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CRAFTS

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This chapter is filled with hours of craft fun for you and your Cub Scouts. Besides craft ideas and tips, you will find out how crafts can be used to build a boy's self-esteem, stretch a boy's creativity and imagination, and incorporate the purposes of Cub Scouting. These "boy-tested" crafts have been used successfully by dens and packs across the country.

Why We Use Crafts

As Cub Scouts work on craft projects, they not only learn to make useful items but also get valuable experience in using and caring for basic tools and materials, learning to follow directions, using their imaginations, and developing coordination and dexterity.

Crafts can help leaders develop the monthly theme in den and pack meetings and tie the activities of the whole month together. Craft projects can be used for advancement requirements or just for fun.

Making his own craft project calls for creativity in each boy. As he embarks on his project, he may need to measure, trace a pattern, cut or saw, sand, and assemble a project with nails, screws, or glue. Crafts develop boys' ability to understand and satisfy their urge to experiment. Furthermore, physical development and mental growth are by-products of the craft program. Muscle coordination comes from lifting, moving, sawing, drilling, hammering, and pounding. Painting helps improve arm and hand control. Folding, cutting, shaping, filing, and sanding craft materials help develop eye and hand coordination.

As boys work with crafts, they learn to shape materials into useful articles. While decorating them, they also learn that useful things can be beautiful art. They gain confidence to experiment with materials and tools and learn new ways to do things. A completed craft project enables each boy to shout out "I did my best!"

Teaching Crafts to Cub Scouts

The leader's job is to stimulate each boy's interest and curiosity and to encourage him to *try*. It is important to allow the boy to create and be proud of his creation. He is making more than just "things"; he is building his mind, body, and future.

All Cub Scout leaders have different backgrounds and experiences, so their knowledge of craft techniques and tools will vary. Those with limited experience may enlist parents and other adults to teach specific techniques or to provide materials and tools.

The *Cub Scout Leader Book* provides some excellent tips for leaders working with boys on craft projects. In addition, the following steps will help leaders teach crafts:

1. Choose a project with the help of the boys. Make sure the project is something that has a purpose and that they will enjoy making.
2. Make a pattern, if needed. Have enough pattern pieces available so that boys don't have to wait to trace them.
3. Make a sample to show the boys, but remember: These are age-appropriate crafts for boys, so don't go overboard and make your sample too elaborate.
4. Gather enough materials and tools so everyone can work at the same time.
5. Teach the craft step by step:
 - Cut out parts, as required.
 - Put them together.
 - Finish it (sand, polish, paint, etc.).
 - Clean up.
6. Whenever possible, start a craft in a den meeting that boys can finish at home with family help. Be sure, however, that the family is aware of the responsibility and has any instructions and materials necessary.
7. Display the craft projects at a pack meeting.

Leaders should guard against crafts that are simply "busywork" of the "cut-and-paste" type that are below the boys' abilities and interests. Crafts should be more than mere handwork: They should be a creative outlet and a form of expression, as well as a way to learn skills. By relating crafts to the monthly theme, you give each boy a chance to live a new dream each month and to create the costumes, props, and other items to help make that dream a reality.

Sometimes, leaders think they need to have a craft project at every den meeting. But remember that crafts are only one of many activities used to accomplish the purposes of Cub Scouting. Overemphasizing crafts may discourage boys whose interests and abilities lean in other directions.

MEASURING RESULTS

Adults judge their own projects differently from boys. Adults judge the excellence of the workmanship and the quality of the project. This is because adults have had more time to develop skills, manual dexterity, and knowledge. A boy does handicrafts for fun. His effort should be measured by his own standards. Leaders and family members need to see the boys' efforts through the eyes of a Cub Scout-age boy. This requires understanding, patience, and a willingness to invest time in working with boys. Each boy is expected to do his best, and each boy's best is different.

To help measure the value and success of den and pack craft projects, ask yourself the following questions:

- Are the boys learning things that will be helpful to them later?
- Do the craft projects reflect the interests and abilities of Cub Scout-age boys?
- Do the den and pack craft projects help create the opportunity for more family activity?
- Do the boys enjoy working on crafts?
- Do they have adequate working space, tools, and materials?
- Are the boys given an opportunity to use their own initiative and imagination in planning and making projects?

HELPING THE BOY

- Encourage the natural creative urge in each boy. If you don't, the urge may disappear and be replaced by lack of confidence in his own abilities.
- Through praise, you can help the boy build self-confidence in his abilities.
- Learning by doing is important.
- Show enthusiasm for the boy's progress. Don't be overly critical.
- Show him *how*—but don't lose patience and take a tool away from him because you can do it better or faster. This will discourage him and destroy his self-confidence.
- Be patient. Remember: Boys may have to be shown over and over how to use a tool.
- Be tactful. Offer your help during difficult parts of a job by saying, "Let's work on this part together."

Resources for Craft Materials

Materials for crafts should be simple and inexpensive. In most cases, you can find scrap materials for crafts around the home.

Most communities have many resources for craft materials. Although you may have to purchase some specialized items at craft and hobby stores, you can acquire most through salvage and surplus or donation. Check telephone directories and begin looking for places where you might be able to obtain aluminum foil, burlap, canvas, clay, cord, floor covering, leather and vinyl scraps, nails, paper bags, plastic rope, sandpaper, spools, etc.

Here's a "starter" list of possible resources for craft materials. Most of the sources listed have scrap that is available for the asking, or at minimal cost. Keep your eyes and ears open for the endless list of "beautiful junk" available for recycling into Cub Scout crafts.

- **Lumber Company:** Wood scraps, sawdust, and curls of planed wood may be given away by the boxload. Make your contact and request, and then leave a marked box to come back for later.
- **Grocery Stores:** Check grocery stores for boxes of all sizes and shapes. Discarded soft drink cartons are excellent for holding paint cans.
- **Telephone Company:** Empty cable spools make great tables; use old telephones as props for skits; use colorful telephone wire for many different projects.
- **Soft Drink Company:** Plastic soft drink crates may be available at a minimal charge. Use them for storage or for projects. Also, use plastic six-pack rings for various projects.
- **Ice Cream Stores:** Use empty 3-gallon cardboard containers for wastebaskets and storage.
- **Medical Laboratories:** Ask for clean paraffin and tongue depressors.
- **Gas Stations and Garages:** Tires and bike tubes are great for games and obstacle courses.
- **Wallpaper Stores:** You'll find wallpaper sample books of discontinued patterns.
- **Carpet Stores or Outlets:** Discontinued rug samples and soft foam underpadding can add to craft projects.

- **Tile Stores:** Use broken mosaic tiles for many craft projects.
- **Appliance Stores and Furniture Stores:** Large packing crates are handy for skit props and puppet theaters.
- **Newspaper Companies:** Ask about end rolls of newsprint.
- **Printing Companies:** You can never have too much scrap paper and cardstock.
- **Pizza Restaurants:** Cardboard circles are good for making shields and other craft projects.
- **Upholstery Shops and Drapery Shops:** You'll find a wide variety of fabric and vinyl scraps.
- **Picture Framing Shops:** Leftover mat boards make great awards or bases for other projects.
- Corrugated cardboard—for stage props and scenery, bulletin board, shields, swords
- Ice cream cartons (3-gallon)—for trash cans, drums, masks
- Ice cream spoons—for mixing paint, spreading paste, figures
- Jars—for containers for paint, paste, and brushes; decorate them for gifts.
- Juice-can lids—for tin punch projects, awards
- Leather or vinyl scraps—for key chains, bookmarks, neckerchief slides, coin purses
- Macaroni—for stringing for jewelry, pictures, and frames
- Margarine tubs—for storing small objects (lids can be used like flying saucers in games)
- Newsprint—for covering tables, papier-mâché, flip chart, growth charts, large backgrounds and scenery
- Old shirts or pajama tops—for paint smocks (cut off the sleeves), costumes
- Paper bags and old socks—for hand puppets
- Paper plates—for plaques, masks, games
- Paper towels—for papier-mâché, clean up
- Pipe cleaners—for simple sculptures
- Plastic water bottles and milk jugs—for planters, games, costumes
- Shelf paper—for finger painting
- Soap bars—for carving
- Sponges—for painting, printing, clean up
- Straws—for holiday decorations, party favors, games
- Tin cans—for metal work, storage containers, planters
- Tongue depressors and craft sticks—for mixing paint, modeling tools
- Wallpaper—for book covers, paper for painting
- Wrapping paper—for murals, painting
- Yarn—for hair for wigs and puppets, holiday ornaments

USING SALVAGE

Many items that are destined for the trash can be used for Cub Scout craft projects. Ask families to be on the lookout for scrap materials. If you live in a community that has a manufacturing company nearby, you may be surprised at the scrap wood, plywood cutoffs, and odd pieces of metal, cardboard, leather, and plastics that you can get just by asking. Ask families to save things such as tin cans; the cardboard rolls inside paper towels, toilet paper, and wrapping paper; boxes; tree branches; plastic bottles; buttons; cloth; pinecones; and wire hangers.

Here's a partial list of useable scrap materials:

- Bottle caps—for Christmas tree ornaments, foot scrapers, wheels, construction projects, markers for games
- Bottles—for musical instruments, containers
- Broom handles—as dowels for projects
- Cardboard cartons—for construction projects, stage props, puppet stages, storage
- Catalogs—for decorations, designs, cutouts
- Clothespins—for human figures, fastening items together, games
- Coat hangers—for wires for mobiles and other constructions, skeletons for papier-mâché work
- Coffee/juice cans—for storage, planters, games
- Coloring books—for patterns for name tags, etc. Patterns can be enlarged for craft projects.

How-To Tips

TIPS FOR PAINTING

Acrylics: Jar acrylic is more economical, but acrylic paint is also available in tubes. It can be thinned with water. Brushes clean easily with water. Acrylics are nontoxic, good for painting almost anything, and don't need a finishing coat.

Tempera: Water-based paints such as tempera are great for Cub Scouts. Powdered paint is more economical but messier. Mix powdered tempera with water and add a little liquid starch, which helps the paint go further and not run.

Cleaning Brushes: Different paints need different cleaners. For tempera, poster paint, or acrylics, use water. The boys can clean up after using these paints; adults should supervise cleanup for other media. To clean varnishes, oils, or enamels, use turpentine, mineral spirits, or kerosene. For shellac, use shellac thinner. For model paint, use the recommended thinner. For lacquer, use lacquer thinner. These solvents are flammable and should be used outside and well away from sparks and flames. *Adequate ventilation is required when working with any of these paints or solvents.*

Finishing Coats: Objects painted with tempera or poster paint will have a dull finish and will not resist moisture. For a shiny finish and for protection, spray with clear plastic or clear varnish, or finish with a coat of diluted white glue. Acrylic paint does not need a finishing coat.

Paintbrush Substitutes: For large items such as scenery, use a sponge dipped in tempera. For small objects, use cotton swabs.

Painting Plastics: For painting plastic milk containers or bottles, mix powdered tempera with liquid detergent instead of water or starch. The paint will adhere better.

Painting Plastic Foam: Some types of paint will dissolve plastic foam, so only use one that is recommended. Test it first on a scrap.

Painting Wood: It is best to give raw wood a coat of wood sealer or thin shellac before painting to prevent the paint from soaking into the wood.

Spray Painting: A spray bottle works well for spray-painting large items. Use diluted tempera or poster paint. If using commercial spray paints, be sure to read the label and follow any instructions.

TIPS FOR ADHESIVES

- To save money, buy white glue in quart sizes and pour into small glue containers for the boys.
- To make heavy-duty glue, mix cornstarch with white glue until the mixture is as thick as desired.
- For small glue jobs, put glue in bottle caps and let boys use toothpicks or cotton swabs.
- Clear silicone is the best glue for plastic bottles and milk containers. It is available at hardware stores and requires adult supervision.
- Egg white is a good adhesive for gluing kite paper. It is strong and weightless.
- Tacky white glue is the best adhesive for plastic foam. A little goes a long way.
- Wheat paste (wallpaper paste) is a good paste for papier-mâché. Flour and water make a good paste too.
- Masking tape and cellophane tape can be used successfully in many projects.

MORE TIPS

- **Stuffing for Puppets:** Use plastic bags or old nylon stockings.
- **Cutting Plastic Foam:** Some types can be cut with a serrated knife or an electric carving knife. *Please note that adults should perform this procedure.* On heavier types, adults might use a coping saw or jigsaw.
- **Punching Holes in Plastic:** Use an awl or hole punch. A leather punch will work on most vinyl. *Adult supervision is mandatory.*

Theme Crafts

Consider each monthly theme for its craft possibilities. In addition to the ideas found in this book, *Cub Scout Program Helps*, the *Webelos Leader Guide*, and monthly roundtables are loaded with ideas. If the projects are fun, the boys will want to do them.

A leader may suggest wide project areas and give the boys greater freedom of choice and an opportunity to use their imaginations. For example, the theme "Things That Fly" might produce kites, gliders, planes, boomerangs, or even flying insects. Ask a boy what knights remind him of and you'll have everything from slaying dragons to building castles. If boys have an opportunity to talk about a theme and what they would like to make, they will come up

with lots of good ideas. And boys will have more fun making something they thought of themselves.

During some months, all boys in the den and pack may be working on the same things, such as when the pack is preparing for a pinewood derby, raingutter regatta, or space derby. The cars, boats, and rockets for those events, however, are youth-adult projects, and boys don't work on them during den meetings. During these times, boys could work on decorations for the event.

Theme crafts may include costumes, ceremony boards, game equipment, props for skits, gifts, decorations, toys, inventions, conservation projects, nature items, and more. The following list will give you some ideas on general theme topics. You'll find details for many of the ideas throughout this book.

