

## Section 12.5 - **Prism and pyramid Activity** \*

Have the students form groups with 2-3 students in each group.

Hand out 18 toothpicks and 12 gumdrops (or miniature marshmallows) to each group. (It saves time during class if you make up ahead of time a “sandwich size baggies” with the appropriate number of items in each bag. Determine how many bags you need based on the size of your class and the number of students per group.)

### **A. Perplexing Problems**

1. Use 12 toothpicks and 8 gumdrops to create six squares. (Think 3 dimensions.)
2. Use 6 toothpicks and 4 gumdrops to create four triangles.

**B.** When the students have solved the above problems and created the correct shapes, have them count the number of edges, vertices and faces for each figure.

**C.** Discuss the connections between the supplies for each problem and the answers for part B.

**D.** Have the students determine the number of edges, vertices and faces for other prisms and pyramids. Use models in class or pictures in the text as an aid.

**E.** Do in class, or as homework, section 12.5 Set A #10 and Set B #10.

These activities take the students from a very “hands-on” concrete level of understanding, to more abstract work with models, and then to understanding algebraic formulas **relating the number of edges, vertices and faces for a prism or pyramid to the number of edges on the polygonal base of the prism or pyramid.**

**F.** Do in class, or as homework, section 12.5 Set A # 9 and Set B # 9. These will help you in learning to draw prisms and pyramids. Be sure to focus on drawing the base(s) first and then adding the other edges. Use dashed lines for “hidden edges”.

\* Problems for gumdrop and toothpick figures based on “Gee-Whiz Geometry” article on pages 208-209 in the November 2004 NCTM journal Teaching Children Mathematics, (Volume 11, Number 4).