Build A Space Station

Postvisit Activity for Space Exploration

Courtesy NASA

Grades K–3

CDE Standards

Science: 4.4e

Preparation and Materials
Estimated Preparation Time: 45 minutes
Estimated Activity Time: Three or more time periods of 30 minutes each

Materials
Several copies of module boxes for each student
Glue (tacky glue works best, but white glue will do)
Scissors
Ruler
Pencils
Colored pencils, crayons, or markers
White or colored card stock

Learning Goals/Objectives
Students will

- List the important components necessary to sustain life in space
- Design a working space station
- Build a space station model from paper boxes

Connection to *Space Odyssey*
Space exploration would not be complete without mention of the International Space Station. In the *Space Odyssey* exhibition, visitors can witness the *Living in Space* play where they will learn about the conditions of living and working in an orbiting space station. At the conclusion of the play, the actors will share many space artifacts from our Living in Space touch cart with visitors. Visitors may also wish to view our storytelling program, *International Space Station*, on the Big Screen.

Advanced Preparation

1. Make copies of the space station components on white or colored card stock for each student in your class. Though the template looks the same for each component, students will design each component for their space station so that it looks different from other students'.
2. Build one "model" of each component to show the students in your class what they will look like when completed.
3. Collect books about space stations to share with your class.

Classroom Activity

1. Read *International Space Station* by Franklin Branley or another book about space stations. This will give your students the background knowledge to discuss and list necessary components of a space station.
2. Work together (or in small groups for older students) to create a list of the necessary components of a space station. Some examples of important modules would include a habitation module, experiment module, recycling module, life-support module, and service module.
3. Instruct your students that they will be building their own space stations. After showing the students what the finished components will look like, have the students draw a rough sketch of what their space station model will look like and where each module of their space station will be located.
4. Teach the students how to build the module boxes, truss, and module connectors. The instructions for building them are on each copy.
5. When students have finished their plans, give them the materials necessary to build their space stations. They will need to design the outside of their component boxes on their own. Remind them that each box needs to be clearly labeled ("recycling module," "habitation module," "research module," and so on). Students' space stations should look similar to their space station plans.

Variations/Extensions

1. Younger students can create a "kid-size" space station using large boxes such as refrigerator and stove boxes. These boxes are often available at appliance stores, though auto parts stores often get large boxes as well. Students may use this space station for plays, skits, and active play.
2. Display your class space station models for parents and other students to see.

Resources

Branley, Franklin. *International Space Station*. New York: Harper Collins, 2000.

