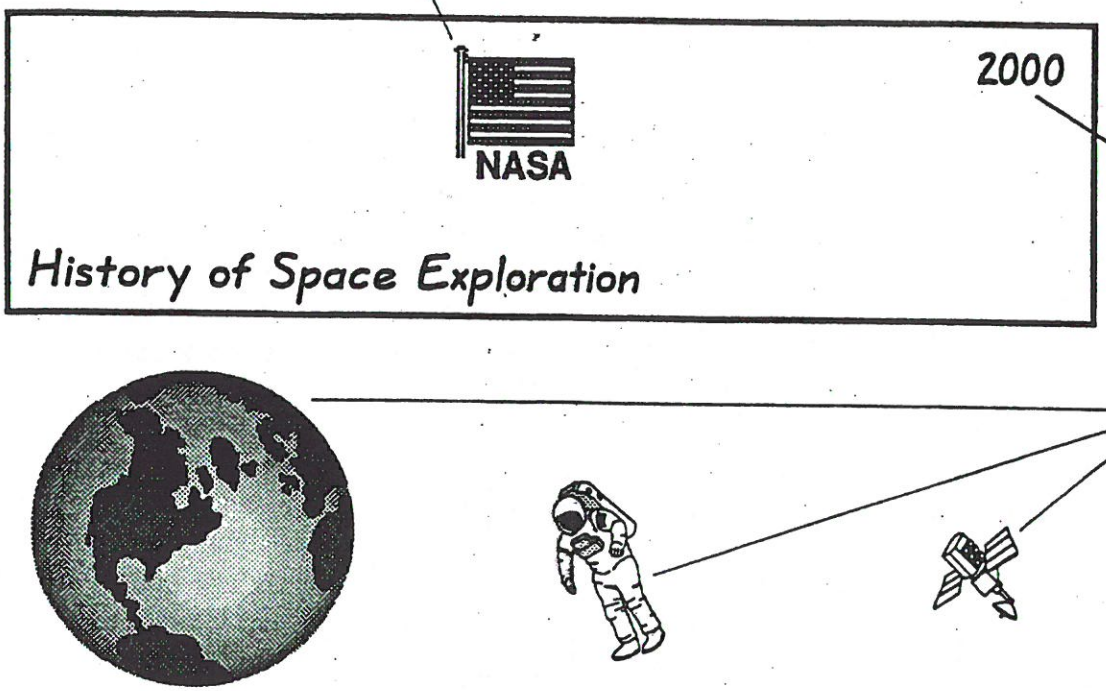
1. How . . . ?	4. Where . . . ?	7. ?
2. What . . . ?	5. Why . . . ?	8. ?
3. When . . . ?	6. ?	9. ?

6. Interview 10 people age 30 or older. Ask them what they c remember about the first satellite and the first moon landing. Write a **newspaper story.** (W-3)

Don't forget other nations' contributions (Russia and ?).

And what about great persons such as Galileo and Leonardo da Vinci ?

7. Draw an illustrated **time line** of the most significant events in the **history of space exploration.** Suggestion: use a long strip of paper (approximately 3 feet x 6 inches). Carefully letter and illustrate. Evaluation will be based on content, accuracy, and attractiveness. (V-3) **CL**

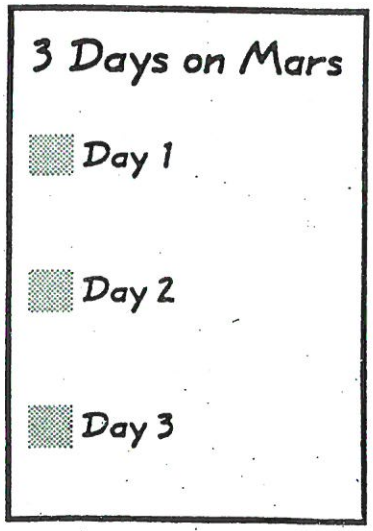


Put dates along the top. Which year will begin your TIME LINE?

Find illustrations in magazines or draw your own ...

Place objects and words under correct years ...

