THINKING OUTSIDE THE BOX

TRADE LINK: CARPENTRY

RATIONALE:

This activity reinforces the prevalence of geometry in our everyday world. A simple design for a small cabin can be created when a 2-D design is translated into a 3-D model. The economics of packaging and design start on the 2-D plane and evolve to the 3-D product after much deliberation and study. One of the skills of carpentry is to be able to think freely between 2-D plans and 3-D products.

METHOD:

In this activity, you will do some backward design in terms of unraveling a pre-made package so that it looks like a 2-D polygon. The notion of not wasting any materials is important to the design and production processes. You will also do some forward thinking design by creating a 2-D polygon design that, when folded together, becomes their new 3-D "product". You are asked to create a 2-D floor plan of a small cabin or house which, when folded together, becomes the end product.

MATERIALS:

- Various cardboard containers – herbal tea boxes, toothpaste box, spaghetti noodle box, file folder box, cereal box, milk carton, etc.
- Ruler.
- Graph paper.

GETTING STARTED:

In this activity, you will move back and forth between two-dimensional plans and three-dimensional models. Many people who work from plans or blueprints have the ability to do this with relative ease. You can too, with a little practice.

THE ACTIVITY:

1. Take a cardboard box and try "backward design" – carefully unwrap or unfold it until it is a flat two-dimensional object sitting in front of you. Keep in mind that when this package was designed, it started out as an idea on paper like this 2-D object, long before it was ever put together.

2. Fold your package from step 1 back together and try to imagine it being unfolded in your mind as you sketch it on a piece of graph paper. Unfold it and compare it to your sketch.

3. Imagine that you are going to build a design for a small cabin or house out of cardboard. Sketch on graph paper what it would look like. Remember – the idea is to design it in such a way that it can be cut out as one piece and folded (just like a model of a polygon) into the final product. Cut out your design, fold it together and see how it looks. Be sure to put in some flaps for gluing and taping.

BRANCHING OUT (EXTENSIONS AND VARIATIONS):

1. Transfer your design to balsa wood, styrofoam or bristol board and construct your model.
2. Try adding little extras to your original design such as a front porch, stairs, maybe even a garage.
3. Try working with a CAD (computer assisted drawing) program to develop your design.
4. Put your model house on a landscaped lot.