Problem of the Week
Problem B and Solution
The Die is Cast

Problem
An 8-sided die contains a different symbol on each side. The diagrams below are pictures of the die from different angles.

a) Given the first three views of this die, determine what symbol would appear on the blank side shown in the fourth diagram.

b) Describe to a classmate how you solved the problem.

Solution

a) A circle \( \bigcirc \) will appear in the blank space on the fourth die.

Reasoning:
Examining the first two views of the die, we see that the eight possible symbols on the octahedron are \( \triangle \bigcirc \bullet \square \times \otimes S \bigotimes \). On the last two views, seven of those eight symbols appear, but on different ‘halves’ of the die than the first two views. Since the pair \( \square \bullet \) is with the pair \( \otimes \times \) on the third view, the fourth view must show the pairs \( S \bigotimes \) and \( \triangle \bigcirc \).

A completed version of the net for the die is shown below.

b) Explanations will vary. The teacher may wish to choose students with several different versions to present to the class.