

# ACTIVITY 15

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## ROCKETS BY SIZE

### Objective

Students sequence objects from shortest to tallest and tallest to shortest.

### Standards

Mathematics, Language Arts

### Materials

- Rocket sequence sheet (Figure 16, page 85), 1 per student
- Crayons, markers, or pencils
- Scissors
- Paper, 1 sheet per student
- Glue or glue sticks
- 1 rocket sequence sheet (Figure 16, page 85), colored and cut out
- Journal or sheet of paper, 1 per student
- Drawings of Proton (Figure 4, page 76) and Soyuz (Figure 5, page 77), colored
- Drawing of space shuttle (Figure 3, page 75), colored
- Pictures of different types of rockets
- Objects in the classroom to put in order by height

### Educator Information

- Read the information on the International Space Station and rockets. Be prepared to share the information on different types of rockets with students.
- Gather pictures of different types of rockets. Laminate for future use.
- Copy and color drawings of rockets and the space shuttle. Laminate for future use.
- Color and cut out one rocket sequence sheet. Be prepared to demonstrate the lesson to students. Laminate for future use.
- Find objects in the room to put in order by height.

### Procedure

1. Show students the pictures and drawings of rockets. Ask students to compare and contrast the rockets. Remind students that rockets come in different sizes.
2. People also come in different sizes. Have five students in the room stand up and come forward. Tell the class that the selected students should line up in order from shortest to tallest. Let the class choose how to place the students in the correct order. Remember



to model sequencing from left to right. Have the class check the order to see if it is correct. Remind them to use comparison words, such as *shorter*, *shortest*, *taller*, and *tallest*.

3. Tell the class that the students now must line up from tallest to shortest. Repeat the procedure.
4. Choose objects in the room and put them in order by height.
5. Show students the rocket sequence sheet. Explain that these rockets must be placed in the correct order. Demonstrate how to sequence the rockets from shortest to tallest then tallest to shortest.
6. Remind students that it is important that the rockets share a common base to ensure they are in the right order. Do a demonstration to show that placement of rockets on the same line or base is important. A line on the chalkboard or the edge of a piece of paper will help students see the importance of a common base.
7. Distribute the rocket sequence sheet and a sheet of paper to students. Have them color and cut out the individual rockets.
8. Let students practice sequencing the rockets from shortest to tallest and tallest to shortest. Suggest that they use the edge of the paper as a baseline for the rockets. Monitor their work. Check that they sequence from left to right and that they use a common base for their rockets. If students have difficulty sequencing from left to right, place a mark on the left side of the paper to remind them where to start.
9. After students have practiced correctly sequencing the rockets, let them glue the rockets to the paper in order from shortest to tallest.

## Assessment

- Observe students as they sequence the rockets.
- Have students draw the rockets in order in a journal or on a sheet of paper. Remind them to use a baseline and to sequence from left to right. Have students or the educator write a student-generated sentence about the drawing or orally describe the drawing using comparison words. For example, *the green rocket is the shortest*.

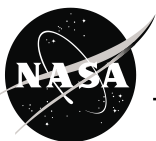
## Enrichment

- Sequence objects in the room from shortest to tallest and tallest to shortest. For example, students put counting rods, rows of interlocking cubes, plastic links, toys, and pencils in the correct order. Remind them to use a baseline and to sequence from left to right. A piece of paper tape on the floor or the edge of a table can serve as a common base.
- Use the rockets on the sequence sheet to play a game using position and comparison words. The educator directs students to place a selected rocket in a certain position on the table or on their body. For example: *Put the tallest rocket under your chin. Put the shortest rocket over your head. Put the tallest rocket behind your back.*
- Ask students to take one rocket from the sequence sheet at a time and find an object in the room the same height as the rocket. Begin with the shortest rocket. Develop a graph to record the objects they find. Use a long piece of paper and draw lines, dividing it into five sections. Glue a rocket pattern in each section. Make sure the patterns are in order, shortest to tallest. Have students tell what objects they found that were the same height as their rocket. Write the names of objects in



the correct column. Compare and contrast the objects they found. Repeat the procedure until students have found objects the same height as each rocket.

