



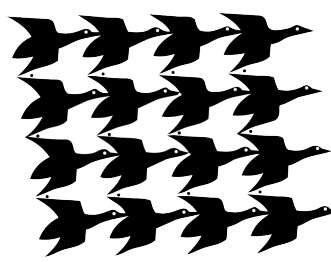
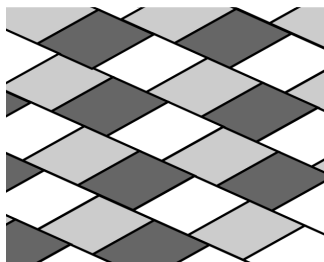
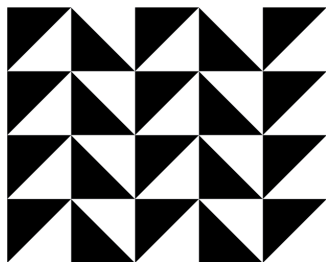
Problem of the Week

Problem B

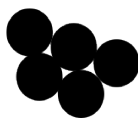
Tessellation Consternation

A *tessellation* is a tiling pattern in which two-dimensional shapes fit together with no overlaps or gaps. A *regular tessellation* uses congruent shapes.

Below are three examples of tessellations, using right triangles, parallelograms, and two slightly different birds, respectively. The first two are regular tessellations, the third is not.

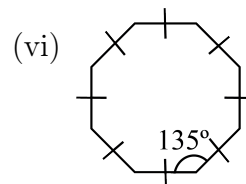
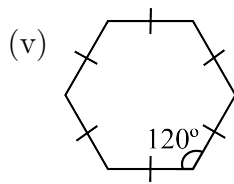
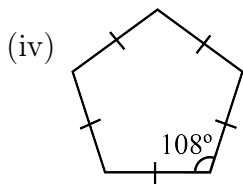
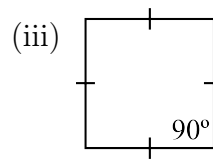
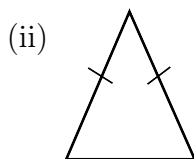
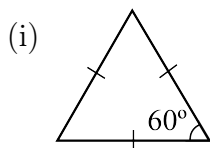


A circle is an example of a shape that does not tessellate, since circles cannot be tiled without creating overlap or gaps:



- (a) For each shape below, name the shape and then decide whether or not it can be tessellated. Note that shapes may be rotated, reflected, and/or translated in order to make them tessellate.

HINT: For no gaps, what must the total angle be where vertices meet?



- (b) On a piece of cardboard or sturdy construction paper, draw an irregular quadrilateral (that is, a quadrilateral with all four sides of different lengths) and cut it out. Trace it on a piece of paper, then continue to move and retrace it to see whether it will tessellate or not.

SUGGESTION: If desired, use a digital tool instead of tracing by hand.