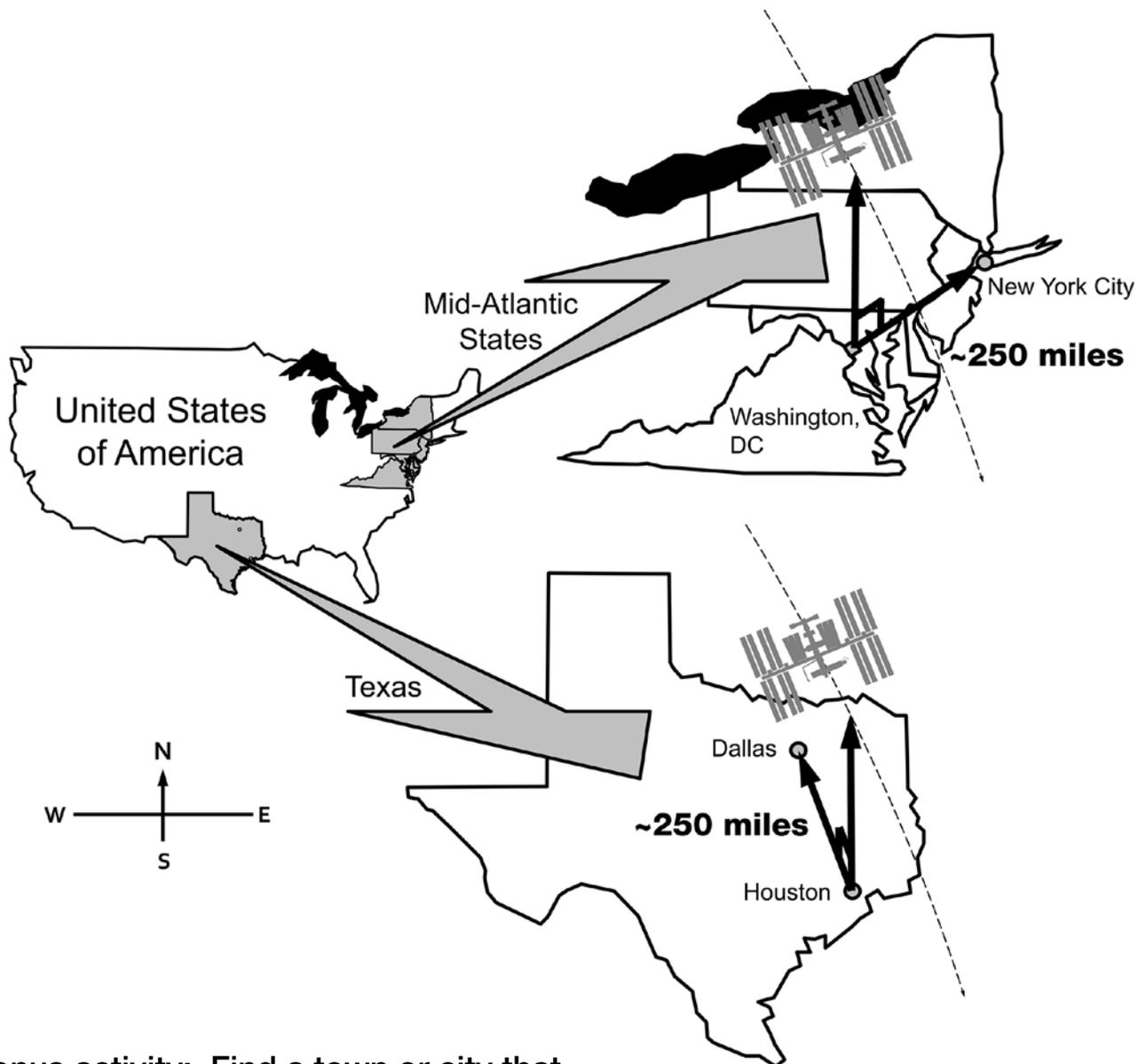


Where is the International Space Station?

Look up in the sky at special times and you will see the Space Station, brighter than the planet Venus, moving quickly overhead as it goes around the Earth. When it's right above you, the Space Station is almost as far away from you as Dallas is from Houston – or Washington, DC is from New York City (about 250 miles), only straight up!

You can find out when the Space Station will be flying over you at: Spot the Station (<http://spotthestation.nasa.gov>).



Bonus activity: Find a town or city that is about 250 miles from where you live... Now imagine flying that high up...!

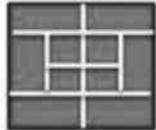
Did You Know...?