FITNESS

- Fitness equipment
- Beanbag toss
- Puddle jumpers
- Fitness chart
- Stilts

SPACE/FUTURE

- Rockets
- Space shuttle model
- Flying saucer
- Launching pad
- Robot
- Radarscope
- Space station model
- Star map

TRANSPORTATION

- Pinewood derby car
- Pushmobile
- Airport
- Glider
- Model train
- Cubmobile
- Model cars
- Model planes
- Helicopter

WATER/BOATS

- Model boats
- Water wheel
- Waterscope
- Raft

HEALTH/SAFETY

- Posters
- Home fire escape plan
- Emergency road signal
- Traffic signs
- First aid kit
- Nutrition chart or Food Guide Pyramid

KNIGHTS

- Costumes
- Family crest
- Banners/flags
- Castle model
- Teeterboard jousting
- Dragon

PIONEERS

- Costumes
- Homemade soap
- Homemade butter churn
- Puppets
- Quill pen and ink
- Model fort
- Old-time games

FAIR/CIRCUS

- Midway games
- Performer costumes
- Animal costumes
- Musical instruments
- Masks
- Puppets
- Noisemakers
- Prizes
- Banner/flags

NATURE

- Birdhouses
- Bird feeders
- Insect net
- Terrariums
- Bird treats
- Box garden
- Collection boxes
- Plaster casts
- Leaf prints
- Ant farm

SCIENCE

- Inventions
- Electric games
- Barometer
- Rain gauge
- Science projects
- Telegraph
- Electric buzzers
- Weather vane

COMMUNICATIONS

- Tin can telephone
- Secret codes
- Telephone directory cover
- Telegraph
- E-mail directories

Safety Rules for the Use of Tools

What is safe for one Cub Scout may be unsafe when two or more Cub Scouts are around. Any workshop must have rules governing the use of tools. Den tools include scissors, markers, low-temperature glue guns, and other craft items—not just hammers and saws.

Because accidents are usually caused by the improper use of tools, take time to teach each boy the right way to use a tool and how to take care of it. Remind him that cleaning up and putting away tools and materials are part of the job. Make sure tools and materials are easy to reach and replace.

- An adult should be present when a Cub Scout uses any type of tool.
- Use each tool for the job it is made for and the way it was intended to be used. (So, for instance, never use a screwdriver to pry or pound.)
- Never use a tool with a dull cutting edge, dull bit, or loose part.
- Most accidents occur to the hands, face, or feet. Protect the eyes. Keep fingers and hands away from the cutting edges of tools. Secure or clamp down wood that is being worked on.
- Be patient and never use force. Don't work with tools when you are tired; you need to be alert.
- Don't wear loose clothing or jewelry, which can be caught in moving parts.
- Keep the work area clean, dry, and well-lit.
- Never use electrical tools (such as a low-temperature glue gun) in damp or wet locations. *Note: It is best to use only simple hand tools and avoid power equipment when working with Cub Scout-age boys.* Adults, however, might wish to use a power tool to precut pieces of a project for younger Cub Scouts.
- Use only heavy-duty extension cords. Don't use the type of extension cord that is intended for small appliances.
- If an electrical cord has a plug with three prongs, you should plug it into a three-hole receptacle (outlet). If you use an adapter on a two-hole outlet, you must attach the adapter wire to a known ground (the screw in the middle of the outlet coverplate).
- Don't abuse tool cords by carrying tools by the cord or by pulling a plug by yanking on the cord. If the cord is frayed, don't use the tool until the cord is repaired.

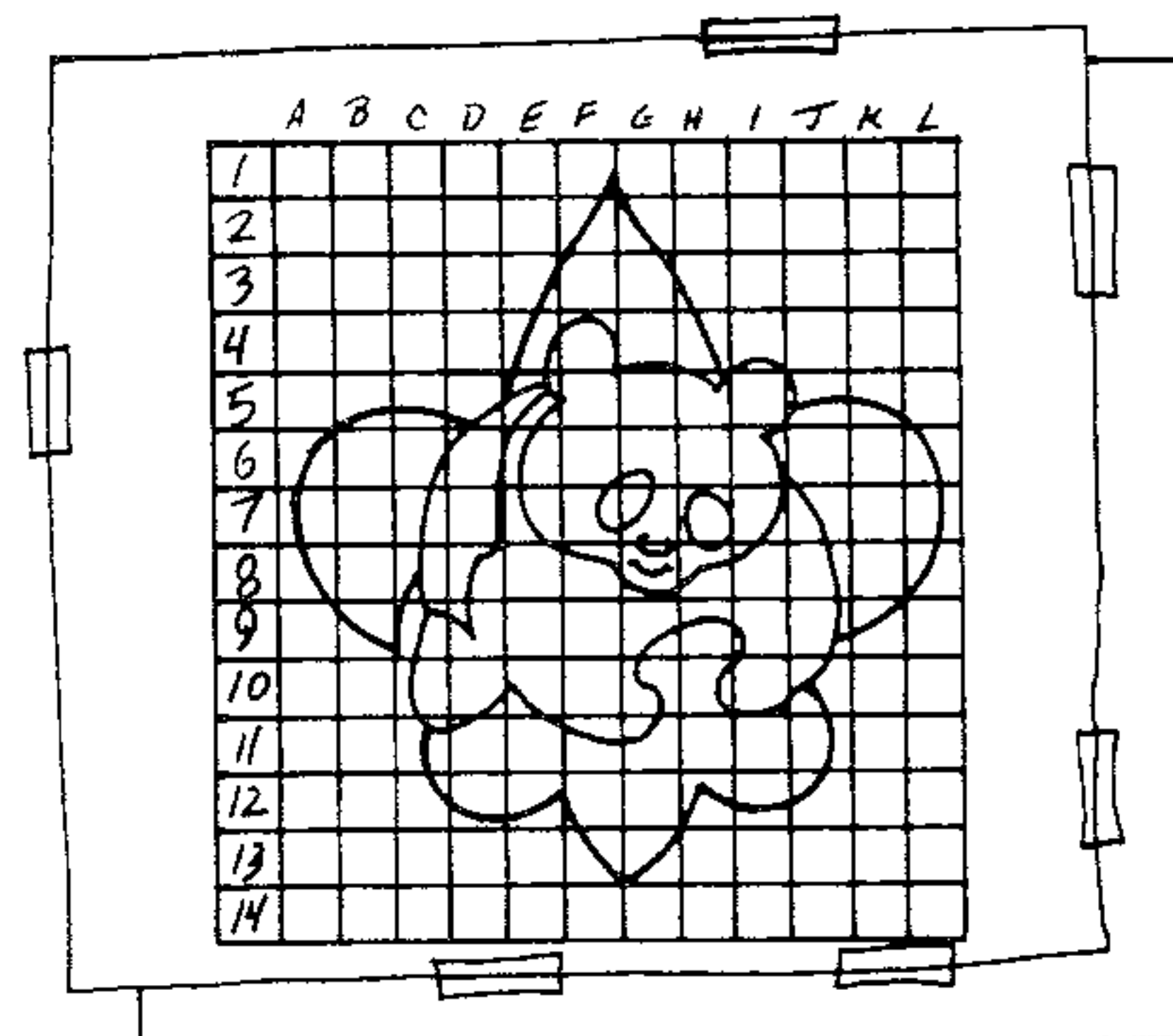
- Adults should unplug all electrical tools when they are finished and put them out of reach of children. Don't leave any tool unattended. *Remember: Power tools are not to be used by Cub Scout-age boys.*
- Adults who choose to use power tools should always unplug electrical tools when changing saw blades, drill bits, or other attachments.
- Keep tools sharp, clean, and oiled.

Enlarging Patterns

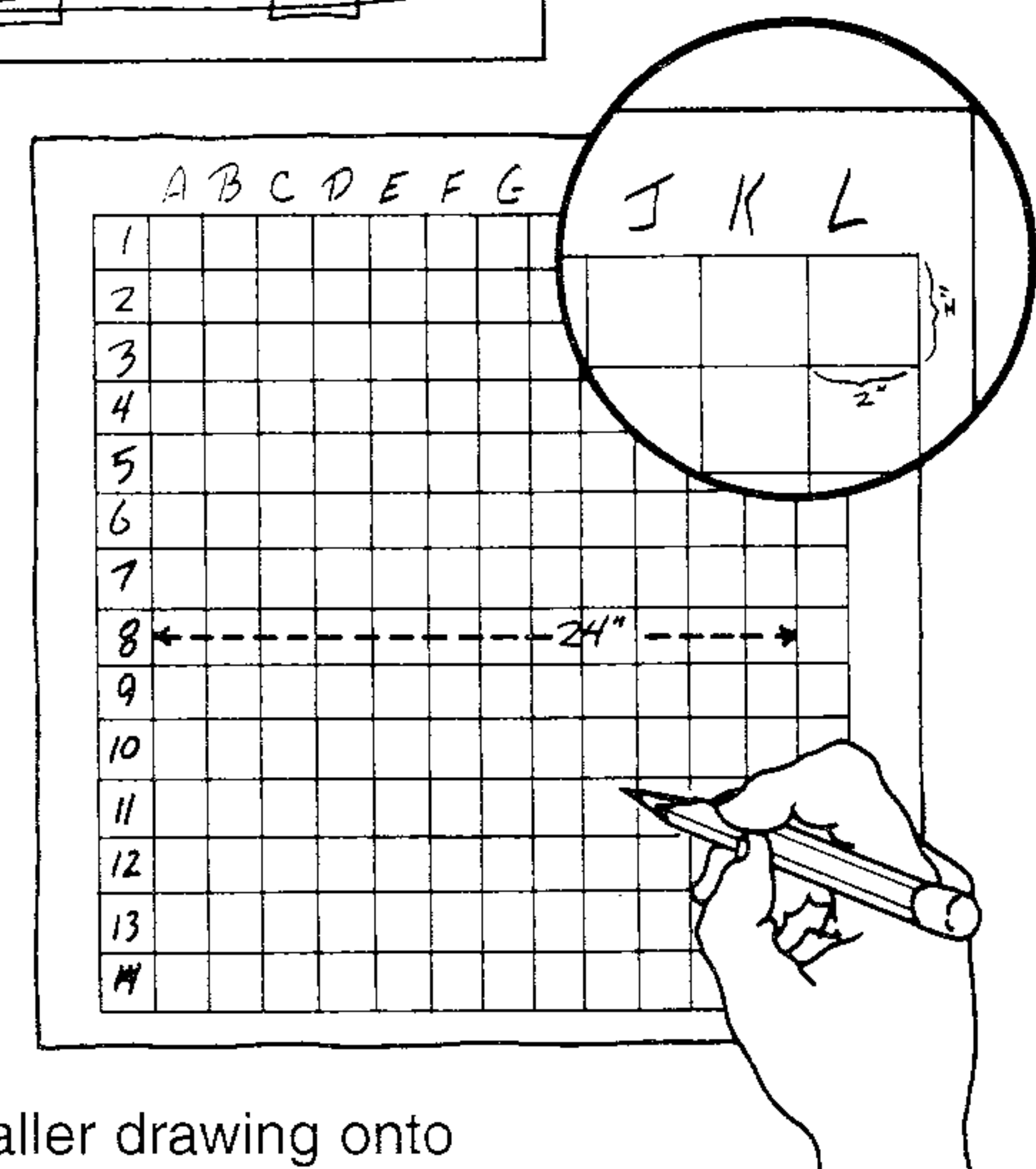
You can enlarge the patterns found in this book and elsewhere as needed. The easiest way to enlarge patterns is to make a copy on a commercial copy machine and enlarge by the desired percentage.

Several types of projectors also will make enlargements. To use an overhead projector, trace over the design you wish to enlarge, using thin plastic (such as notebook page protectors) and the special marking pens designed for use on plastic. Place the plastic sheet on the overhead projector "bed," and you can enlarge it to almost any size. This is especially helpful in making posters and other wall hanging-sized drawings.

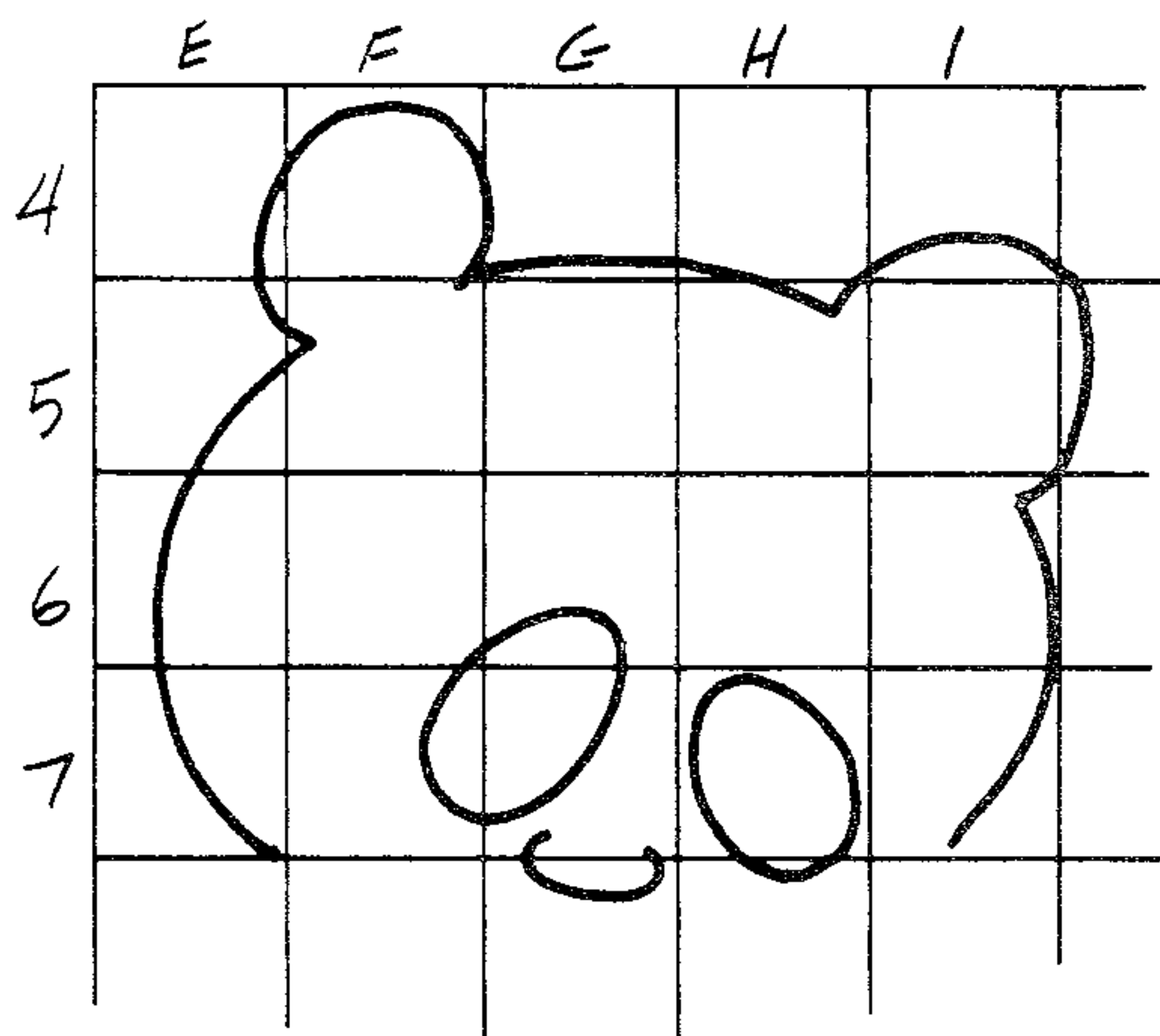
Tracing of original small drawing on 1-by-1-inch grid



2-by-2-inch block in larger grid



Copy smaller drawing onto larger grid block by block.



