

Math-Art for Christmas

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Christmas--the magic word--still brings excitement to young faces and twinkles to their eyes. It is also known to bring confusion to the classroom as the countdown approaches and it becomes increasingly difficult to focus attention on learning.

As a teacher of junior high school mathematics, I have successfully utilized for several years "math-art" as a pre-Christmas activity with my classes. The idea can be easily adapted to various grade levels, with closer supervision of younger students and unlimited avenues of originality among older ones.

The creation of Christmas tree decorations representing a variety of geometric shapes is an excellent class project. My students usually decorate a large tree for the classroom. One year, they provided place favors for the December faculty meeting. Another year the decorations were arranged at a December PTA meeting in order that parents could view them. Whatever the use, both faculty and patrons always seem to be impressed with the originality and ingenuity of the students.

But beyond the fun and the opportunity for artistic expression, my personal justification for such activity at any level is that the students develop a vocabulary of geometry as well as the recognition and manipulation of geometric shapes. Later in the school term, when the units on geometry appear in the curriculum, the students readily remember their creations of geometric shapes and usually require a minimum of orientation to the unit of study.

Although the same students may participate in this activity from year to year, their enthusiasm does not seem to fade. Their originality and artistic expression become progressively more complex. The older the students, the more intricate are the designs and the more versatile are the materials used.

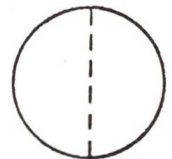
A "briefing" usually precedes the first session: explanation of the total project, suggestions for materials to be used, and a few ground rules to be followed during work sessions. Some of the following may be helpful to teachers who undertake such a project:

1. Keep materials simple. Minimize "bought" items whenever possible. Scraps of felt, ribbon, lace, decorative trims, yarn, velvet, foil, gift-wrapping paper, odds and ends of glitter, sequins, beads, cardboard (old boxes, shirt or blouse cards), can be found in most households. Construction paper, glue, tape, and staples may be available at school. If not, these items may be donated by those who have some available at home. My contribution is always the long ornament hangers for the finished decorations.

2. Have some way to store each student's materials (they may bring a paper bag or shoe box) if the decoration cannot be completed in one session. Although I usually have some 150 students participating, I have never really had a storage problem. Also, have some way to store completed articles. I usually bring some large coat boxes for this. Each box will hold many items, and the damage factor is minimized when the finished products are safely stored away.
3. Protective covers for desks or tables are a *must*. Newspapers and/or waxed paper are good. Glitter is messy! Glue is too! Even junior high students must be reminded to be careful!
4. Some provision should be made for the student who cannot bring materials or who feels that he does not wish to participate. If the former is true, an effort should be made to provide needed materials; if the latter, some alternate tasks related to the project might be assigned. Distribution and collection of school materials (scissors, rulers, compasses, etc.) and desk covers, help in clean-up and storage are very important. Each student should feel that he is participating *in some way* in the activity. A student who is reticent during the first session may well overcome his shyness on subsequent work days.
5. No effort should be rejected. Although originality should be emphasized, there are always some students whose best effort is a decorated styro-foam or satin ball. Some of these may be beautiful; others, pathetic. Whatever the finished product, it goes on the tree!

A few suggestions for decorations are given below. Hundreds of others may be found in the Christmas "do-it-yourself" craft magazines which have been in production for a number of years. I have a large collection of such magazines, which I usually keep on hand in the classroom as long as they are needed. The students may want to look through the magazines before deciding what to make. A picture may suggest possible materials and/or shapes that otherwise might not be considered.

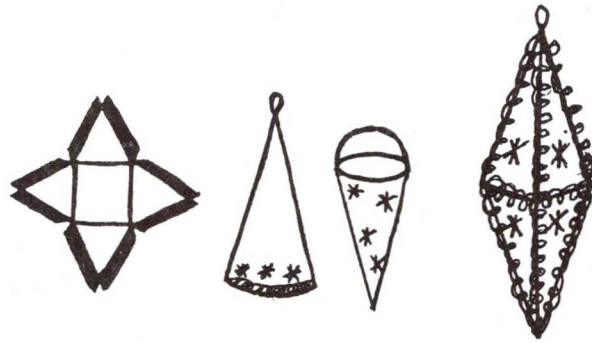
- (1) Cut 2 or 3 circles from construction paper. Fold circles in half. Tie the circles together along the folds with yarn. Make a loop at top for hanger and dangling fringe at bottom, if desired. Foil gift wrap glued to construction paper makes a brighter ornament here.



- (2) Do the same things in (1), except for the shape. Use a diamond shape (parallelogram) or ellipse.

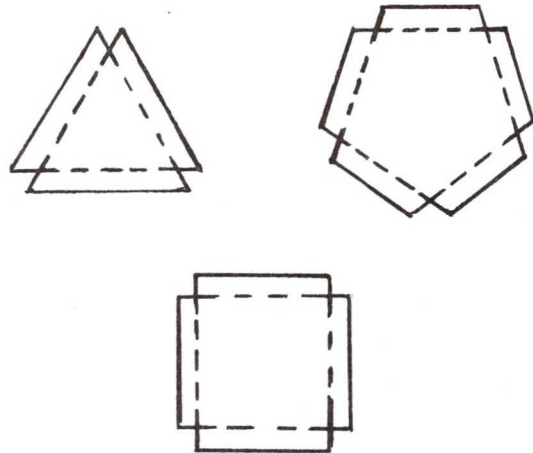


(3) Make two pyramids. Tape or glue bases together. Decorate edges with ribbon lace, decorative tape, etc. Decorate lateral faces with glitter, sequins, jewels, etc.



(4) Do the same as in (3) except to vary the number of sides on the bases of the pyramids. Use a cone instead of a pyramid. Cones may also be used singly, hanging from the pointed end (vertex) or from the base, as a "basket".

(5) Staple or glue "polypanels" with tabs folded to the outside. These are especially attractive when made with foil wrap glued onto construction paper.



The foregoing are just a few ideas to get you started. There are as many possibilities as you have students...and then some! Have fun! And HAPPY HOLIDAYS!