Let's learn some fun facts about the International Space Station!

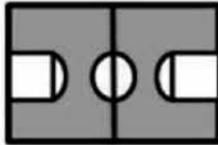
The International Space Station is as large as:
Circle the correct answer.



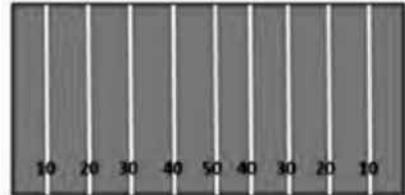
Playground



Tennis Court



Basketball Court



Football Field

How fast does the International Space Station orbit Earth?
Circle the correct answer.



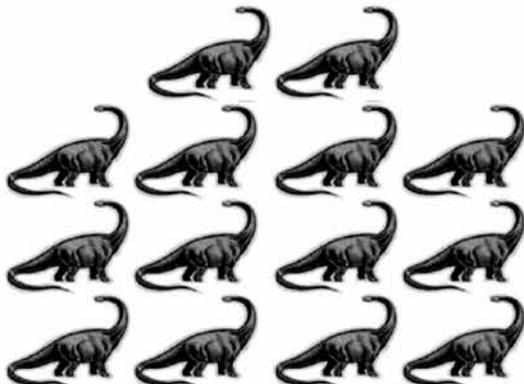
How heavy is the International Space Station?
Circle the correct answer.



2½ blue whales



6 Space Shuttles



14 apatosauruses



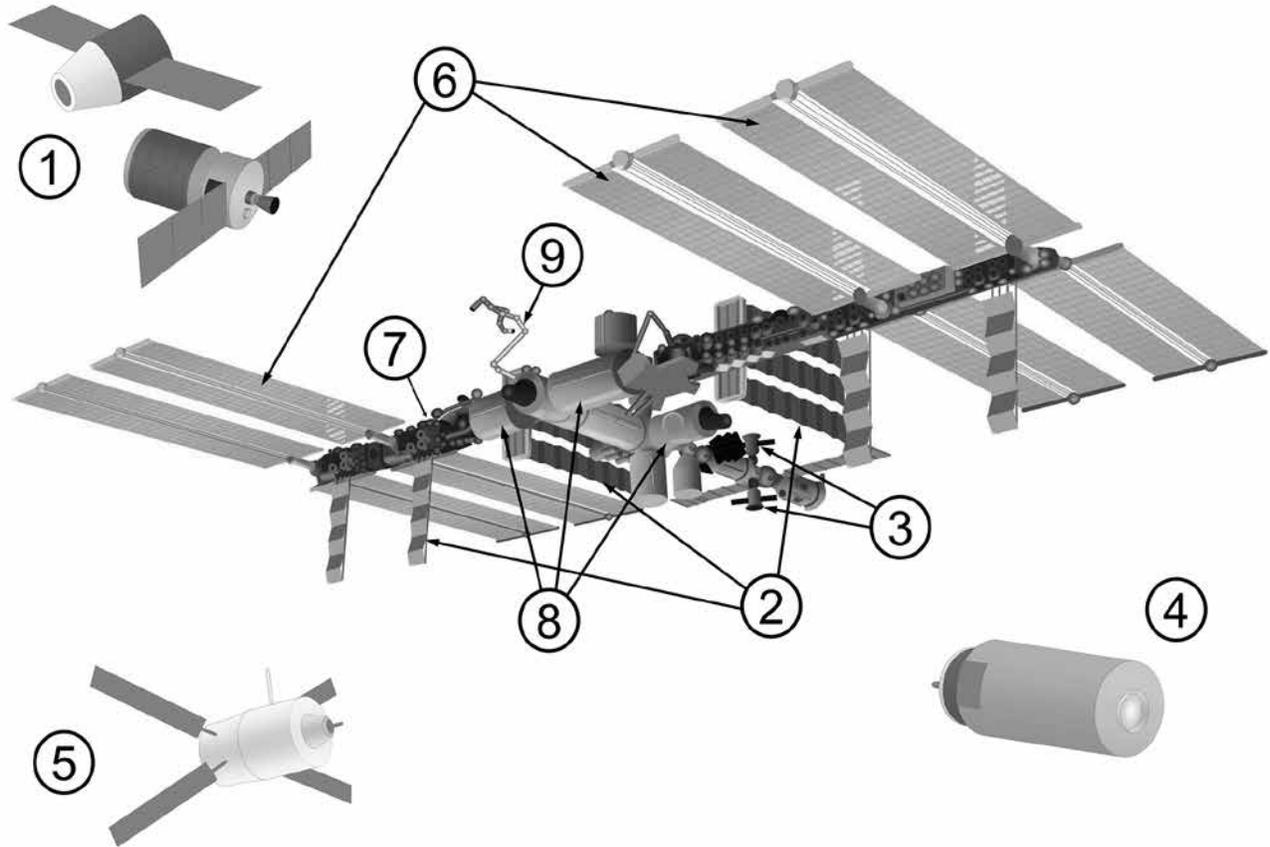
40 school buses

(Answers on page 32)

International Space Station Parts

Let's learn some of the main parts of the International Space Station!

