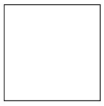
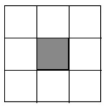
1. (Exercise 20, 22 in Section 11.1 of *Symmetry, Shape, and Space*) Find a triangle on the surface of the sphere whose angles add up to 270°. Is the area of this triangle equal to, greater than, or less than

$$\frac{1}{2} \times \text{base} \times \text{height}?$$

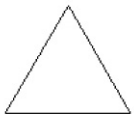
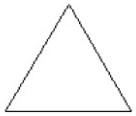
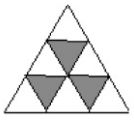
2. Can you find a triangle on the sphere whose angles add up to less than 180°?

3. *The Sierpinski Carpet* Using graph paper, carefully draw the figures that result from the first three steps, with the following recursive replacement rule:

   Start with a square  . Whenever (and wherever) you see a  , replace it with a  .

   Suggestion: Since you're going to be dividing the sides of your squares into thirds three times, you might want to start with them having length 27, if the squares on your graph paper are small enough.

4. *The Mitsubishi Gasket* Using graph paper, carefully draw the figures that result after two steps, with the following recursive replacement rule:

   Start with an equilateral triangle  . *Whenever (and wherever) you see a*  , *replace it with a*  .

   Suggestion: Since you're going to be dividing the side of your triangles into thirds twice, you want to start with them having a length that's a multiply of 9.

5. What points in the plane do the following complex numbers represent? Graph each one.

   (a) $2 - 3i$

   (b) $3 + 4i$

   (c) 7

   (d) $-2i$

6. Evaluate the following: (Remember that $i = \sqrt{-1}$.)

   (a) $(-7 + i) - (1 + 6i)$

   (b) $(3 - i)(5 + 2i)$

   (c) $i(4 + 3i)$

   (d) $(-2 + 4i)(8 - i)$