K–8 resource

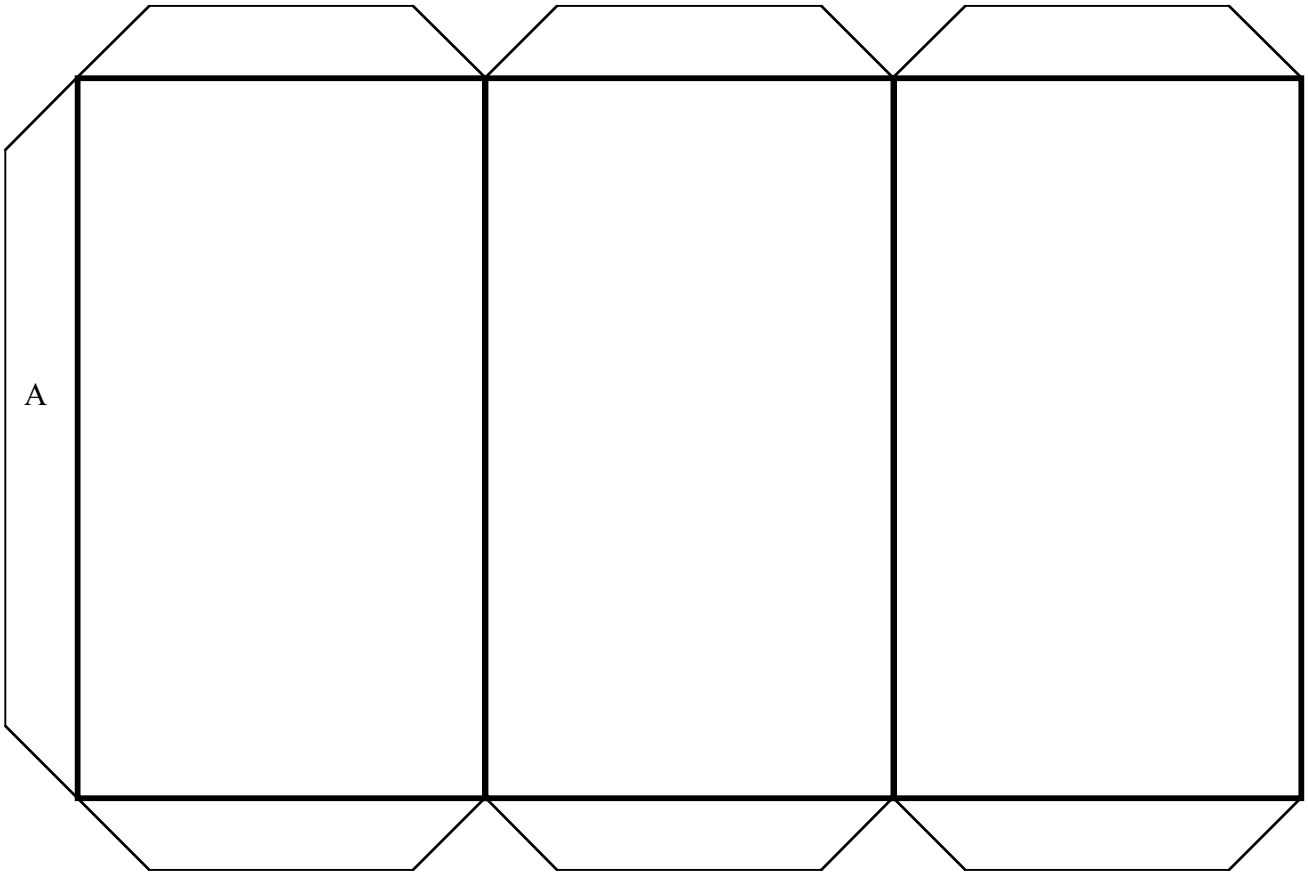
International Space Station is a beautifully illustrated book about the building of the International Space Station (ISS). It describes the

many components of the ISS, as well as their functions, and describes the many challenges of living in space.

Davis, Amanda. *Space Stations: Living and Working in Space*. New York: Rosen Publishing Group, 1997.

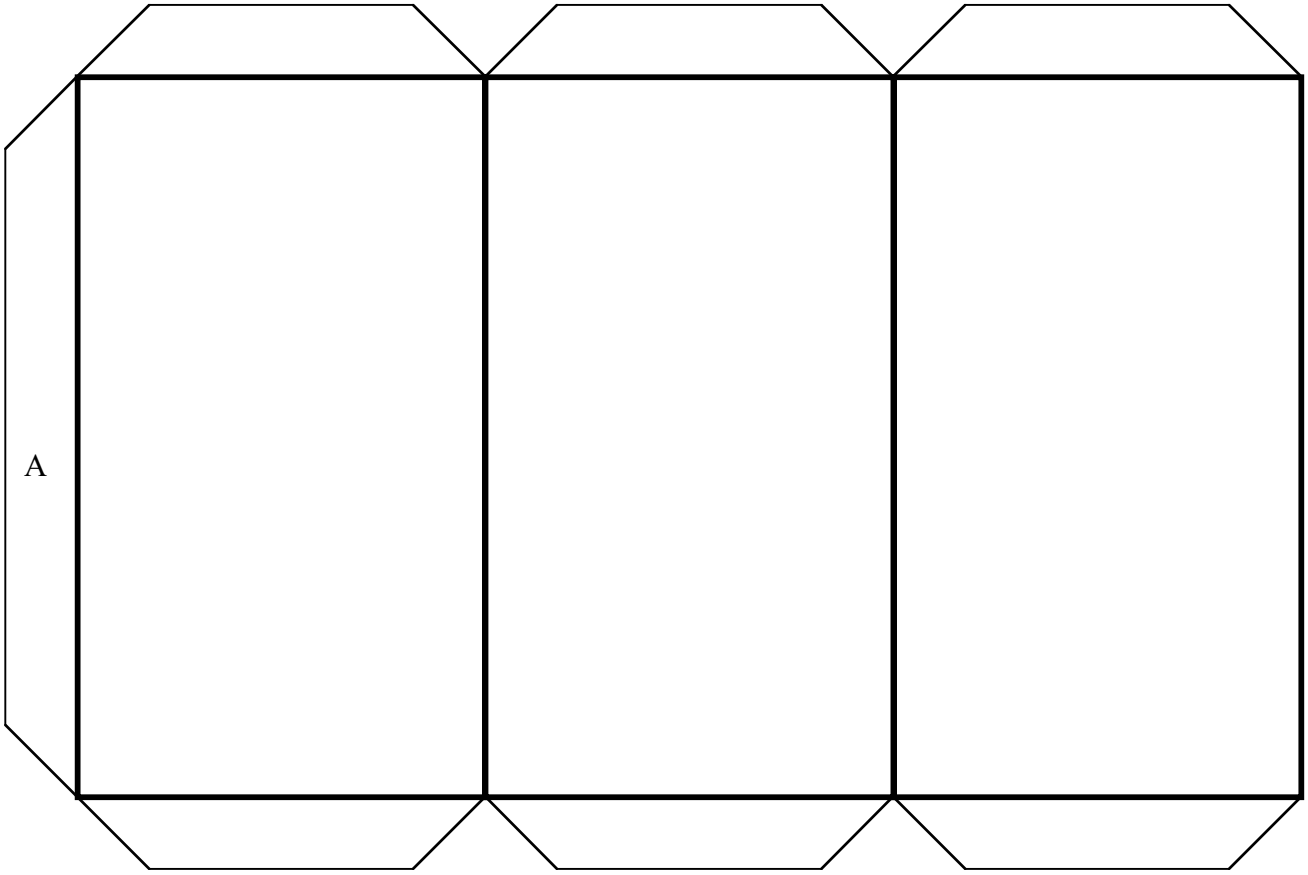
Dyson, Marianne. *Space Station Science*. New York: Scholastic, 1999.
K–12 Resource
Not only does this book provide information about space stations and living in space, it also presents several excellent experiments for students of all ages to simulate conditions of living in space. An outstanding resource for teachers!