Match each numbered part with its correct description:



Write the part numbers in the blanks below, next to their descriptions:

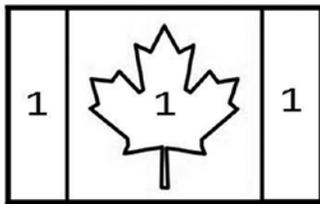
- _____ **Solar arrays** (8 pairs) make electricity from sunlight and store it in batteries
- _____ **Truss** (big beam) holds solar arrays, radiators, and often the big robotic arm
- _____ **Radiators** get rid of heat from solar arrays and modules to keep things cool
- _____ Canada's big **robotic arm** moves people, parts and even spacecraft around
- _____ **Modules** (big soup can shaped parts) are where the astronauts live and work
- _____ **Soyuz** and **Progress** (Russian spacecraft) bring people, supplies and fuel
- _____ **ATV** (European spacecraft) is designed to bring supplies and fuel
- _____ **HTV** (Japanese spacecraft) is designed to bring supplies and spare parts
- _____ **Dragon, Cygnus** (American spacecraft) designed to bring people, parts, and/or supplies

(Answers on page 32)

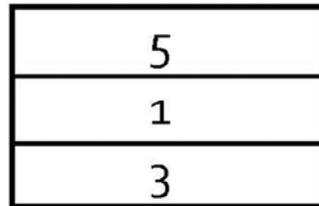
International Space Station Partners

Let's learn who designed and built the International Space Station!

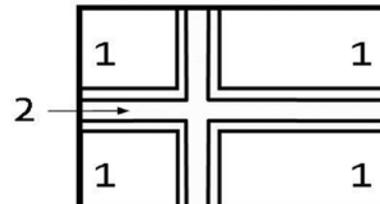
Color the flag of every country that helped build and supply the Space Station, using the color-by-number key below:



