

ACTIVITY 9

ROCKET CONSTRUCTION

Objective

Students build rockets out of wooden blocks and use comparison words to describe the height relationships.

Standards

Mathematics, Technology, Language Arts

Materials

- Wooden blocks
- Die with numerals 1 to 6 or corresponding number of dots
- Drawings of Proton (Figure 4, page 76) and Soyuz (Figure 5, page 77), colored
- Drawing of space shuttle (Figure 3, page 75), colored
- Photographs of different types of rockets

Educator Information

- This activity may work best in a small group environment.
- The educator may wish to limit the size and number of blocks used in this activity.

- To avoid accidents, the teacher may wish to limit the height of the rockets. For example, a rocket can only be as tall as the table, the bookcase, or a student.
- Review information on different types of rockets. Be prepared to share this information with students.
- Copy and color drawings of Russian rockets and the space shuttle. Laminate drawings and pictures for future use.

Procedure

1. Show students pictures, photographs, and drawings of different types of rockets. Tell students that rockets are different shapes and sizes. Show students drawings of the Russian Proton and Soyuz rockets and the American space shuttle.
2. Tell students that several types of rockets carry supplies, people, and parts to the space station. Ask them to compare and contrast the drawings. Look at the rocket pictures and discuss similarities and differences in rocket design. Remind students that rockets do not all look the same and are not all the same size or shape.



Enrichment

3. In small groups, have students use wooden blocks to create their own rockets. Allow students to independently explore building rockets out of wooden blocks.
 4. Add a die to the block area in the classroom. Tell students that they must roll the die to determine the number of blocks they will use to build a rocket. Each student will roll the die three times and build three rockets. For example, a student rolls a six, and uses six blocks to build a rocket. Make sure that the rockets have the same base, such as a table or the floor, to be sure that comparisons will be accurate.
 5. Direct students to roll the die three times. Each time students roll the die, they build a rocket with the appropriate number of blocks. Leave the rocket standing after each roll. The student should have three rockets standing after three rolls.
 6. Compare the rockets' height using comparison words, such as *taller* and *shorter*, and *tallest* and *shortest*. Introduce or review the word, *equal*. Have students place the block rockets in order from tallest to shortest, and shortest to tallest.
 7. Challenge students to evaluate the way the blocks are stacked or placed. Blocks stacked the "tall way" rather than the "long way" may change the height of the rocket.
- Have students build three rockets of different heights out of blocks. Label the rockets 1, 2, and 3. Have students compare the heights of the rockets and use good reasoning skills. For example, *if rocket 1 is taller than rocket 3, and rocket 2 is shorter than rocket 3, then rocket 2 must be shorter than rocket 1*. Encourage students to look at other possible comparisons using rockets of varying heights.
 - Two students build individual rockets using the same die roll. Ask them to compare the heights of the rockets. Decide if the rockets are equal in height. Have students evaluate the way blocks are placed and decide if the rocket height changes if blocks are stacked a different way. Use comparison words to describe the heights of the rockets. Increase the number of blocks used in the activity by using a pair of dice instead of one die.
 - To practice numeral or number word recognition, repeat this activity with students selecting cards with number words or by using a spinner with numerals.
 - Select an object in the room. Compare the height of a block rocket to the height of the object. Use comparison words. Ask students to build a rocket *taller*, *shorter*, or *equal* to the height of this object.
 - Use nonstandard measurement tools, such as interlocking cubes or plastic links, to measure the height of the rockets built out of blocks.
 - Introduce or review the concept of *symmetry*. Ask students to examine their block rockets. Decide whether the rockets have *symmetry*. Look for other symmetrical objects in the room. Ask students to build a symmetrical rocket.
 - Have students use different materials to construct rockets. Students could construct rockets out of cardboard tubes and scrap

Assessment

- Listen and evaluate students as they use comparison words to describe their rockets. Observe students as they place rockets in order by height.
- Students draw the rockets they built. Observe students to see if the depiction of rocket heights is correct. Students or educators write a student-generated sentence to describe the drawing.



paper. Use scraps of wood and glue to create rockets. Use small cardboard boxes for individual rockets. Use large cardboard boxes to create a child-sized rocket for the classroom. Encourage students to use comparison words to describe the rockets.

- Find and read books to the class on building rockets. Examples from the *Suggested Reading* list may include *Ritchie's Rocket* by Joan Anderson, *Mooncake* by Frank Asch, or *Rocket* by Mike Inkpen. Have students compare and contrast the rockets they built with the rockets built in the books.