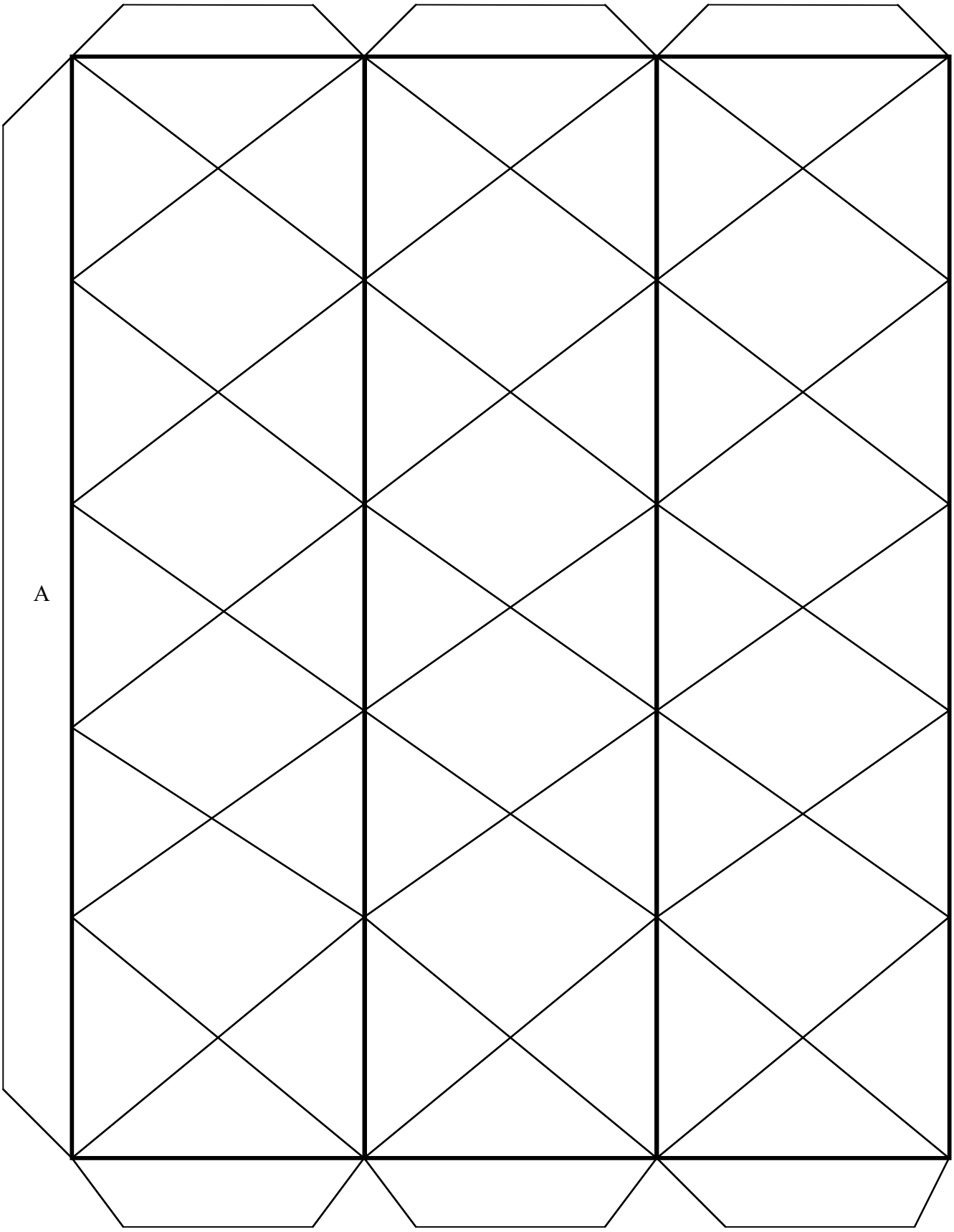
Gallant, Roy. *Space Stations*. New York: Benchmark Books, 2001.
K–6 Resource
Space Stations is a great resources for learning about space station science. It describes the building and future plans for the International Space Station, as well as historical space stations. Information about living and working on a space station is also included.