8. Plan a week's **menu** for **three astronauts** on a **trip to the moon.** Write a paragraph telling why you selected certain items. How would they eat in a weightless environment? How will the diet be different from the usual food needs? Will they need more or less calories? (W-3) **CL**



9. Design three **bumper stickers** advertising space travel. These should be actual size. Take care to incorporate artistic interest, information, and neatness. (V-1)

10. Imagine you are to be sent on a three-day **exploration trip** to the **moon** or **Mars.** Plan the trip. (What areas will you explore? Why there? What do you expect to find?) Prepare a map that will show the area you expect to explore. Prepare a schedule showing what you will do each day. Describe your transportation. Select the equipment you will need. (W-3) **CL**

11. You are in charge of selecting the **first school student** to travel **to outer space** with a team of astronauts. Prepare a one-page application blank for the job. (W-1)

TV 39
from Saturn

12. Prepare a **TV newscast from Mars** (or any other planet you select). Present to the class. This may involved up to three people and will last five minutes or longer. (O-3) **CL**

13. You must convince a reluctant friend to accompany you on a trip to another planet. Prepare and present a **skit** in which you convince the friend to go. As you develop the skit, make clear why the friend is scared and how you help him overcome his/her fear. The presentation must use information and facts, as well as persuasion. This skit involves two people and must take at least five minutes. It would be a good idea to videotape it for later showing at the Open House. (O-3) **CL**

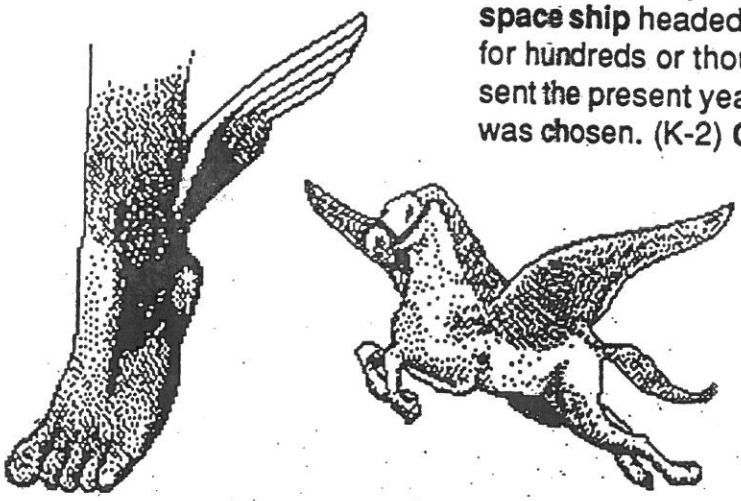
14. Produce a **newspaper from a planet** of your choice. Include news, ads, cartoons, weather, etc. All articles must convey reliable facts and information. (V-2) **CL**

15. Invent an international, interplanetary **code or language** which will be used by all kinds of civilizations. Include an **alphabet**. Prepare a colorful display for your class. (V-3) **CL**

16. Select one **planet**. Make a poster and brochure advertising it as an **ideal vacation spot**. (V-1)

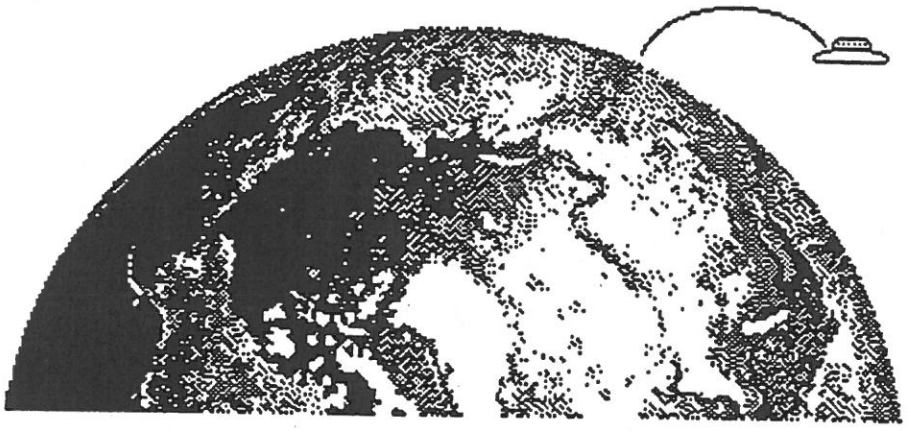
17. **Design a planet** that is part of another solar system. The planet is inhabited by living creatures who are more advanced than earthlings. Draw a map of the entire solar system and locate the new planet. Name it. Decide a) if it will have moon(s), b) what the surface will be like, c) if anything grows there, d) if it rotates, e) what the clothing, transportation, fuel, food, climate, language, history, and government are like, f) if it has advantages over Earth, g) what the customs and problems are. Describe and draw the inhabitants. (V-3)

18. Make **a time capsule** that you would place in an **unmanned space ship** headed far into outer space. The ship may travel for hundreds or thousands of years. Put in items that represent the present year and our culture. Explain why each item was chosen. (K-2) **CL**



19. Read several **myths** that relate to the **stars**. Retell your favorite one to the class and tell why you like it best. (O-1)