Portion of larger grid showing how to sketch block by block

ENLARGING PATTERNS BY HAND

Here's a good method for enlarging patterns by hand. Use a ruler, tracing paper, pencil, and these simple directions:

1. Place tracing paper over the design you want to enlarge. Mark the design's outer limits.
2. Using these limits as guides, draw parallel horizontal and vertical lines on the paper to create a grid. With a ruler, make the lines the same distance apart (depending on the size and detail of the pattern).
3. Letter each top square; number them down the left side.
4. Tape the grid over the original design and trace the pattern onto the grid.
5. Decide how much of an enlargement you need. Draw another grid with larger squares to the total width and length of the new pattern. Letter and number the new grid in the same manner.
6. Copy the lines of the pattern into their exact positions in each square of the larger grid.

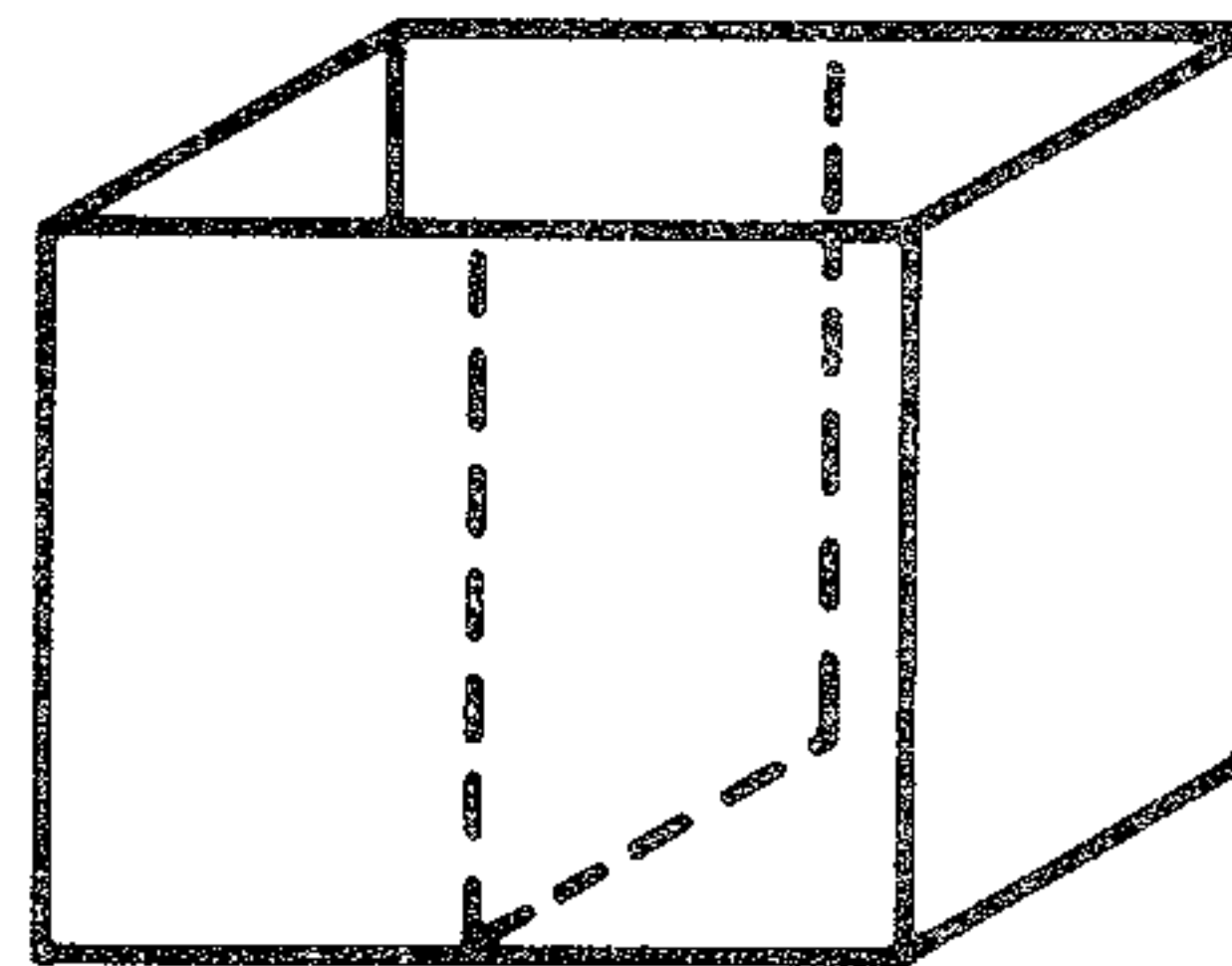
Managing Den Supplies

Boys will take pride in a meeting place that is consistently well-organized. You'll find that craft tools and items can easily get out of hand, so a den craft storage box is a good idea—both for organization and so that needed craft items are always available. Fill it with feathers, paper plates, puzzles, table tennis balls, tennis balls, balloons, assorted buckets and jars, paper bags, straws, and string. Also keep glue, scissors, markers, beads, and other craft items on hand. Make pencil cans from frozen orange juice or other similarly sized cans and keep them in the den craft storage box.

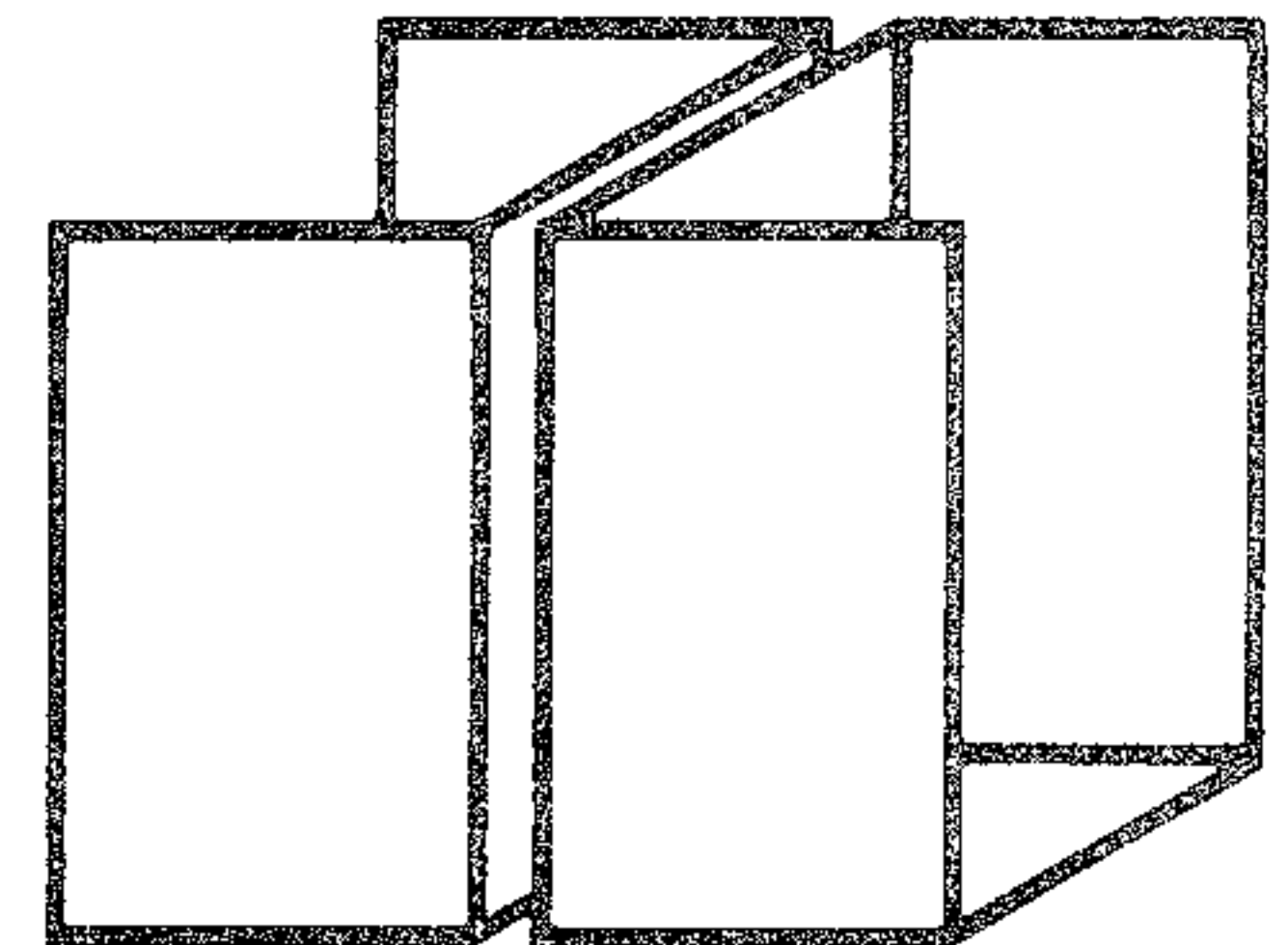
You can make craft storage boxes out of any material as long as they meet your needs. Sort craft materials by using an egg carton. A heavy-duty cardboard box that 10 reams of paper come in is also excellent for storage. Cut handholds, and then paint or cover with colorful adhesive-backed paper if desired. Another favorite is a plastic fishing tackle box.

HANDY TOTE BOX

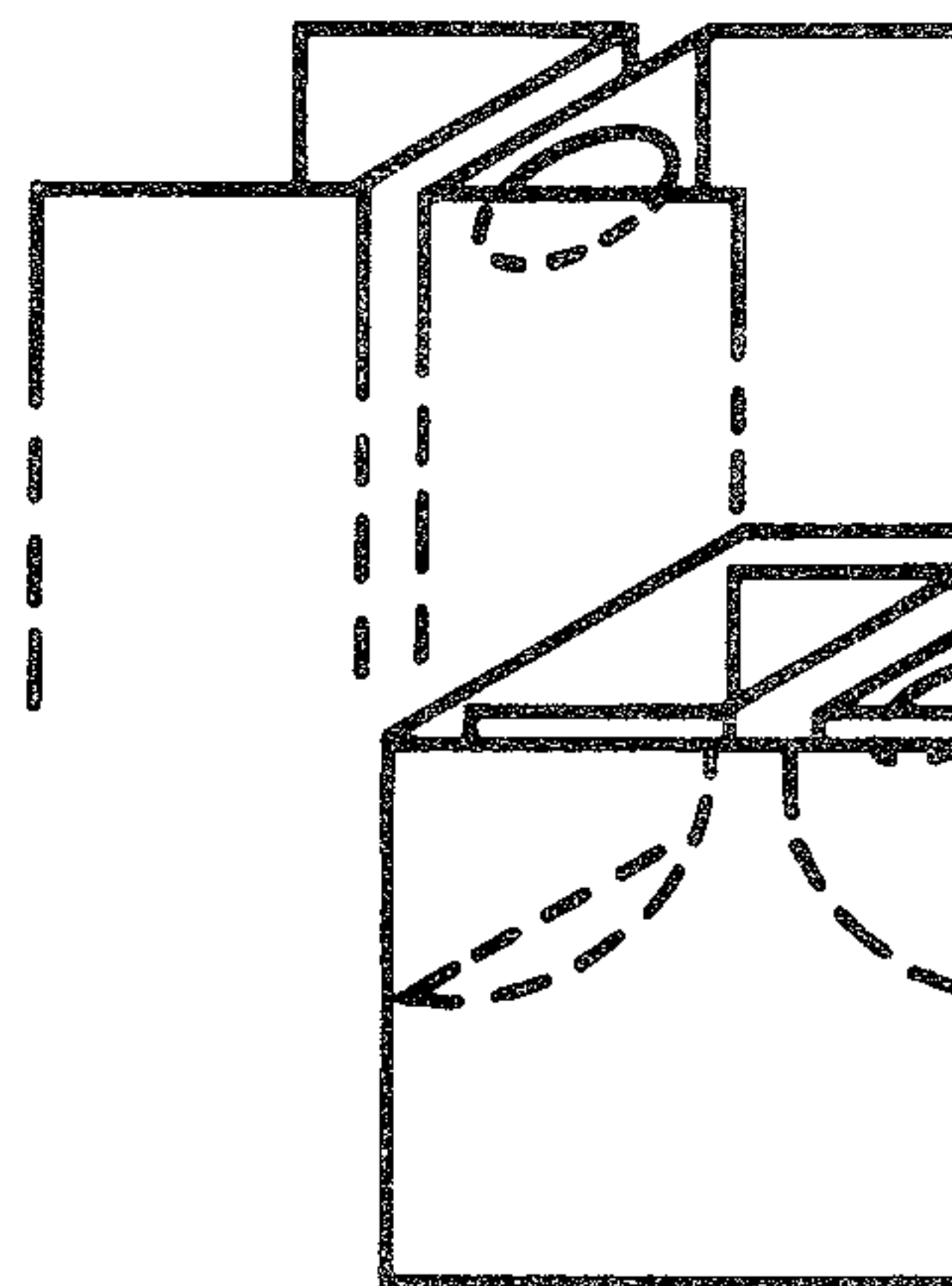
This sturdy box will carry a lot of weight. Make it from two identical cardboard cartons.