Module Connector – Directions for Construction

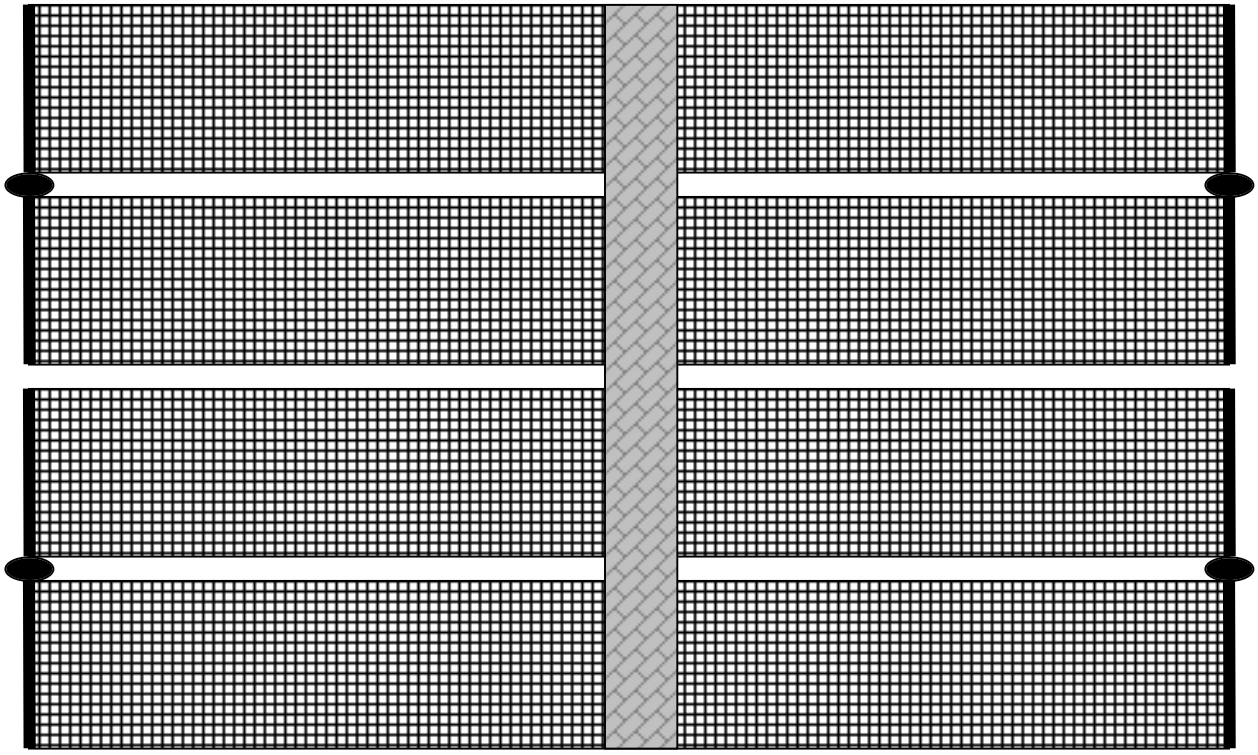
Follow directions for construction of truss.