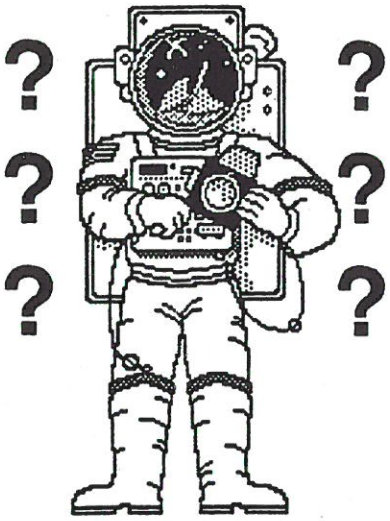
Predicting ... Evaluating ... Decision-Making ...



2. Some people are concerned that our Earth is running out of necessary natural resources. They feel that in the future we may be able to **mine neighboring planets** in order to supply the Earth's needs for disappearing resources.

Will we mine  **other planets?**

Research and write a report on the major issues we must consider before embarking on such an ambitious task. End by recommending a possible course of action and by making predictions about whether such mining will take place in the near future. (W-3) **CL**



Machine

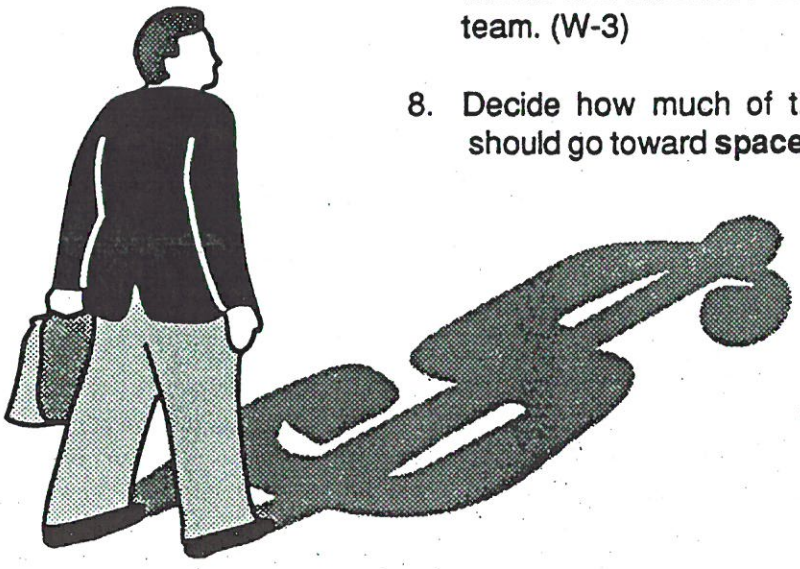
3. Prepare an oral presentation of how you believe **the space shuttle accident** on January 28, 1986, has and will continue to affect **the future of space exploration**. You will probably want to make a videotape or an audiotape for later showing at the Open House. (O-2)

4. With a partner, research and present a debate on this resolution: **Resolved: Future deep space exploration should be done by machines rather than human beings.** One of you should make the case for only machines going into deep outer space; the other should make the case for including human beings. Each person must develop very convincing arguments and work to persuade the audience with facts whenever possible. (O/K-3) **CL**

5. You have been assigned to a **one-year space trip** during which you will be allowed to take only **five books**. Select the books you will take. Briefly describe each book and discuss why you would include it as one of your precious five. (W/O-2)

6. When explorers came from other lands they brought beads, cloth, coins, etc. as **gifts or articles** of trade to the natives in America. What would you take **to trade** with the natives of other planets? What might they give you in return? Write about your choices, explaining why you would take certain things to trade. (W-2)

7. The director of NASA has selected you to lead the most adventurous space trip to date. You must choose **10 people** from Earth **to go with you**. Decide whom you will take. List your choices, and beside each name tell what qualities, talents and attributes each person has to contribute to your team. (W-3)



8. Decide how much of the **United States federal budget** should go toward **space exploration**. Use reference materials to find out how your decision compares to the current or recent budget of the United States. Prepare a budget request to submit for each of the next three years, and be able to argue it before Congress. (W-4) **CL**

The next 50 years . . .

9. The director of NASA has asked you to plan the future of United States space exploration for the next 50 years. Make a **time line** of your goals. Your time line should be attractive as well as clear in the information it presents. You might want to use a roll of butcher paper or make a long strip. Carefully print and color, perhaps adding drawings. (V-4) **CL**

10. The day may come when two or more countries of the planet Earth claim possession of one planet. Develop a set of **space laws** that would govern the claiming and settling of new territories on other planets. (W-3) **CL**

What laws would wise lawyers from two countries recommend ?