



Zoon Balloon Kit

User Guide

PITSCO
EDUCATION

59110 V0912

Cautionary & Warning Statements

- This kit is designed and intended for educational purposes only.
- Use only under the direct supervision of an adult who has read and understood the instructions provided in this user guide.
- Read warnings on packaging and in manual carefully.
- Always exercise caution when using sharp tools.

Facts About the Zoon Balloon

- Hot-air balloons, which use propane gas for fuel, are approximately 55 feet in diameter by 70 feet high (or as tall as a seven-story building). If filled with water, it would hold approximately 600,000 gallons!
- The Zoon Balloon is a small hot-air balloon constructed of tissue paper and uses hot air for its fuel.
- The hot air in real hot-air balloons comes from burners fueled by propane. Heat for the Zoon Balloon, however, will come from the Pitsco Indoor Balloon Tester or the Pitsco Inflation Station Launcher.

Balloon Terms

- altitude – the height above the ground
- buoyancy – the tendency of an object to float or rise when submerged in a fluid (the hot air inside the Zoon Balloon floats on the cold air outside due to the principle of buoyancy)
- gore – one panel of the Zoon Balloon
- temperature differential – the difference in temperatures between two locations, such as inside and outside the balloon
- template – a pattern or mold used as a guide to form something

Materials Included

- Six 20" x 30" tissue paper sheets
- Glue stick
- 3 paper clips
- Four 8-1/2" x 11" gore pattern sheets
- Zoon Balloon Mouth Pattern

Items Required (not included)

- Scissors
- Stapler
- Ruler

Constructing a Zoon Balloon

1. Locate the tissue paper and glue stick. Lay one piece of tissue paper on a flat surface and make a line of glue a half-inch wide along the edge of one of its 30" sides.
2. Take another piece of tissue paper of the same color and overlap the line of glue with one of its 30" sides. Be sure to press firmly to seal the papers together – avoid gaps where air might escape. You have made a large sheet (30" x 39-1/2") of tissue paper. Lay this sheet aside for now.

- Repeat Steps 1-2 to produce two more large sheets of tissue paper.
- Stack all three large sheets neatly on top of one another. Fold the sheets lengthwise to create a rectangle measuring 15" x 39-1/2". While folding, carefully line up the corners and sides (Figure 1-1). Fold the sheets lengthwise again to create a rectangle measuring 7-1/2" x 39-1/2" (Figure 1-2).

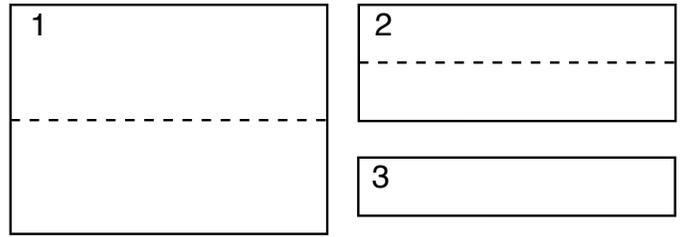


Figure 1

- Fold the top edge of the top gore down to the bottom edge, folding it in half without pressing the crease (Figure 1-3). Set aside these folded sheets.
- Locate the four sheets of paper labeled A, B, C, and D. These pages will become the gore template.
- Align the sheets in alphabetical order, lengthwise in front of you (Figure 2). On Sheets B, C, and D, trim the excess paper from the sides labeled Edge 2, 4, and 6.

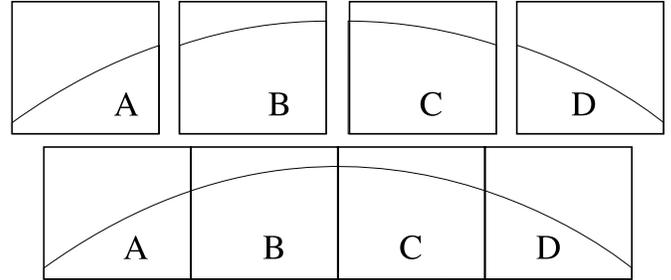


Figure 2

- Overlap Sheet A with Sheet B until the pattern is lined up. Glue or tape the them together at the overlap. Repeat this process to connect Sheet C to AB and Sheet D to ABC. Trim out the pattern by cutting along the lines on the outside edges of Sheets A, B, C, and D.
- Locate three paper clips, the folded tissue paper, and the gore template. On the folded tissue paper, one long side has several free edges. You will **not** use this side – use the side with just one long fold.
- Position the gore template so its straight side is flush with the side of the tissue paper that has one long fold. Using the three paper clips, attach the gore template and tissue paper on the folded edge.

- Holding the template and tissue firmly, cut the tissue paper around the curved edge of the template. Do not cut the edge with the paper clips (Figure 3). The excess tissue paper can be used later for repairing tears and covering the top of the balloon. Remove the paper clips and template.