Truss – Directions for Construction

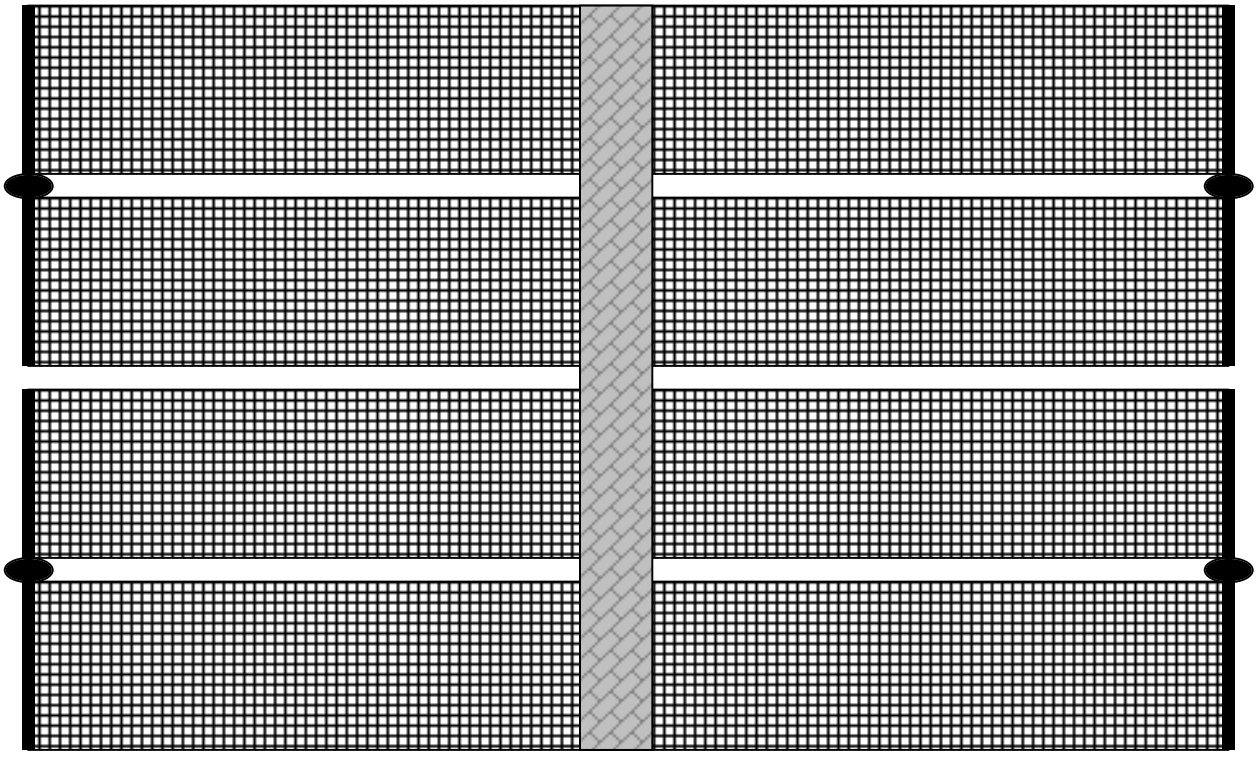
1. Cut around the outside of the figure.
2. Score dark lines with scissors and a ruler.
3. Fold to make a triangular shape.
4. Glue tab A to close the triangular shape.
5. Use remaining glue tabs to adhere to space station modules.