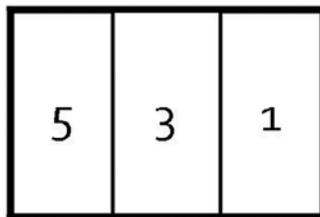
Canada



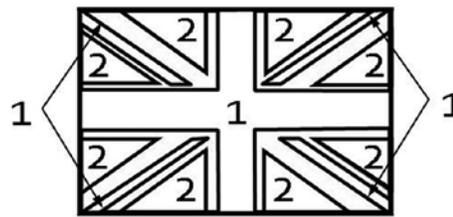
Germany



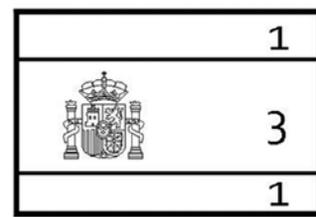
Norway



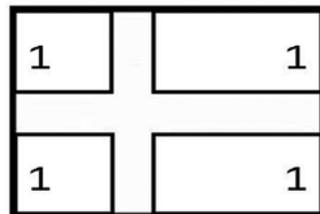
Belgium



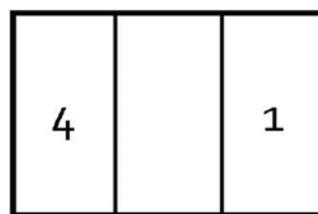
Great Britain



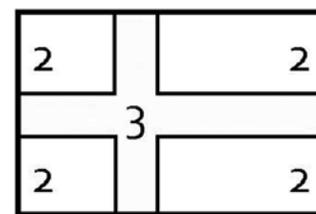
Spain



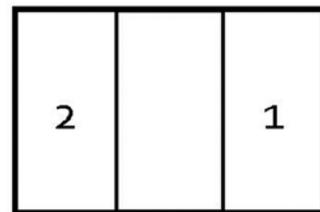
Denmark



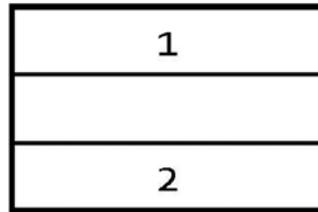
Italy



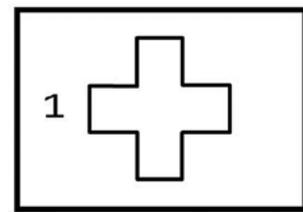
Sweden



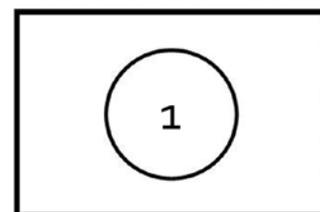
France



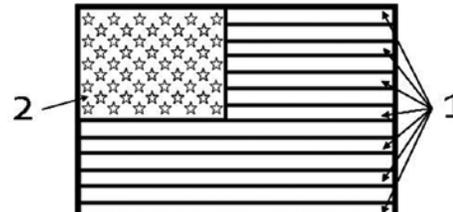
Netherlands



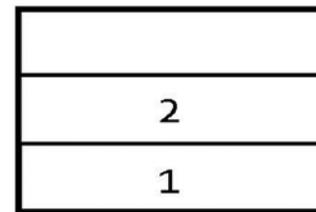
Switzerland



Japan



United States



Russia

Color Key: 1 = red 2 = blue 3 = yellow 4 = green 5 = black

Space Symbols and Agency Acronyms

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

October 1, 2018 marks NASA's 60th anniversary!

The States of NASA

- 1) California
- 2) Texas
- 3) Mississippi
- 4) Alabama
- 5) Florida
- 6) Ohio
- 7) Virginia
- 8) Maryland
- 9) Louisiana

Bonus: District of Columbia

Did You Know...?

The International Space Station is as large as:
Circle the correct answer.

Playground Tennis Court Basketball Court Football Field

How fast does the International Space Station orbit Earth?
Circle the correct answer.

SPEED LIMIT 110 MPH SPEED LIMIT 1550 MPH SPEED LIMIT 12950 MPH SPEED LIMIT 17500 MPH

How heavy is the International Space Station?
Circle the correct answer.

2½ blue whales 6 Space Shuttles
14 apatosauruses 40 school buses

Note: All four answers to the last question are true!

International Space Station Parts

- 6 **Solar arrays** (8 pairs) make electricity from sunlight and store it in batteries
- 7 **Truss** (big beam) holds solar arrays, radiators, and often the big robotic arm
- 2 **Radiators** get rid of heat from solar arrays and modules to keep things cool
- 9 Canada's big **robotic arm** moves people, parts and even spacecraft around
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- 3 **Soyuz** and **Progress** (Russian spacecraft) bring people, supplies and fuel
- 5 **ATV** (European spacecraft) is designed to bring supplies and fuel
- 4 **HTV** (Japanese spacecraft) is designed to bring supplies and spare parts
- 1 **Dragon, Cygnus** (American spacecraft); designed to bring people, parts, and/or supplies

What is it Like to Build an International Space Station?

What were some special challenges faced by the people who designed and built the International Space Station?

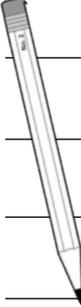
Pick a country you've never visited: _____

Do people there speak your language? Yes ____ No ____

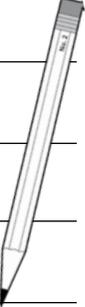
Do you speak theirs? Yes ____ No ____

Now pretend you have to work with someone from that country to design a new spaceship...

What will be fun about your new job?