- Use a rocket from the sequence sheet for students to practice using the words, *taller* and *shorter*. Have students select a rocket and find an object in the room that is taller than the rocket. Repeat and find an object shorter than the same rocket. Repeat the procedure using different-sized rockets.
- Use a rocket from the sequence sheet as a nonstandard measurement tool. Select a rocket to measure objects or people in the room. For example: *The table is 7 rockets long. The cabinet is 5 rockets high.* Remind students to practice saying the unit of measurement. Encourage students to develop a method to collect this data. In a journal or on a sheet of paper, students write the word or draw a picture of the object and record the measurement. Repeat the procedure using different-sized rockets.
- Challenge two students to measure the same object with two different-sized rockets. Have them share their measurements with the class. For example: *Jill measured the table, and it was 6 rockets long. Sam measured the table, and it was 10 rockets long.* Ask the class if one of the students measured incorrectly. Ask the students to measure again using the same rocket patterns. The answers will be the same. Ask the class to figure out why there are different answers. The measuring tools were different lengths. One was shorter than the other. Explain that it is always important to use a consistent unit of measurement.
- From the *Suggested Reading* list or other sources, select books that show rockets that are different sizes. Selections could include *Space Vehicles* by Jon Richards or *Rockets and Spaceships* by Karen Wallace. Share the books and pictures with the students. Encourage students to use comparison words to describe the rockets in the books.



