

Student Activities: Problem-Solving Session

This year's MAA Pacific Northwest Section meeting at the University of Puget Sound will include a Student Problem-Solving session. We will have several problems from various sources for students to consider, plus paper and pencils to work with. The session is strictly for fun; we hope to bring together students from different schools to work together on interesting problems.

In addition, problems from the American Mathematical Monthly will also be available; interested students can write up solutions for submission and publication in the Monthly as part of the Pacific Northwest Section Problem-Solving Group.

Here are a couple of sample problems; there will be many more at the meeting.

1. [Source: Five Hundred Mathematical Challenges, Barbeau, Klamkin, Moser, 1995, MAA] Observe that

$$9^3 + 15^3 + 12^3 = 18^3$$

$$28^3 + 53^3 + 75^3 = 84^3$$

$$65^3 + 127^3 + 248^3 = 260^3$$

Find a generalization.

2. [Source: My Best Puzzles in Mathematics, Hubert Phillips ("Caliban"), 1961, Dover] Each of the four faces of a regular tetrahedron is divided into four equilateral triangles. You have four colors with which to paint this solid, subject to the following rules: (a) You may only use two colors on each face (b) Each color must be used exactly four times (c) If two triangles share a side, they must be different colors.

In how many different ways can you paint this tetrahedron according to the rules?

Be sure to let your students know about this opportunity to get to know students from other schools in a fun, informal setting!