Cut one box in half, along sides and bottom. Turn pieces so that open sides are on the outside and uncut sides are touching. Tape together.

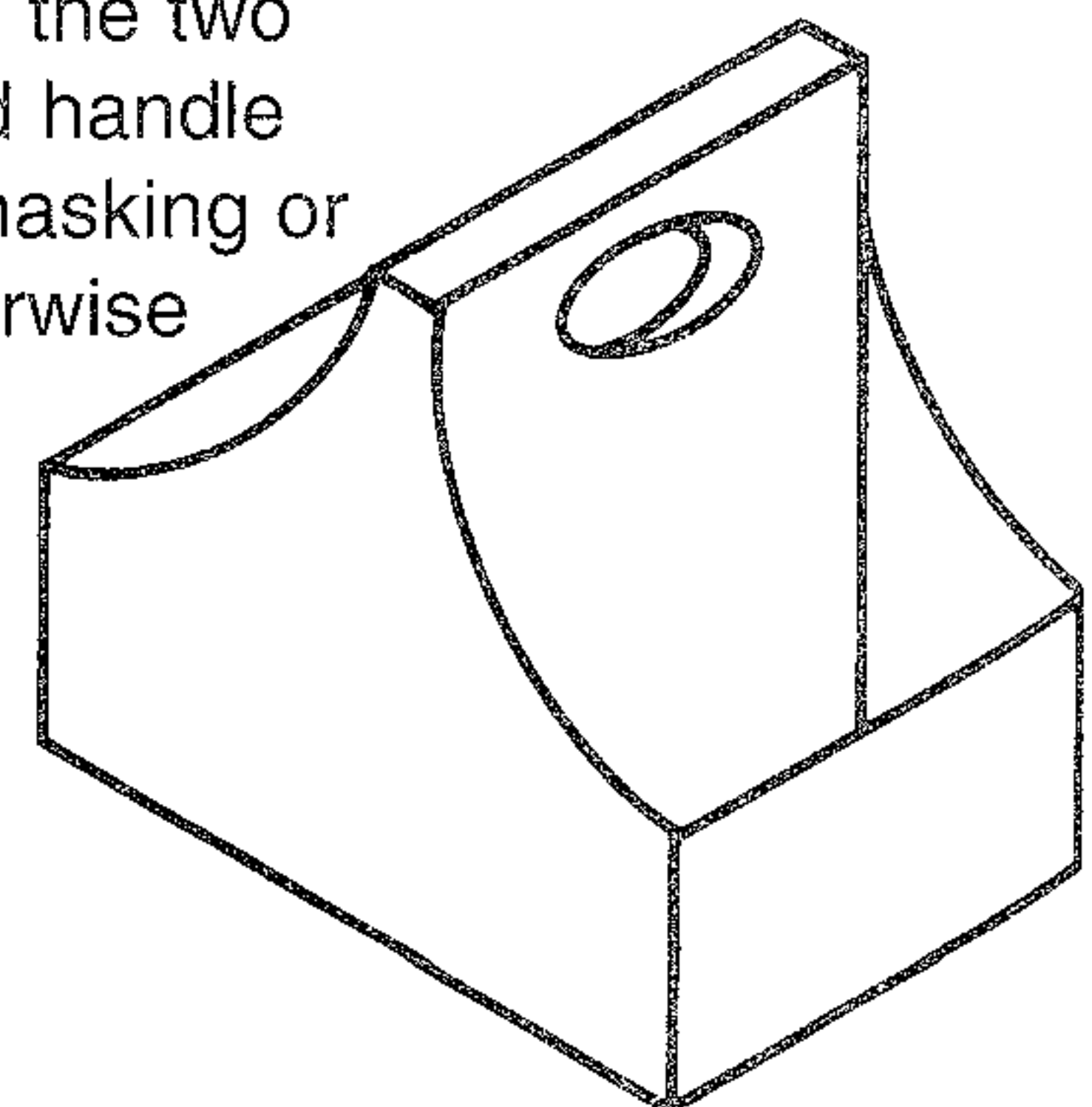


Cut out an opening for handle through both sections.



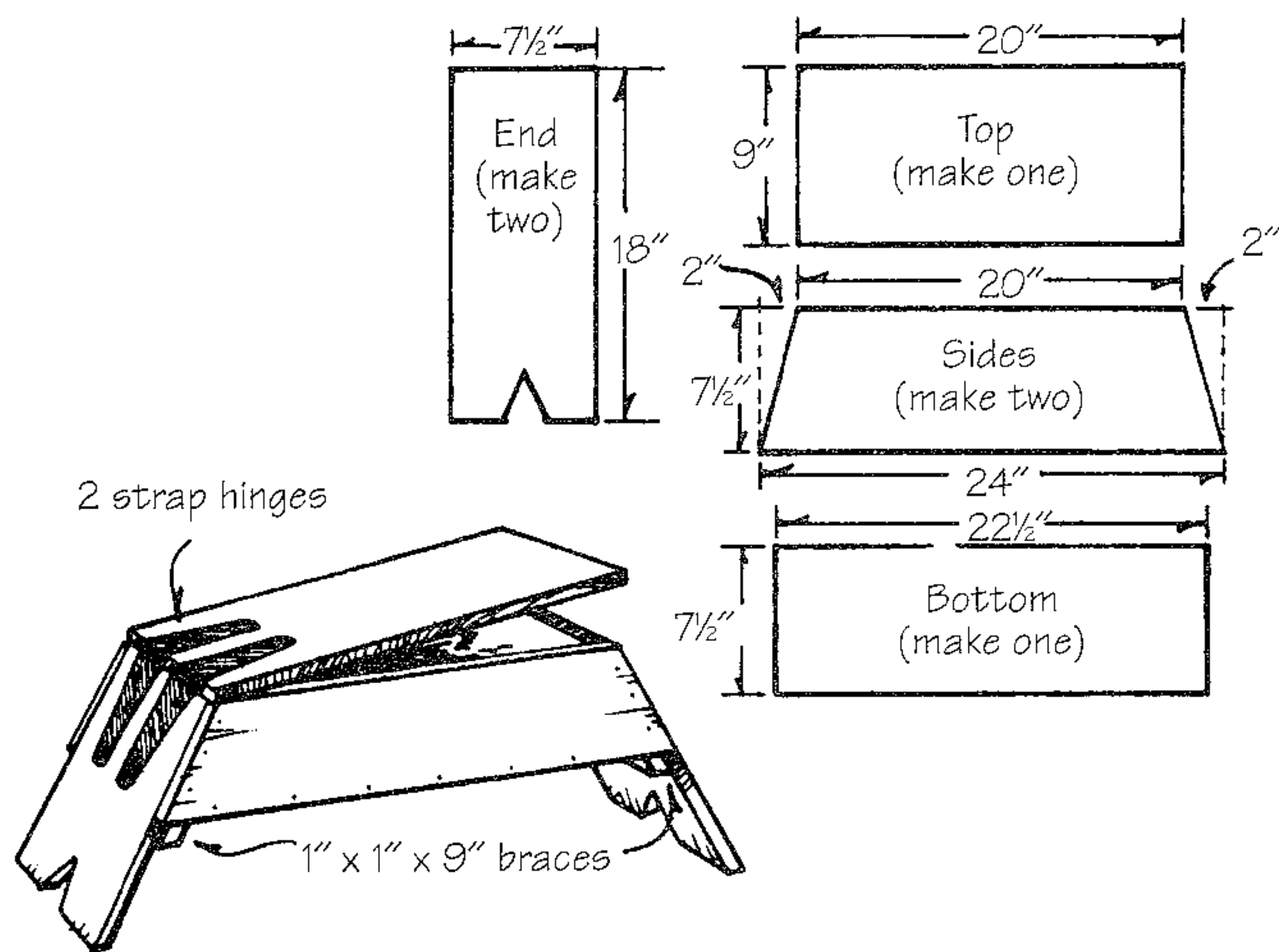
Place inside of second carton. (It will be a tight fit and may need trimming.) Cut as shown to shape the sides.

Finish cut edges where the two boxes meet and around handle hole by covering with masking or duct tape. Paint or otherwise decorate as desired.



PERSONAL STORAGE BENCH

Each boy could have his own storage bench for pencils and crayons, incomplete projects, etc. Make from 1-inch shelving as shown in the illustration. Each boy and an adult can build and decorate one in their own style. This can be the boy's seat at den meetings as well as holding his tools and materials. And these benches will stack for easy storage.



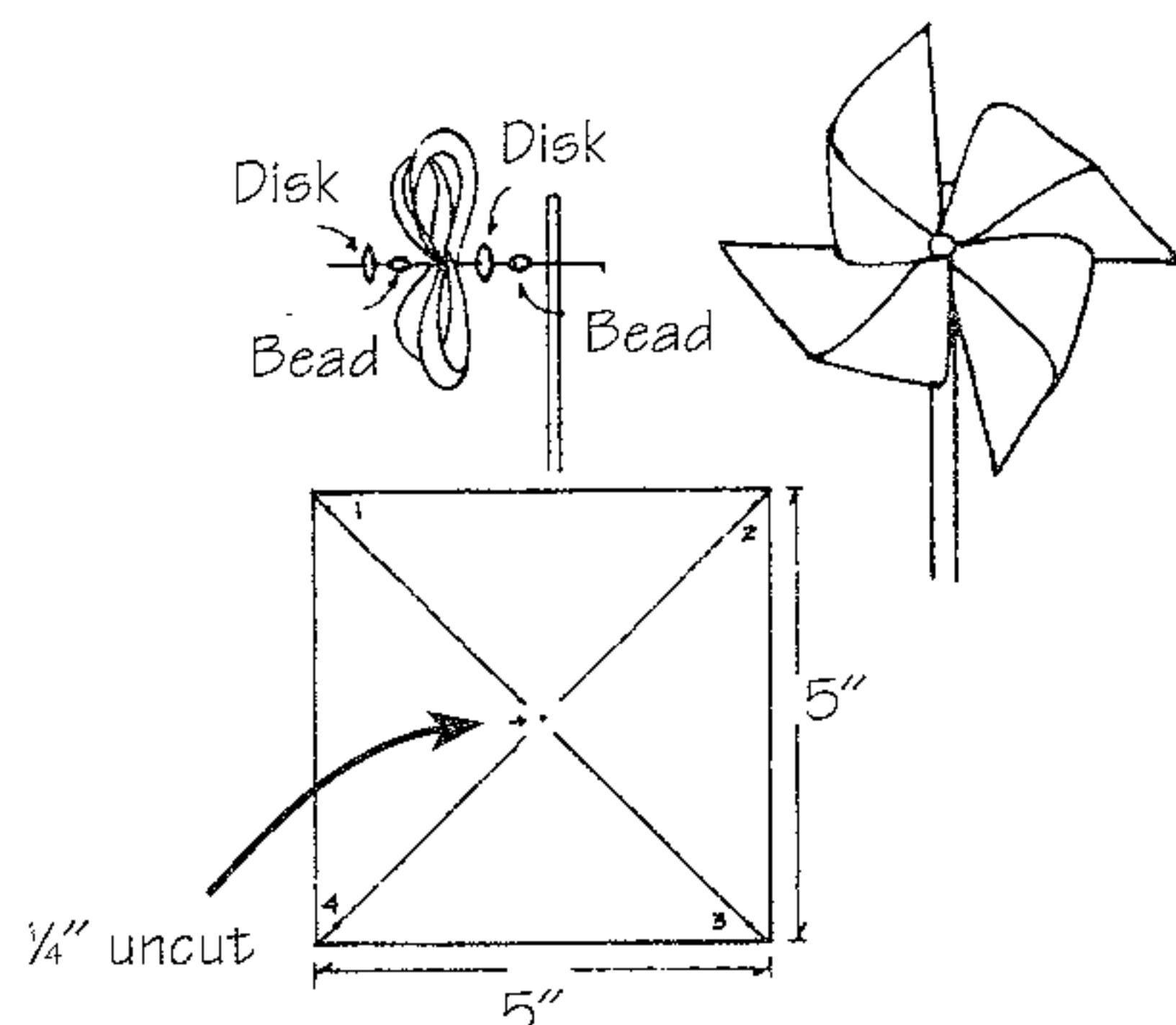
Paper Crafts

Paper can be a great medium for simple craft projects. These can be used for gathering times or filler time, or as a den craft project. They are easy and inexpensive, and boys will enjoy them.