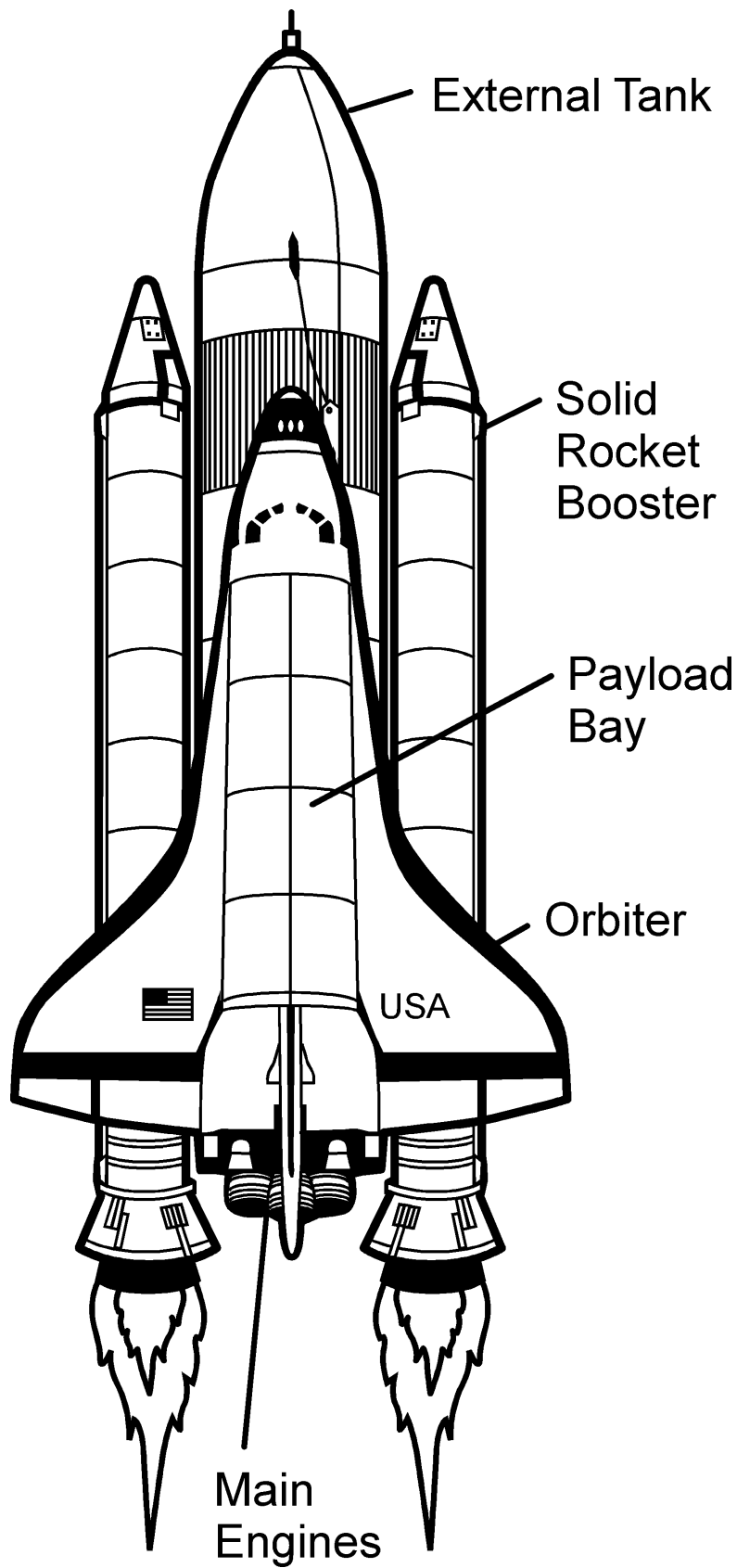


Figure 3. Parts of the Space Shuttle

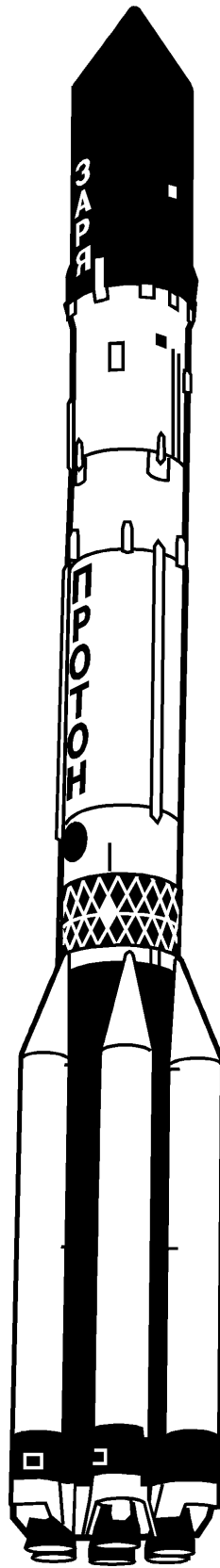


Figure 4. Proton Rocket

