Angles and Polygons

Use the fact that one turn around is 360 degrees to figure out the following questions.

1. Find the angles in each corner of all the different pattern blocks.

2. For each pattern block, find the sum of all the angles. What patterns do you notice?

3. Use your work in #2 to predict what the angles should sum to in a 5-sided figure (don't build one before predicting). Then build one and check your prediction. Do the same for a 7-sided figure.

   Turn your observations into a formula.

4. Make at least 8 copies of a single interesting (all different sides, no right angles) triangle. You can use graph paper to make sure they are the same. Can you line them up so they make a straight strip of paper (except for maybe the ends)? Conclude something about the angles in a triangle.

5. Use the result about triangles in the last problem to explain why your sum-of-angles formula in #3 always works.

6. A **polygon** is a flat figure whose sides are straight line segments with no loose endpoints. Is it true that every polygon with all equal angles must have equal sides? Is it true that every polygon with equal sides must have all its angles equal?