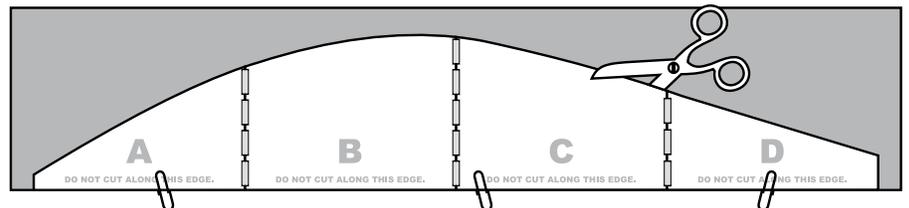


Figure 3

- Unfold the gores while keeping them stacked together – there should be six gores. Some of them might be slightly larger than others. If you want to alternate the colors on the balloon, take the top three gores and flip them over. The order of the gores will be their order as they go around the balloon. Set the stacked gores in front of you lengthwise.

- Take the top gore and slide it up a half inch. On the gore that you just moved, make a line of glue half an inch wide along the bottom edge (the edge closest to you) (Figure 4).
- Beginning at the center of the edge, fold 1/2" to 3/8" of the bottom edge of the second gore up and over the bottom of the first gore you just glued, fastening the two pieces together. **Hint:** Smooth the pieces as much as possible to create the best possible seal. If there is not enough glue at any point, apply more.

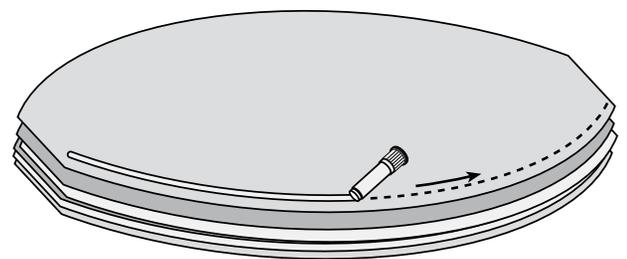


Figure 4

- Fold the top edge of the top gore down to the bottom edge, folding it in half without pressing the crease (Figure 5). Slide the second gore straight down a half inch.

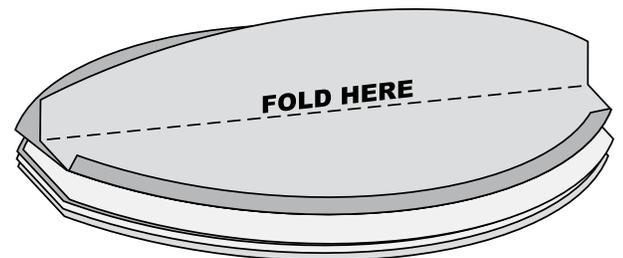


Figure 5

17. On the gore you just moved, make a line of glue half an inch wide along the top edge (the edge farthest from you) (Figure 6). Beginning at the center of the edge, fold 1/2" to 3/8" of the top edge of the third gore down and over the top of the second gore, fastening the two pieces together.
18. Take the seam between the first and second gores and fold it up to the seam between the second and third gores. Again, do not press the crease.
19. Repeat Steps 13-17 to fasten the remaining gores to one another. Do **not** fasten Gore 1 and Gore 6 to each other. Leave these two edges free for now.

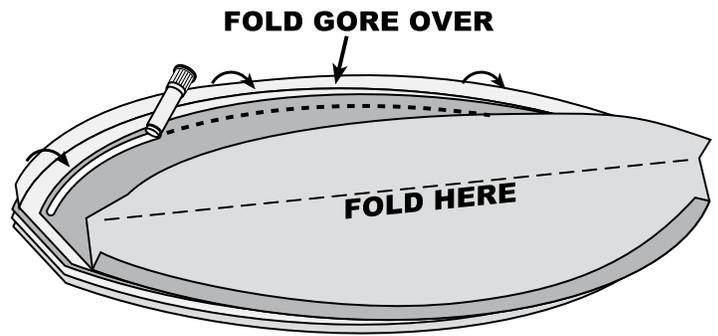


Figure 6

20. Pick up the folded balloon, unfold it, and turn it inside out. (The seams are neater this way.)
21. Using the same process as before, glue the remaining two free edges together. This leaves two holes in the balloon. The bigger hole is the bottom; the smaller hole is the top. Set this part of the balloon aside and find the excess tissue paper from Step 11.

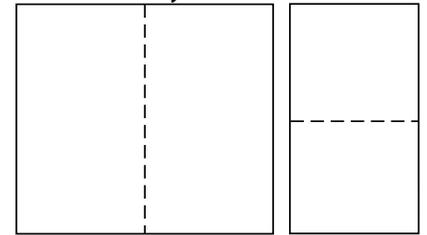


Figure 7

22. Take a large piece of the scrap paper and cut a six-inch square. Fold the square in half twice to create a three-inch square (Figure 7). One corner of the folded tissue paper has four free edges. The corner opposite it has none.

23. Between the two other corners, cut an arc that trims off the corner with the four free edges (Figure 8). Do not cut along any other edges. The paper should now resemble a piece of pie. Unfold the paper to make a circle.