Solar Panels

Directions for Construction:

1. Cut around the outside edge **only** of the solar panel.
2. Glue the solar panels on your space station.



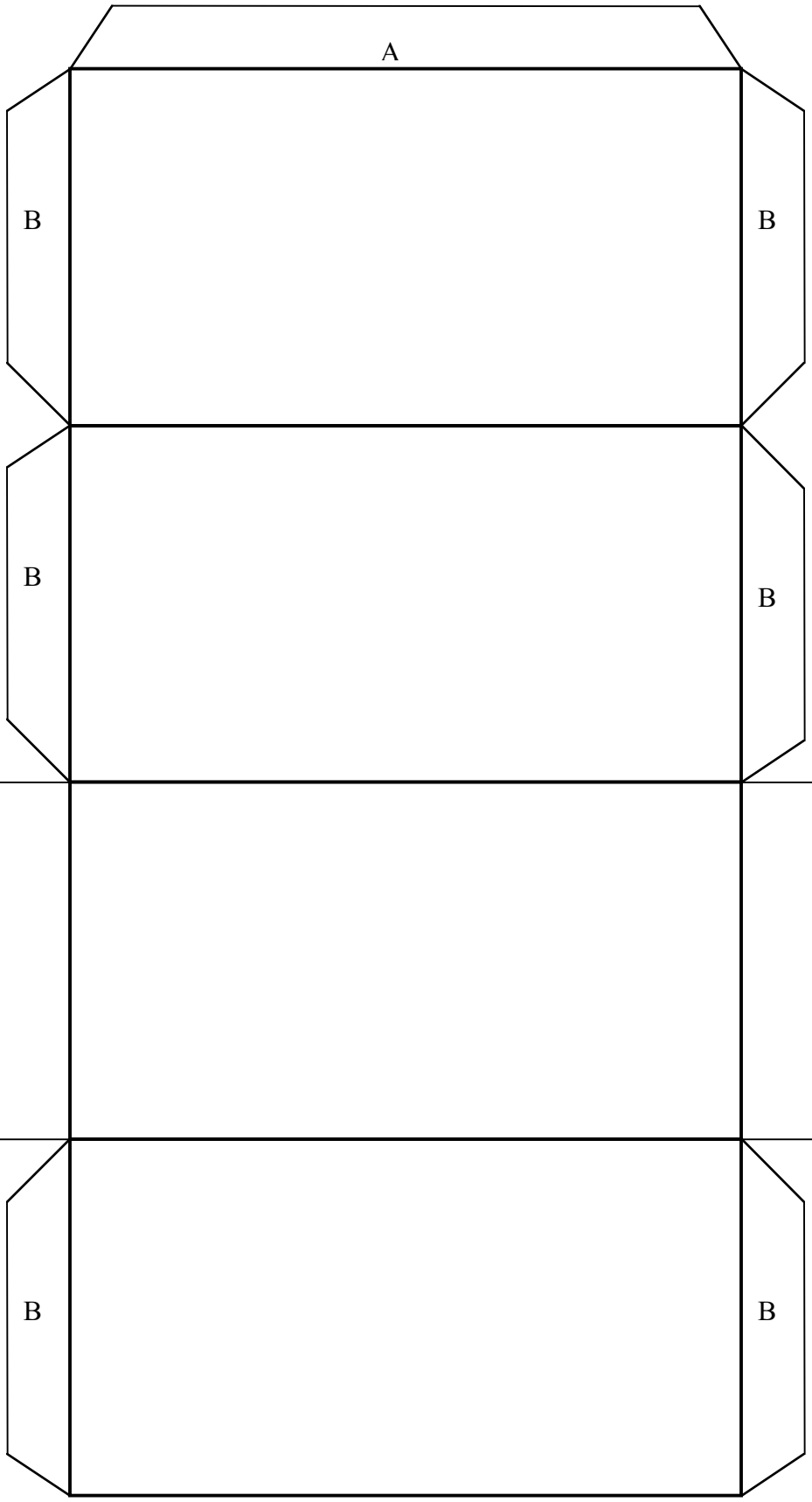
Module Boxes
Directions for Construction:

1. Cut around outer edge of the figure.

2. Using a pair of scissors and a ruler, score each of the darker lines in the figure.

3. Fold along each of the scored lines.

4. Rub white glue on the entire surface of glue tab A. Fold the paper so that it makes a rectangular box. Glue the box together so that glue tab A is on the inside of the box.



Module Boxes
Directions for Construction
(continued)

5. Fold the all of the B glue tabs toward the inside of the box. Rub white glue on each of the tabs, and then fold the remaining squares over the glued tabs to close the box.