PINWHEEL

Materials: 5-inch square of heavy paper, long heavy pin, two wooden beads, two plastic disks, dowel or pencil

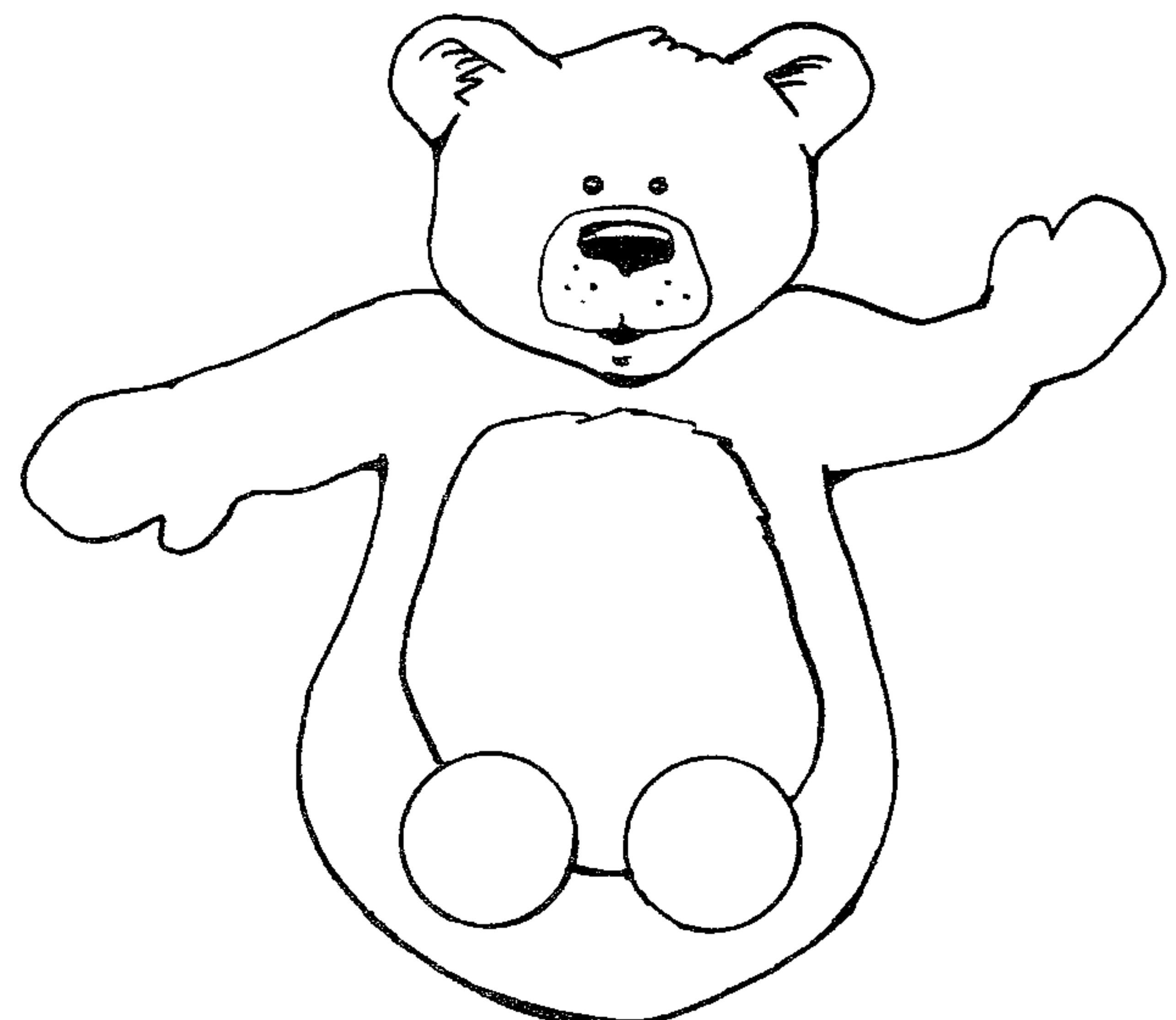
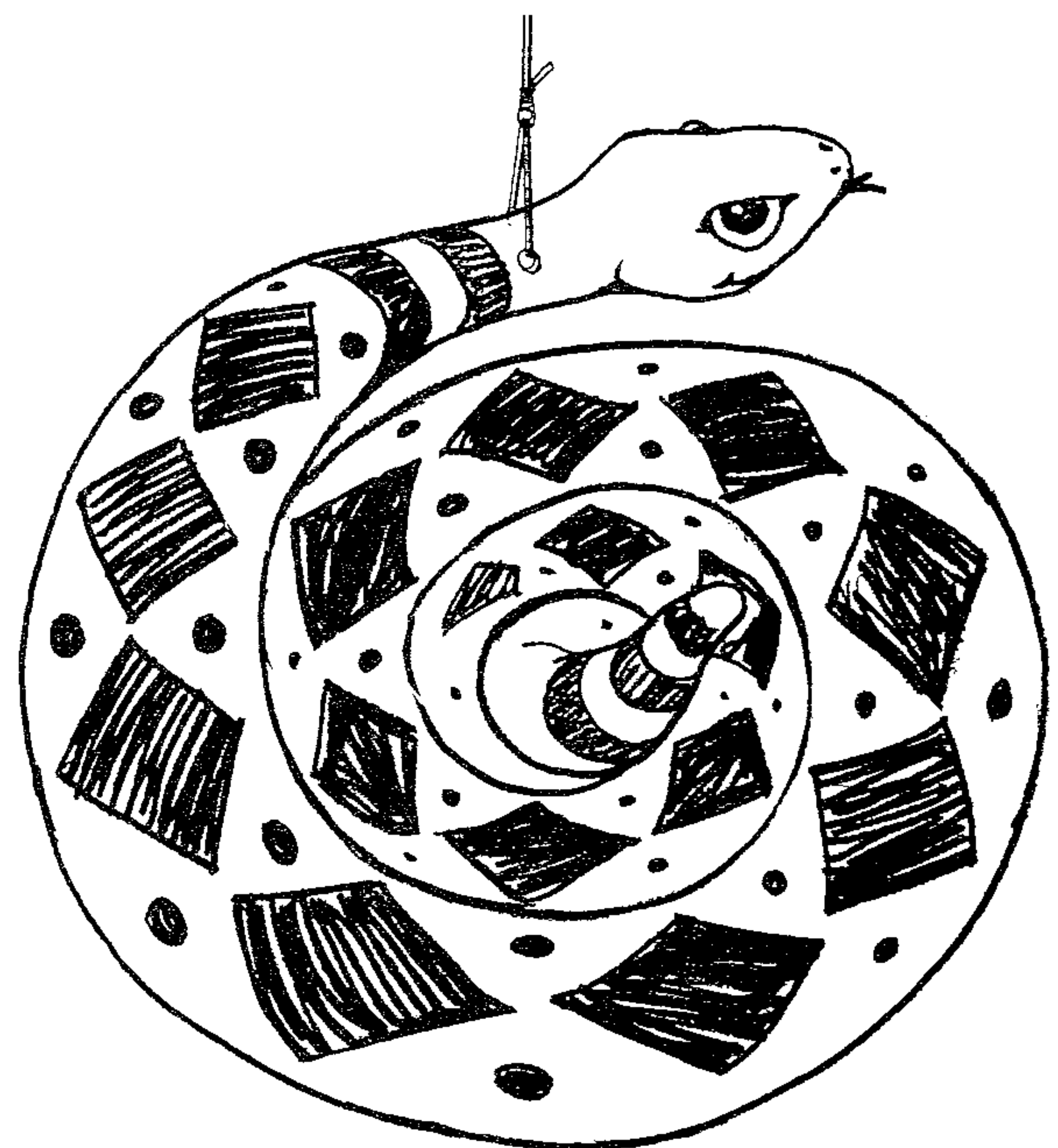
1. On a 5-inch square of heavy paper, draw diagonal lines from corner to corner as shown.
2. Cut on the lines to within 1/4-inch of the center.
3. Punch holes in the center and the corners.



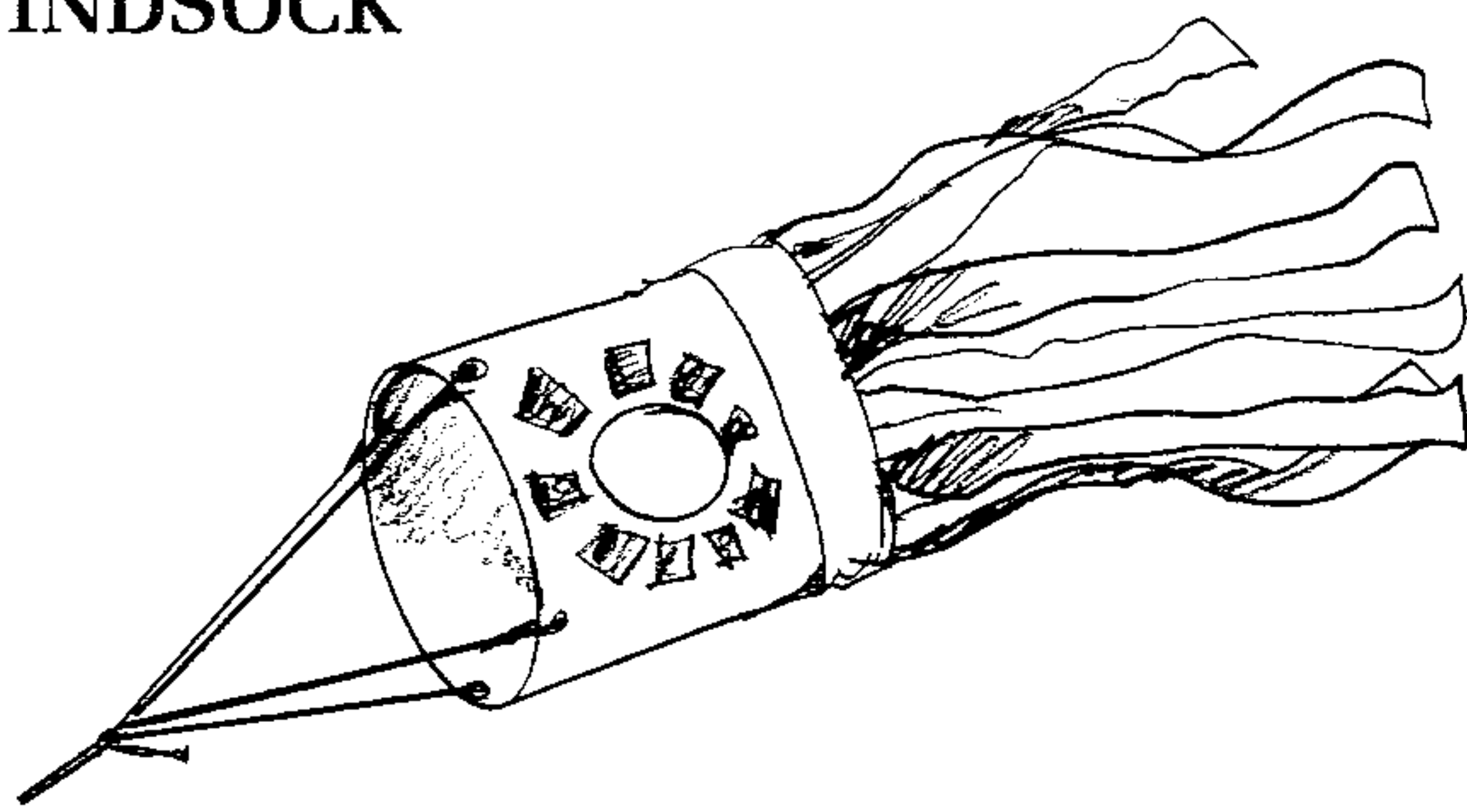
4. Put the following on the heavy pin (or a thin nail) in this order: plastic disk, wooden bead, the pinwheel corners in the order they are numbered, center of pinwheel, plastic disk, and wooden bead.
5. Push or tap the pin through the dowel or pencil.

BALOO AND KAA PAPER PROJECTS

Make the Baloo finger puppet and Kaa hanger from heavy cardstock. Enlarge the patterns as needed, and run off one pattern per boy on a copy machine or trace on posterboard. Boys can cut out and color and decorate as they want. Decorate Kaa with stripes, spots, and diamond patterns. Cut out finger holes for Baloo's "legs" (younger boys may need help cutting out the finger holes).



WINDSOCK



Decorate this windsock to fit any theme. Use blue streamers on gold paper for the blue and gold banquet, or red and white streamers on blue paper for a patriotic theme.

Materials: 4-by-16-inch paper, crepe paper streamers cut into 3-foot lengths, four pieces of string or yarn 12 inches long

1. Boys decorate paper using markers, crayons, or stickers, leaving a $\frac{1}{4}$ -inch edge.
2. Make a cylinder with the paper, securing with transparent tape.
3. Tape, glue, or staple streamers around the bottom edge of the cylinder.
4. Punch four evenly spaced holes around the top.
5. Tie one end of the strings through each hole, and tie the other ends together to make a hanger for the windsock.

KWANZAA MKEKA

Kwanzaa is a nonreligious holiday celebrated at the end of the year during which African Americans reflect upon their heritage, families, and communities. One of the symbols of Kwanzaa is the *mkeka*, or mat. Although preferably made out of straw, this woven paper mat will also fulfill its purpose.