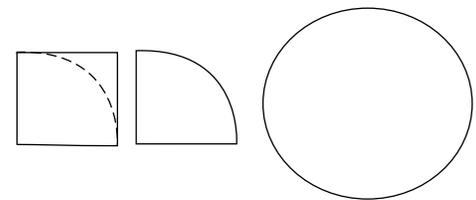


Figure 8

24. Find the glue stick and balloon body. Completely cover the circle with glue, paying special attention to the edges of the circle.
25. Put one hand inside the balloon through the bottom. With the other hand, take the circle and press it over the hole at the top of the balloon. Be sure the edges of the circle are securely glued to the balloon to form an airtight seal, which will help ensure proper flight of the balloon.
26. Set aside the balloon again and locate the Zoon Balloon Mouth Pattern. Cut along the two lines labeled "Cut line." Overlap the pieces at the narrow ends a half inch and attach the pieces together using glue or tape (Figure 9). Fold the entire length of the joined pieces at the fold line.

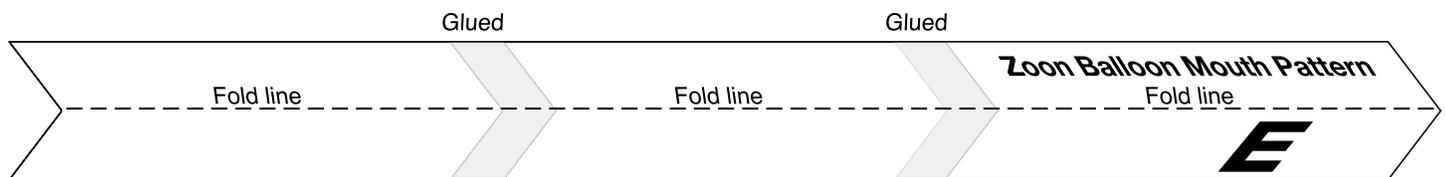


Figure 9

27. Place the folded strip over the edge of the bottom of the balloon. Staple the strip to the balloon about every two inches (Figure 10). Overlap the strip as needed at the ends.

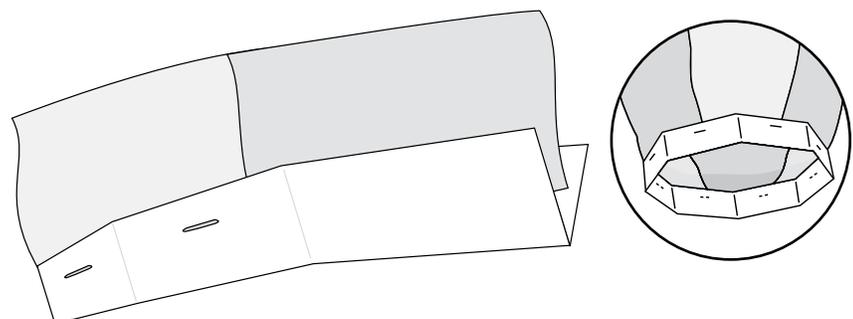


Figure 10

28. Check all the gore seams and add more glue to any that are not sealed. You have completed a Zoon Balloon!

Zoon Balloon Flying Instructions

1. Keep in mind the following hints and precautions as you are launching the balloon:
 - Before launching, check for gaps and tears. Use glue and the excess tissue paper to repair any damage.
 - The balloon may be launched repeatedly. Be sure to check for tears and gaps after each launch. Repair any damage before launching the balloon again.
 - Do not add the attachments that come with the Indoor Balloon Tester. Use only the base.
 - Be careful to keep the balloon away from moisture or liquid of any kind. When wet, the tissue paper will disintegrate.
 - Keep hands and fingers (and any other body parts) away from the direct blast of hot air coming from the mouth of the Indoor Balloon Tester.
2. If the balloon doesn't rise, try the following suggestions:
 - Check the balloon to make sure it has no tears or gaps that would let out air. Hot air will escape through any opening. If the balloon is not able to hold hot air, it will not rise.
 - Check the temperature to make sure the air outside the balloon is much cooler than the air used to fill the balloon. Cold air is denser than warm air, so warm air rises above cold air. If the temperature difference is not great enough, the weight of the balloon might be too great for the warm air to rise.

Indoor Launches

1. To launch the balloon indoors, find a cool room with a high ceiling.
2. Plug in the Pitsco Indoor Balloon Tester, and let it run a couple minutes to warm up.
3. Hold the mouth of the balloon over the tester for three to four minutes.
4. Release the mouth of the balloon and watch as it rises.

Outdoor Launches

To launch the balloon outdoors, you need an outdoor launcher such as the Pitsco Inflation Station. To launch the balloon outside, a cool and calm morning is best. Do not launch on rainy or foggy days.

1. Locate a launch area away from trees, structures, and power lines.
2. Set up and turn on the launcher following its included directions. Let the launcher run a minute to warm up.
3. Hold the mouth of the balloon over the launcher for three to four minutes. 4. Release the mouth of the balloon and watch as it rises.



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