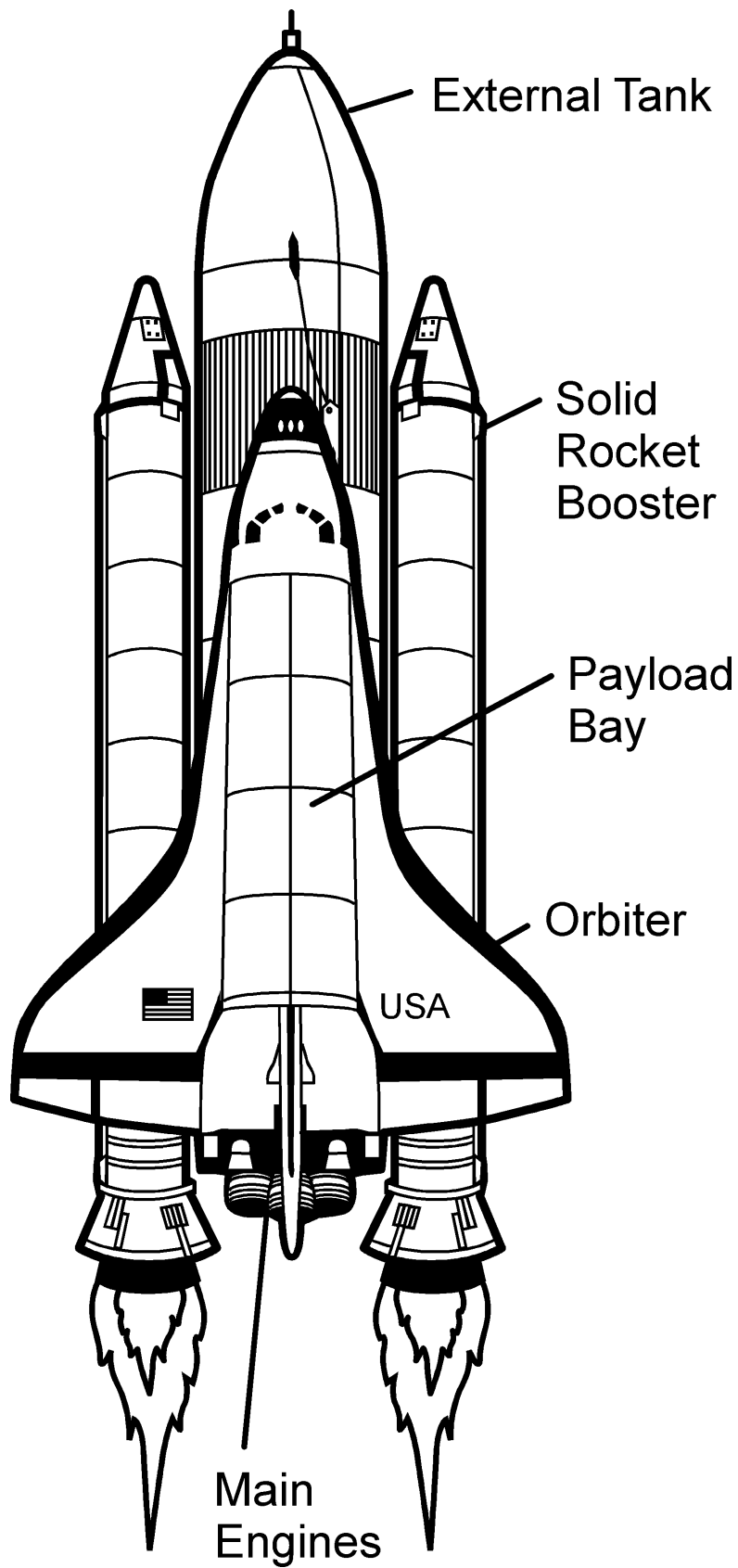


Figure 3. Parts of the Space Shuttle

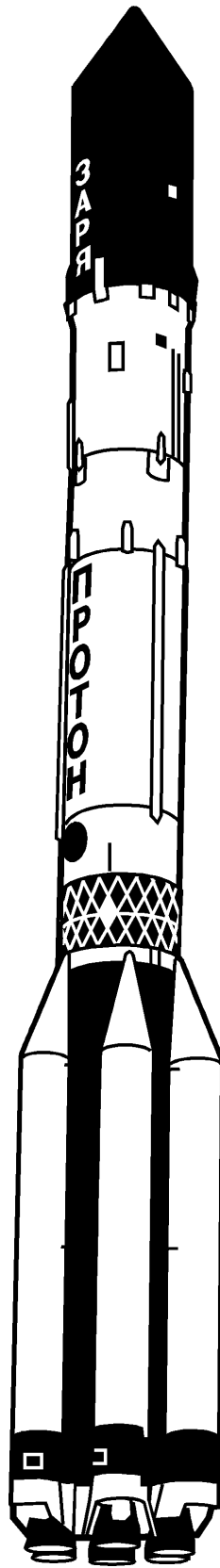
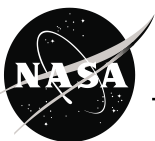


Figure 4. Proton Rocket



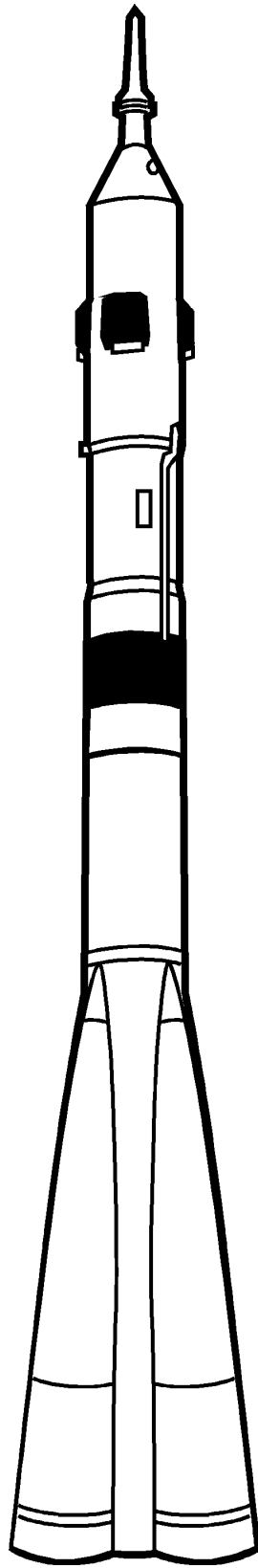
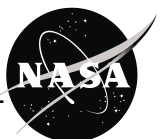