Materials: 10 strips of black construction paper, 2 by 24 inches; four strips each of dark yellow, deep red, and forest green construction paper, 2 by 22 inches; transparent tape; clear contact paper

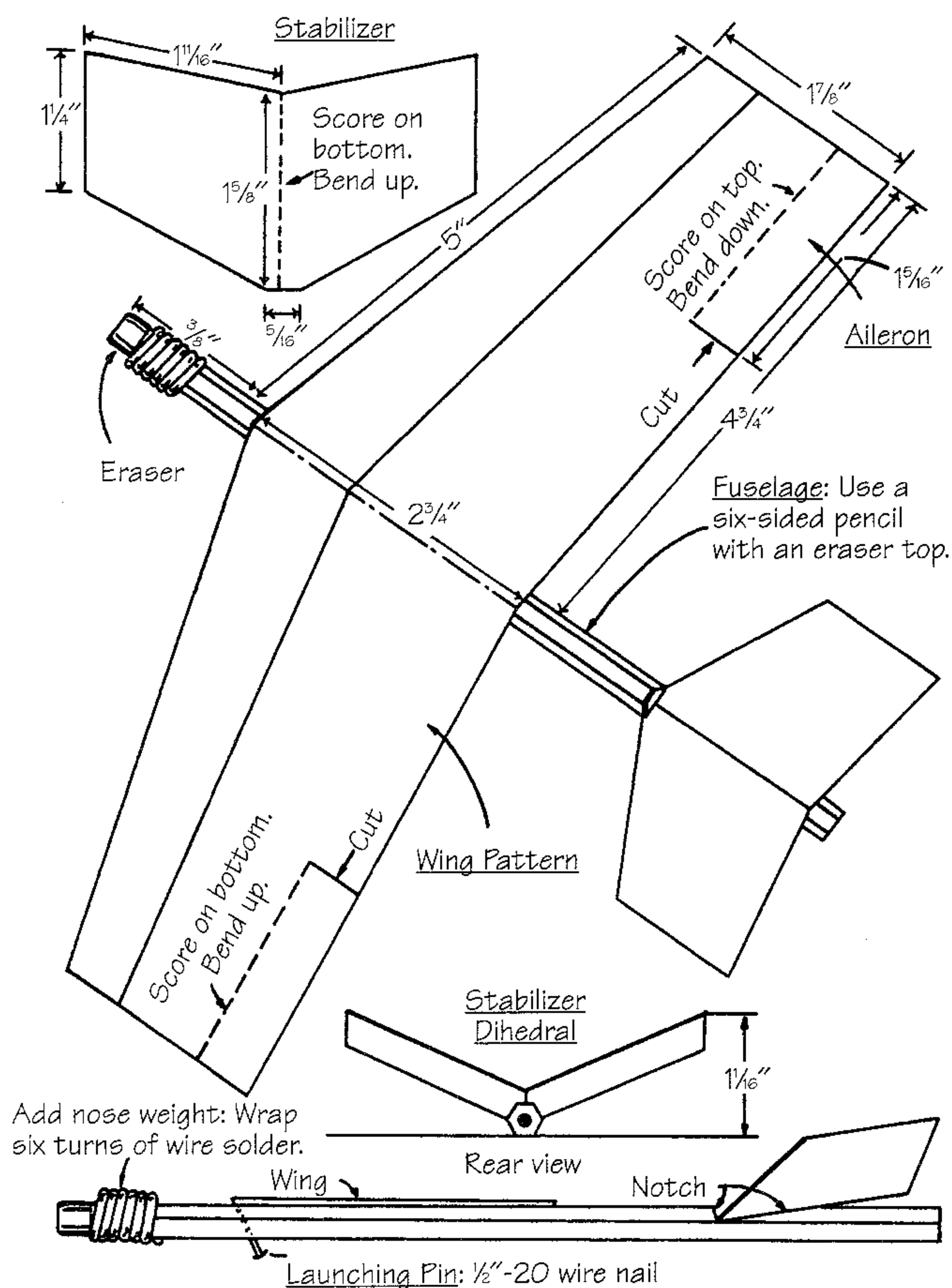
1. Lay the black paper strips next to each other on a flat work surface.
2. Run a piece of tape along the edge of the right side to tape the strips together.
3. Using the colored strips (the traditional colors of Kwanzaa), weave back and forth through the black base, one color at a time, alternating colors in any order.
4. Pull the ends of the color weaves to make the edges straight.
5. Run a second piece of tape along the left side to hold the strips in place.

6. Cover the front and back of the mat with clear contact paper.

PAPER AIRPLANE PROJECTS

Paper airplanes are simple and always fun. An excellent resource for flying crafts that use no glue or cutting is *The Gliding Flight: 20 Excellent Fold and Fly Paper Airplanes*, by John Collins (Ten Speed Press, 1989).

A Catapult Glider



This glider will take some time to make, but it will be lots of fun and worth the effort.

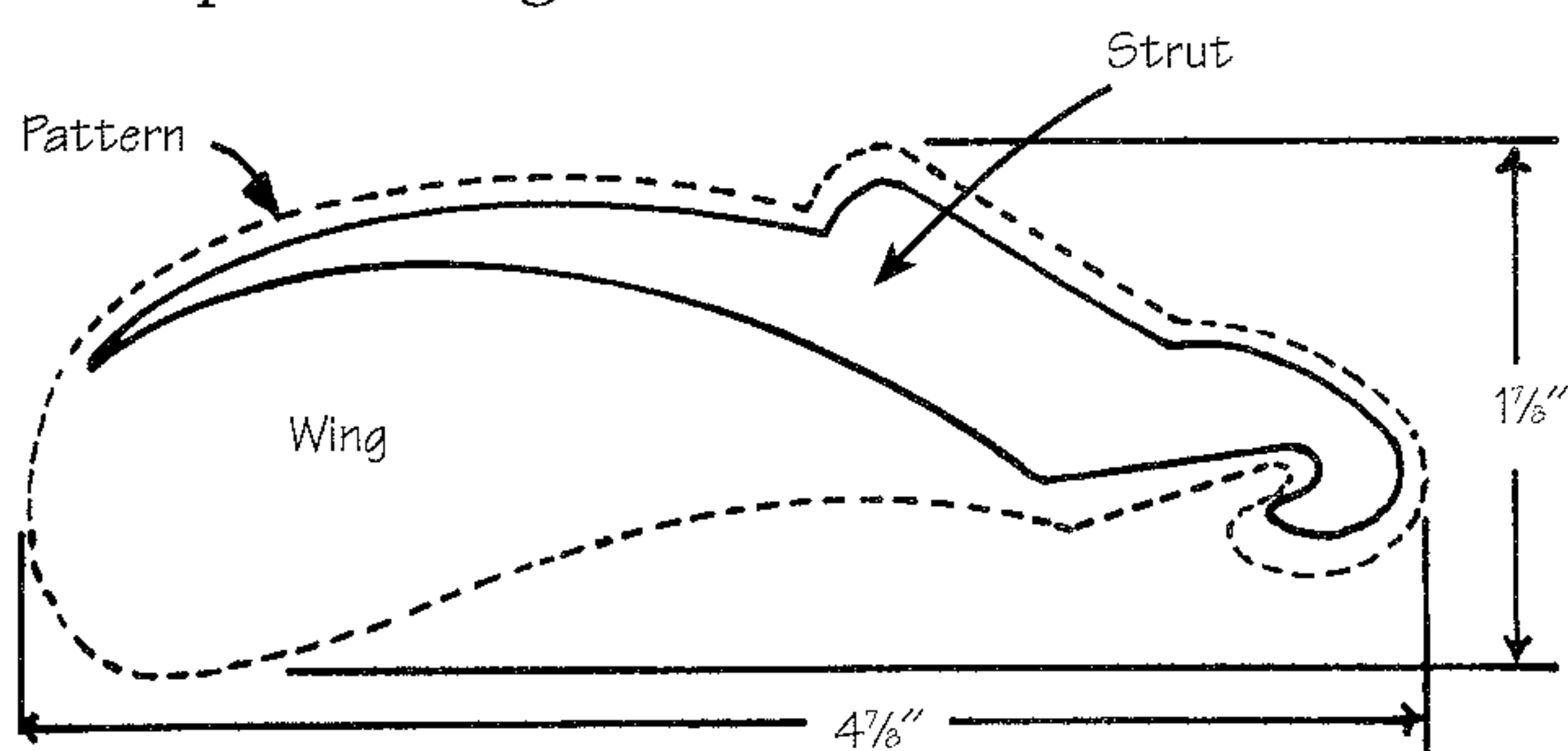
Materials:

- New six-sided pencil with eraser
- Stiff cardboard (cereal box sides or posterboard)
- $\frac{1}{2}$ -inch wire nail
- 7 inches of $\frac{3}{32}$ -inch-diameter wire solder
- Model cement or craft glue
- 5-inch length of another pencil or piece of dowel
- One or two heavy rubber bands

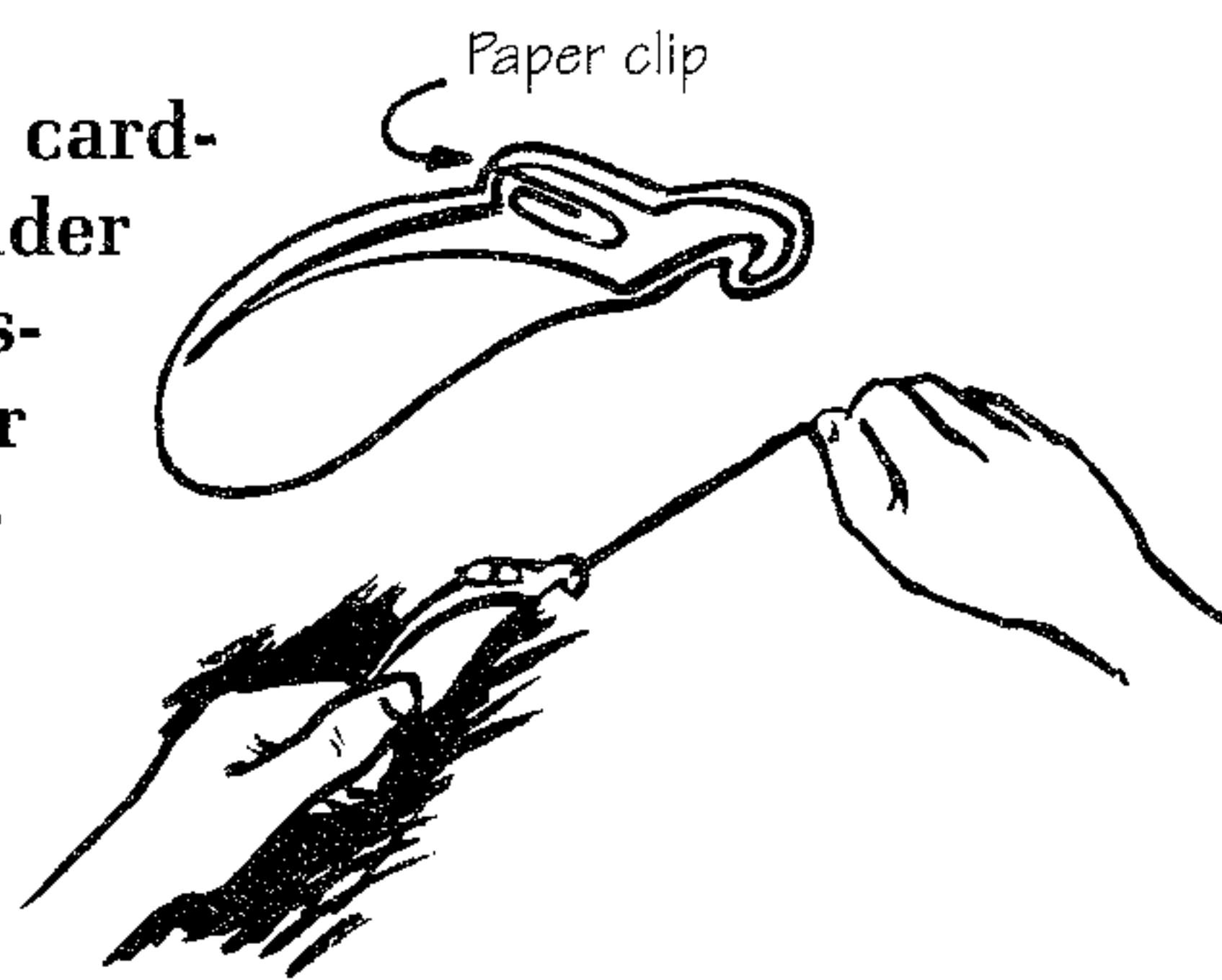
1. Enlarge the pattern to the size indicated and trace onto the cardboard.

- Cut out the wing and stabilizer. For more accurate cutting, use a modeler's knife. Guide the cuts using a metal ruler as a straight edge.
- Notch the pencil 2 inches from the end. Score the bottom of the stabilizer on the centerline and bend up. Insert the stabilizer into the notch. Check that the tips of the stabilizer wings are $1\frac{3}{16}$ inches from the bottom edge of the pencil.
- Insert the launching pin (the $\frac{1}{2}$ -inch wire nail) on the bottom of the pencil about $1\frac{1}{2}$ inches from the eraser end.
- To add weight to the nose, wrap it with about six turns of wire solder.
- Cut and score the ailerons at both ends of the wing. Glue the wing to the top of the fuselage (pencil).
- To make a launching rig, notch the small pencil or piece of dowel to hold the rubber band or bands.
- To fly the glider, attach to the launching rig, aim high, and let it go! If the glider dives out of its glide, remove some solder. If it stalls (repeatedly swoops up, dives, and then swoops up again), add solder. Hold a glider contest to see whose glider goes the farthest!

Helicopter Wing



Materials: Thin cardboard (from file folder or posterboard), tissue paper, paper clip, $\frac{3}{4}$ -inch-wide transparent sticky tape, rubber band



- Enlarge the pattern to the size indicated.
- Trace the wing strut on the thin cardboard and cut it out.
- Place the strut on the tissue paper. Cover completely with 6-inch strips of sticky tape, overlapping them by $\frac{1}{16}$ inch. Be sure to press down firmly to ensure a good bond.