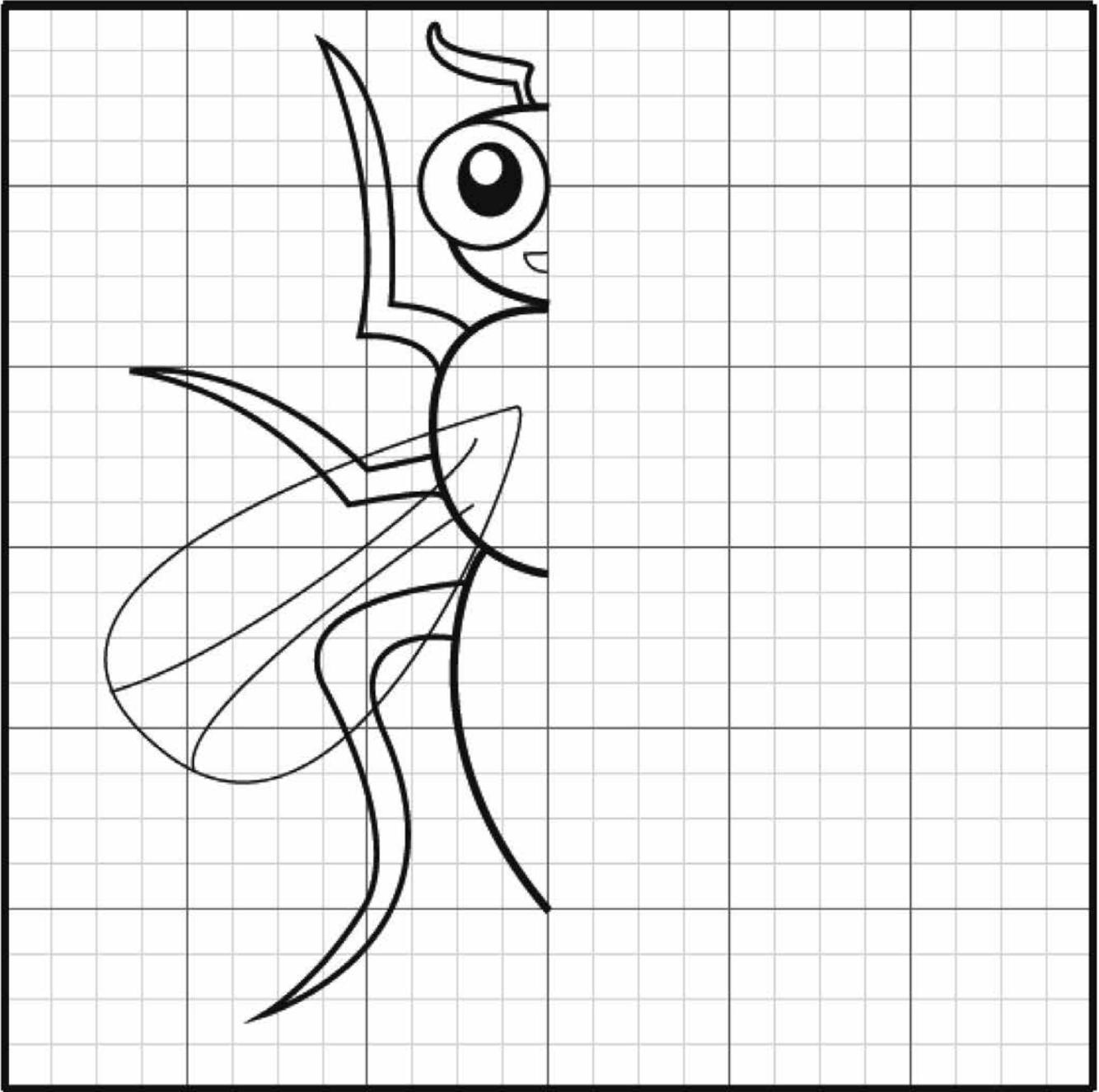


What might be hard about your new job?



Fruit Fly Observations

Here's your chance to be a NASA scientist! Below is half of a simple fruit fly blueprint. Your mission is to complete the other half of the image by drawing the mirror of the image present on the grid.



Hint: Count the number of blocks in the grid to make sure your dimensions are correct.

Mission Patch Meanings

Missions, or trips to the Space Station, usually have a patch designed for them that can be worn on shirts, hats, etc., to show the pride that the people involved with them feel in the important work they are doing to improve life on Earth and make it possible to explore space. Check out the sample mission patch below and the meaning of its parts, then think of a mission you would like to work on, choose a name for your mission, and design your very own mission patch for it!

Mission name:
Fruit Fly Lab 01



Mission patch parts or symbols:



Meaning of patch symbols:

Earth, as seen from orbit

The DNA molecule, building-block for all known life forms

The mission acronym (first letter of each word in its name)

The fruit fly – the focus of the mission's experiments

The Space Station, where fruit fly experiments will be done

Draw your mission's patch here – it can be any shape you like!

Your mission's name:

What the symbols in your patch mean:

Mission Badges Examples

For every space flight, the astronaut crew designs their own mission patch. Included in the patch design are various elements describing the different phases of that particular mission. The names of the crew are usually included into the design, as is the name of the space vehicle and its mission number.

What goes onto your mission badge?

- *Names of the crew (HBS 5th Grade, teacher name or a few students)*
- *Space vehicle*
- *Mission number - sometimes*
- *Mission goal*



Challenger mission STS 51-L

Names of astronauts

Space vehicle – Space Shuttle

Mission goal – observe Haley's Comet and a teacher who would teach from space (the apple)