Figure 5. Soyuz Rocket



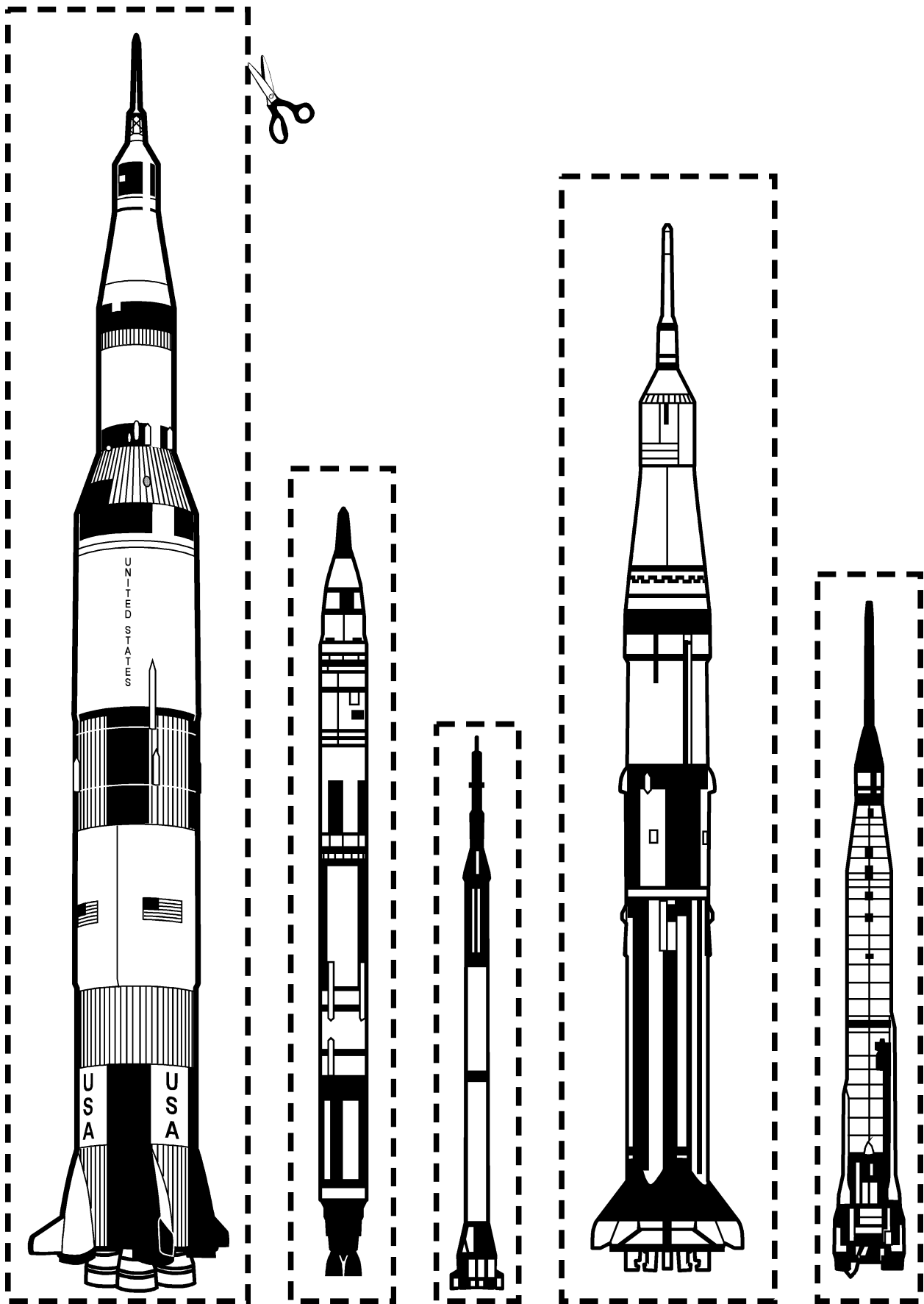


Figure 16. Rockets Sequence