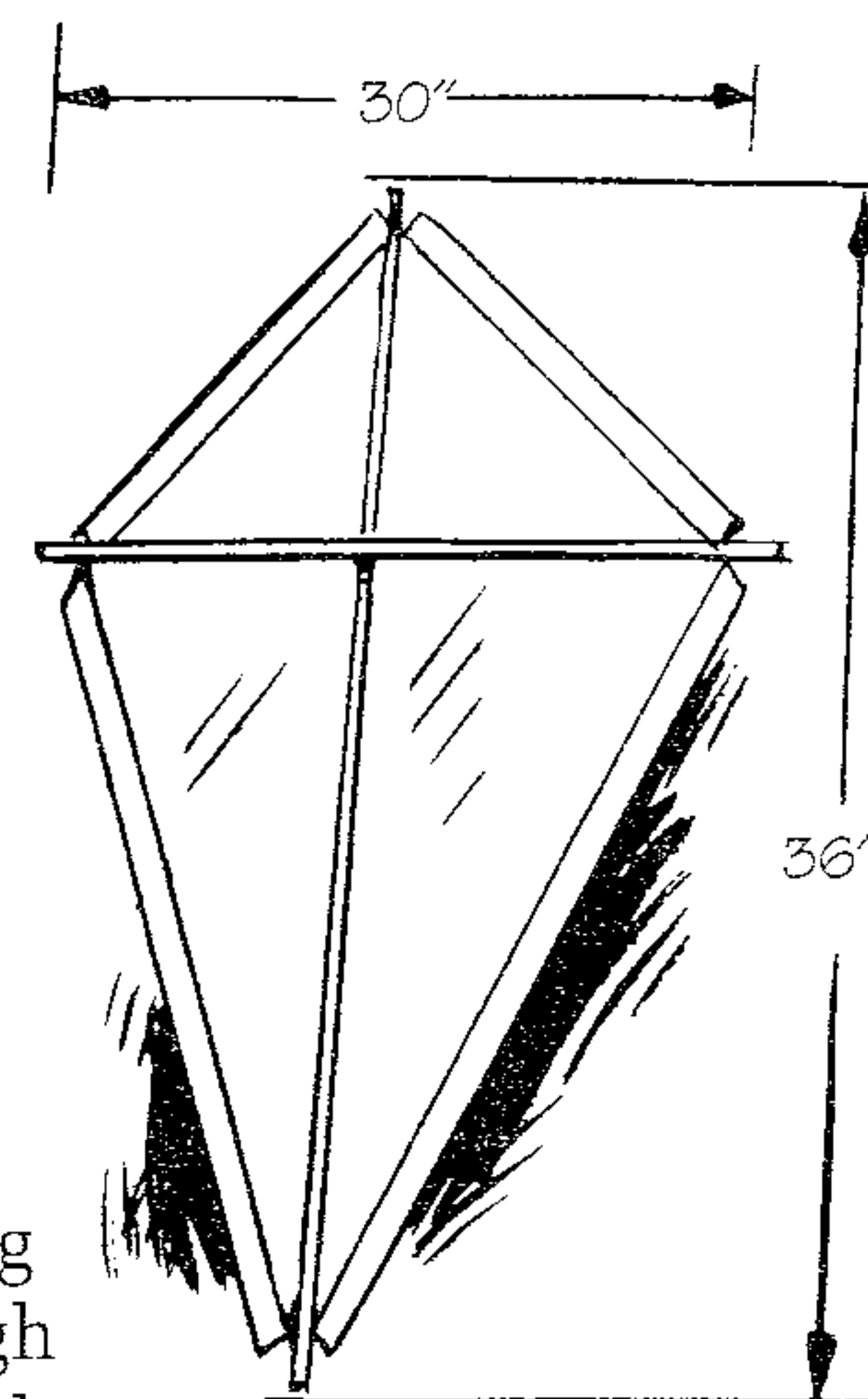
- Make a pattern for the wing and trace its shape onto the tissue paper. Cut it out.
- To fly the helicopter wing, slide a paper clip onto the wing. You may hand-launch the wing or shoot it into the sky with a rubber band.

KITE PROJECTS

Besides being fun, successful kite building and kite flying give boys a feeling of competence. Don't worry about flaws in workmanship; in a simple kite, they won't make much difference. Refer to Elective 5, "Spare-Time Fun," in the *Wolf Cub Scout Book* for more information about kites. Also see the chapter "Special Pack Activities" in this book for kite derby ideas and kite safety rules.

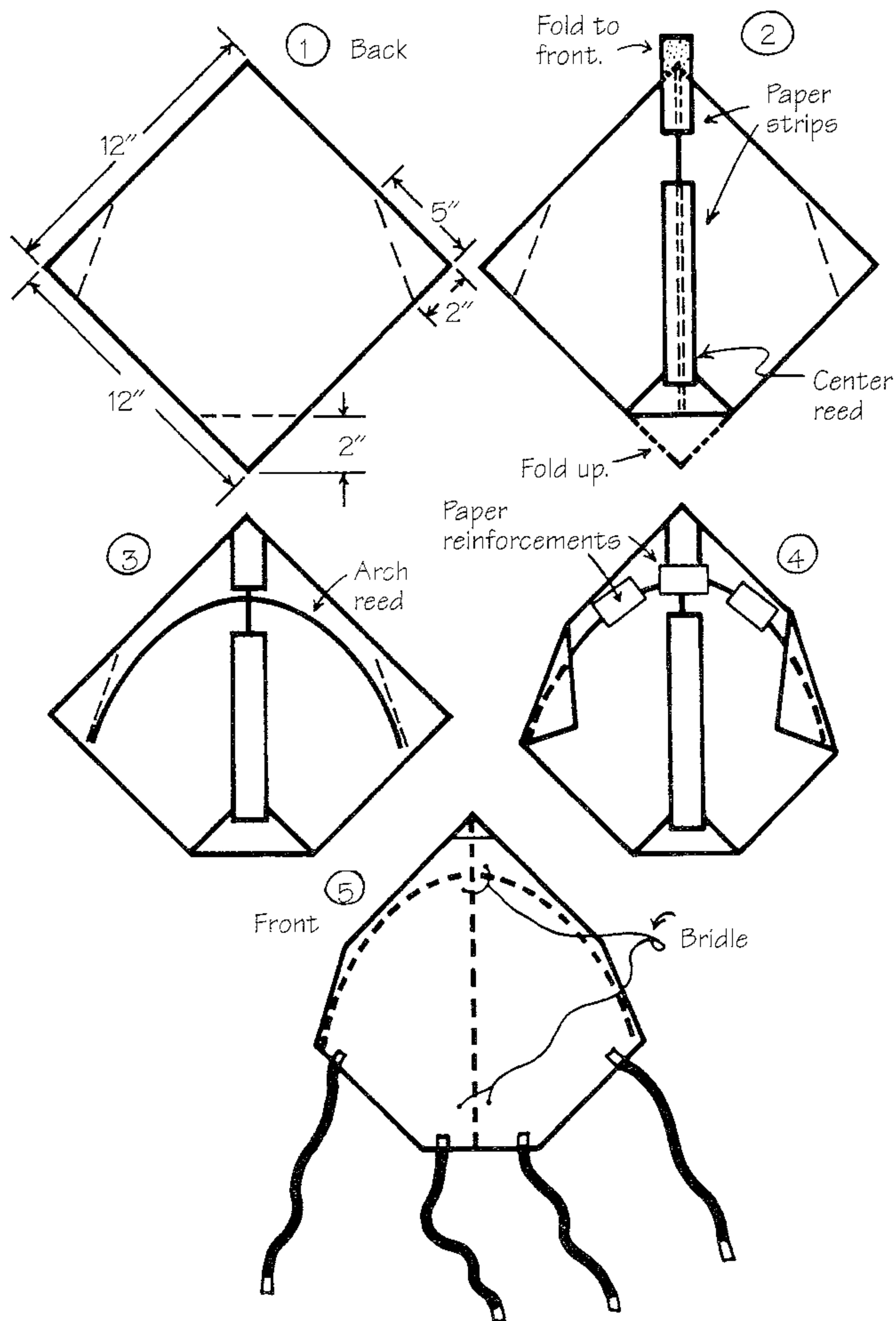
Two-Stick Flat Kite

Materials: Wrapping paper, strong plastic, or cloth; $\frac{1}{8}$ -by- $\frac{3}{8}$ -inch stick, 36 inches long; $\frac{1}{2}$ -by- $\frac{3}{8}$ -inch stick, 30 inches long; white glue or rubber cement; at least 100 feet of kite string



- Notch the sticks in the ends for framing strings. Tie the sticks together at right angles.
- Run the framing string around the kite, through the notches, and tie the ends together to complete your frame.
- Measure and cut the frame cover (wrapping paper, plastic, or cloth) with a 1-inch overlap all around, except at the sticks, as shown.
- Lay the frame over the "skin" and fold all the flaps over the frame. Check for fit. Glue down one flap at a time.
- The lengthwise bridle string should be about 40 inches long; the crosswise string, about 34 inches long.
- For a tail, tie 4-by-6-inch tissue paper bows about 6 inches apart on an 8-foot string.
- If the kite dances too much or is too sluggish, add or reduce the length of the tail to correct the kite's flight.

Tissue Paper Kite



Materials:

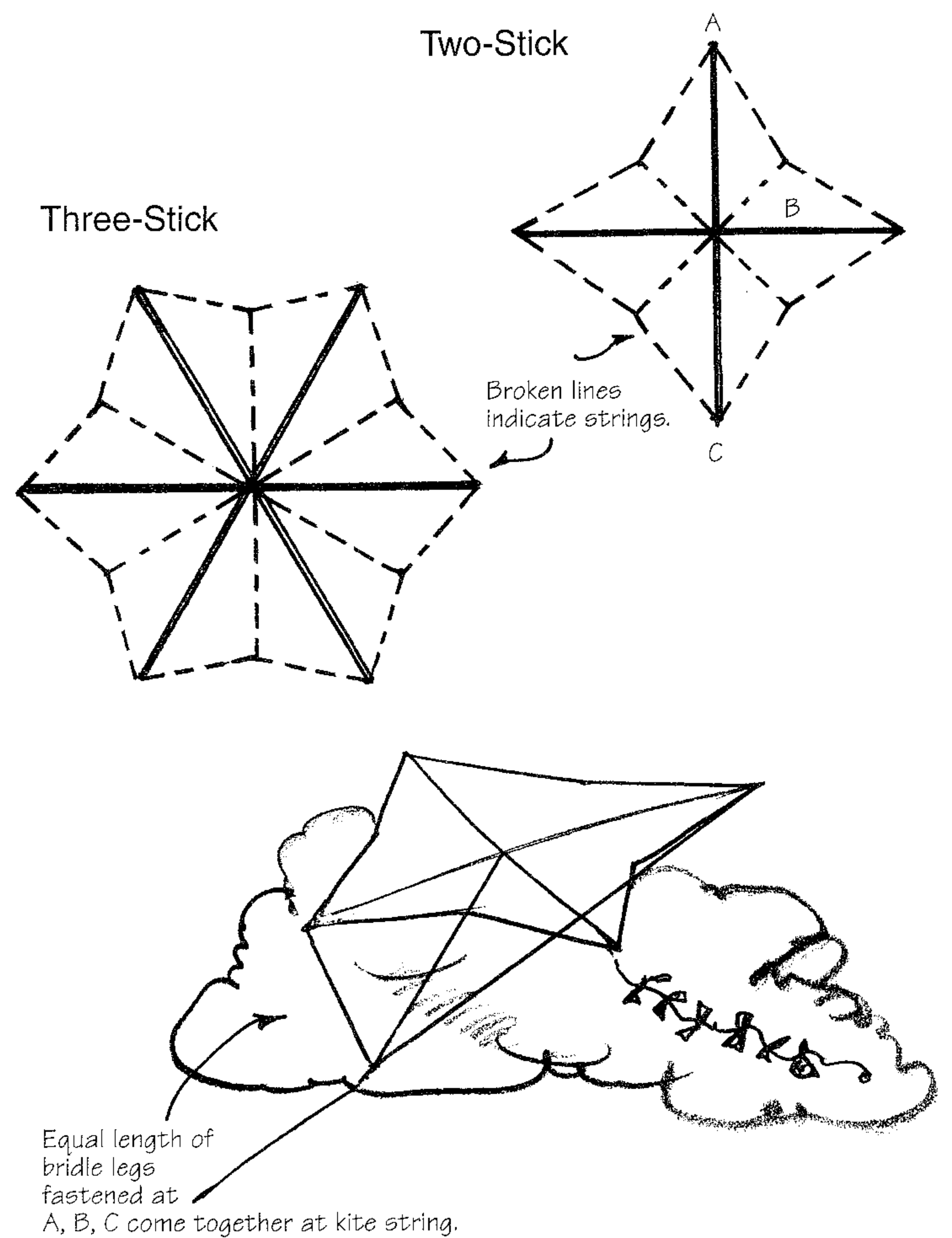
- 12-by-12-inch tissue paper square and scraps
- Four 2-inch-by-5-foot strips of crepe paper
- Rubber cement (or egg white)
- Matchstick-thick bamboo reed
- Scissors, pencil, ruler
- 22-inch lightweight string (bridle)

1. Cut the bamboo reed into two pieces, one 22 inches long and the other 15 inches long.
2. Crease the 12-by-12-inch square of tissue paper on the broken lines as shown in illustration 1.
3. Glue the 15-inch center reed in place by covering with a strip of scrap tissue paper. Trim the reed if necessary. Glue the bottom flap up over the center reed and a narrow strip of paper over the tip, folding the corners of this strip to the front to act as reinforcement (see illustration 2).
4. Measure and cut the reed for the arch to fit as shown in illustration 3. Be sure the reed is strong, with a good natural curve.
5. Glue the left and right corner flaps over the arched reed (illustration 4). For best results, glue on one side first and let it dry, and then glue the

other side, holding it taut until it dries. Glue paper reinforcements over the intersections of the reeds midway between the center and corners (illustration 4). Then turn over kite.

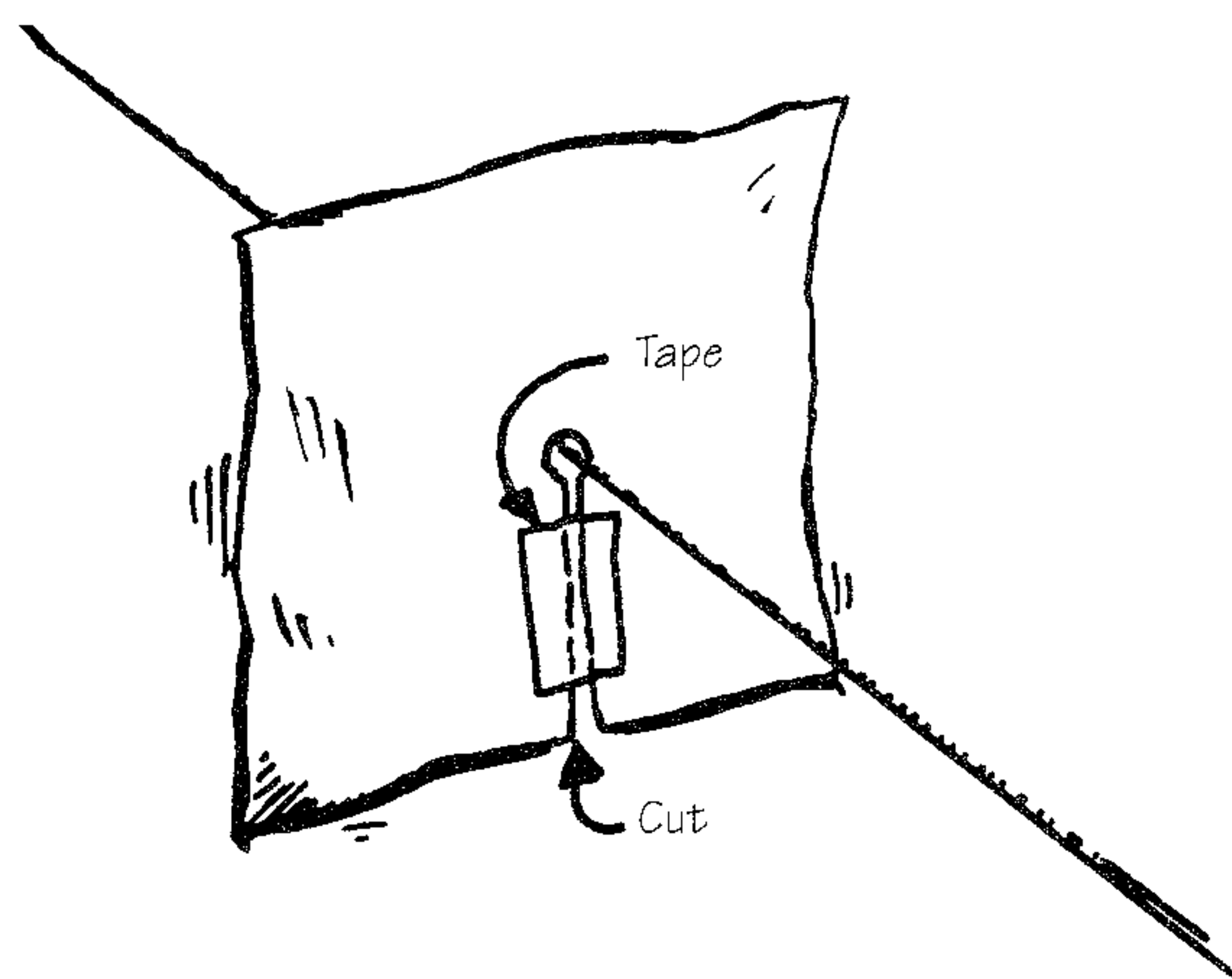
6. Tie the bridle string over the intersection of the bamboo reeds and then over the center reed 2 inches up from the base of the kite. Set the angle of the bridle by tying a loop in the string, as shown (illustration 5).
7. To find the correct flying angle, hold the kite by the bridle over a table. The center reed (spine) of the kite should be tilted upward at about a 15-degree angle from the horizontal. Add the four crepe paper tails as shown.

Star Kite



You can make two- and three-stick kites in a star shape as shown. The sticks are the same length. Tie them together and use string as shown. Glue on a paper cover. A tail, attached to one of the star points, is needed to balance these designs. Use a three-leg bridle and attach the kite line.

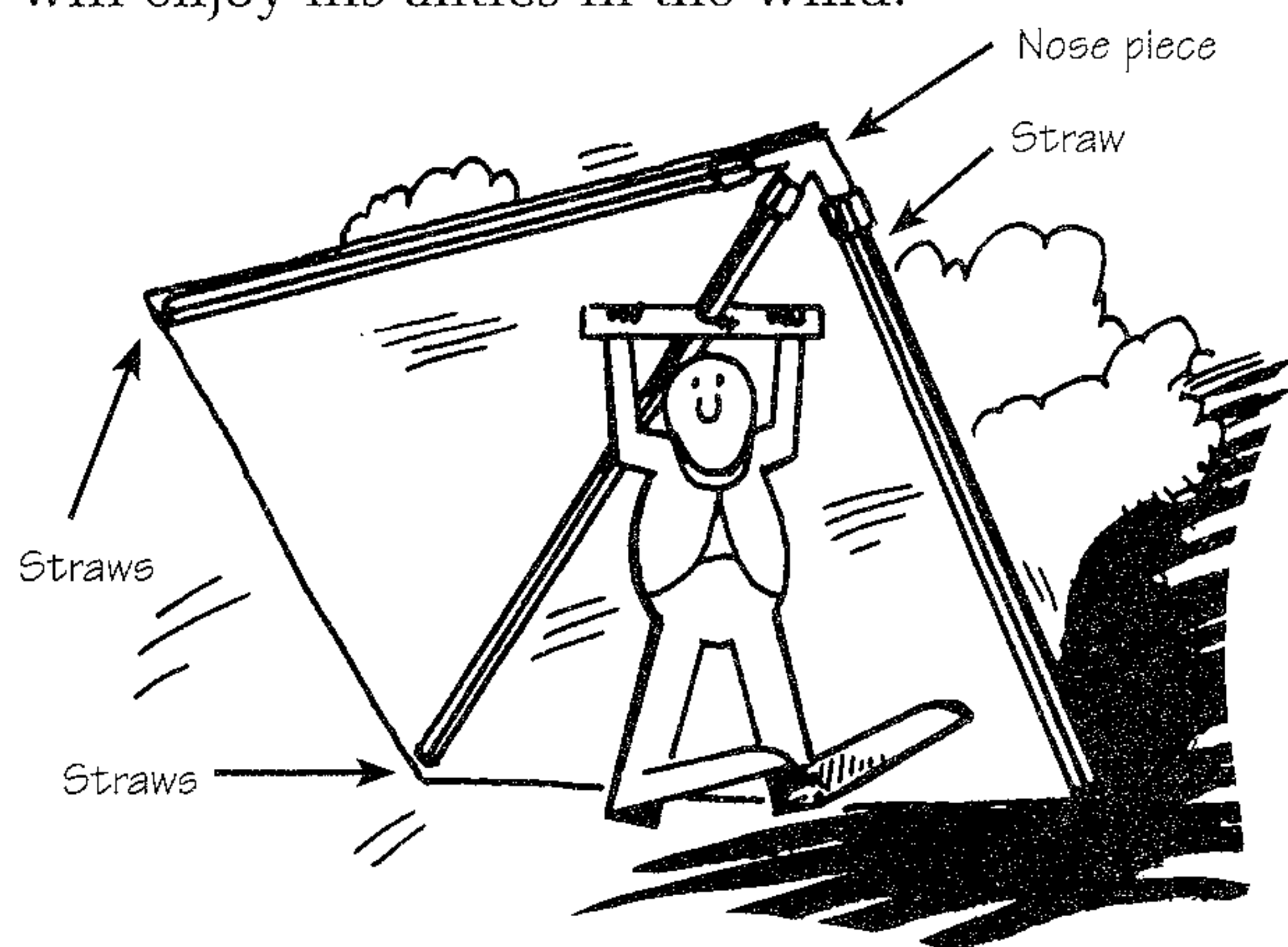
Kite Messenger



Cut a small hole in the center of a square of paper, with a slit to one edge, as shown. Slip the paper over the kite flying line and tape the slit shut. The wind will blow the messenger up the kite. To have a kite messenger race, all players send their kites up to a specific length of line—perhaps 50 yards. The messenger is then attached to the flying line and allowed to move up to the kite. The boy whose messenger reaches his kite first wins.

Hang Glider

This hang-gliding guy is easy to make, and boys will enjoy his antics in the wind.



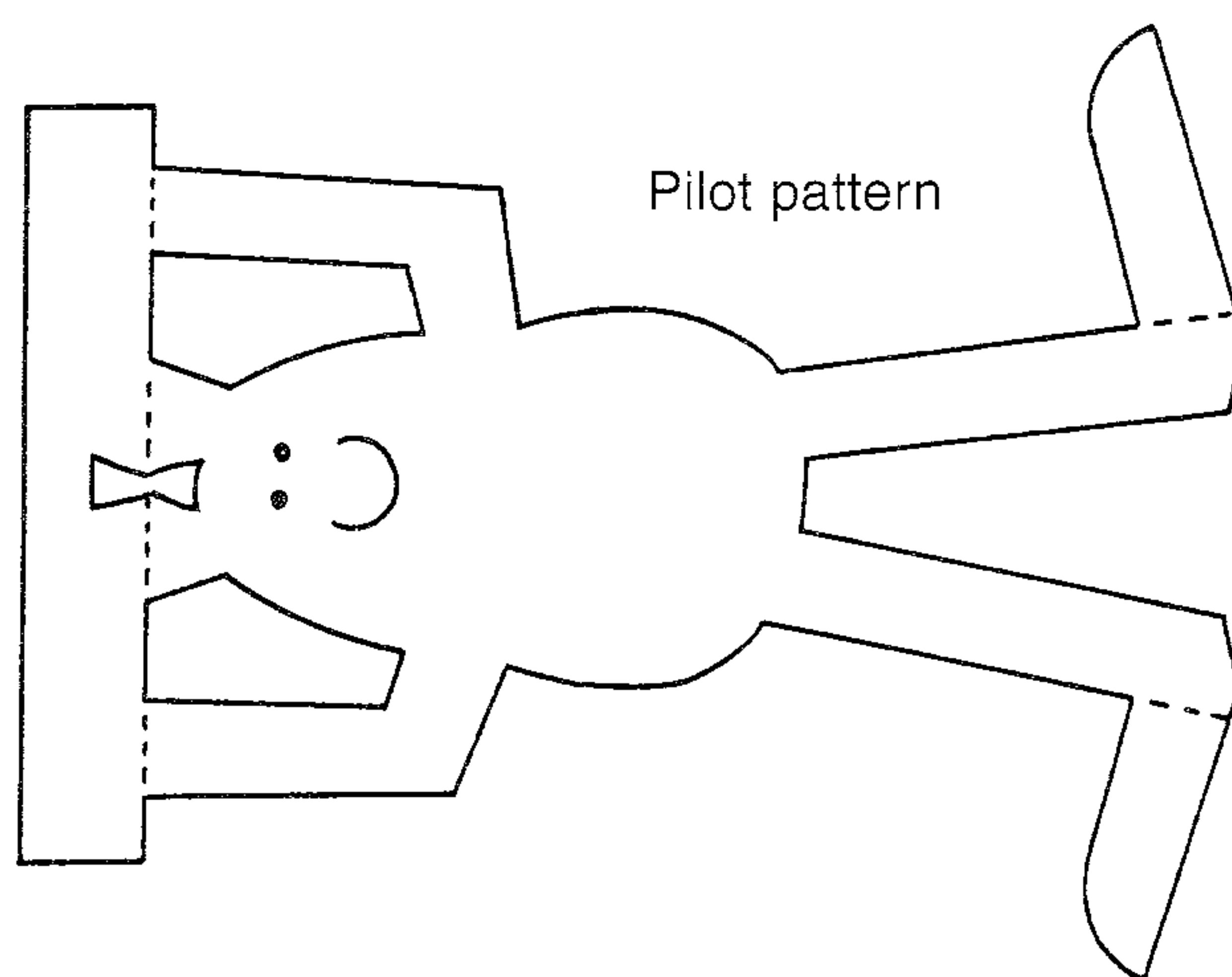
Materials: Transparent cellophane tape; thin plastic food wrap; three plastic soda straws, $\frac{1}{8}$ -inch in diameter; plastic lid from margarine tub; cardstock or heavy paper

1. Trace the shape of the nose piece on the plastic lid. Cut out the nose piece and insert into three straws of equal length. The nose piece should fit tightly for better wing support and better flight.
2. Trace the pattern for the pilot onto heavy paper and cut it out. Fold the feet forward and the top down on the dotted lines as shown.

3. Make tape ringlets by folding a 2-inch piece of sticky tape lengthwise, sticky side out. Cut into $\frac{1}{4}$ -inch rings.
4. Place two ringlets on each of the straws and one ringlet on the nose piece, as shown. Place the straws, ringlets down, onto the plastic food wrap. Cut around the straws as shown using a straight edge and blade, allowing about $\frac{1}{4}$ inch extra on all sides. Fold the extra width over the straws and tape down.
5. Attach the pilot to the center straw about 2 inches from the nose piece. Fly your kite and watch your hang glider fly!



Nose piece pattern



Pilot pattern

Folded pilot

