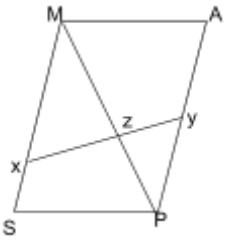
Name:

Geometry Project: Similarity & Dilations

Part 1: The Proof

Task: Write a **two-column or paragraph proof** to show the triangles are similar using AA, SSS, or SAS. Be sure to include reasons and use correct vocabulary. Please type your work below, or if handwritten, please insert a photo of your proof.

Given: MAPS is a parallelogram, with diagonal $\overline{MP}$ and a segment $\overline{xy}$ drawn in the interior.
Prove: $\Delta MZX \sim \Delta PZY$



Proof:

Part 2: Problem Solving with Proportions

Solve the following problems, showing all work. You may type your work below, or if handwritten, please insert a photo of your solution.

1) Two similar triangles have a scale factor of 3:5. If a side of the smaller triangle is 12, what is the corresponding side of the larger triangle? Justify your answer.

2) $\Delta ABC \sim \Delta DEF$. If $AB = 6$, $AC = 8$, and $DE = 9$, find the length of $\overline{DF}$. Justify your answer.

3) A tree casts a shadow 15 feet long. At the same time, a 6-foot person casts a shadow 4 feet long. How tall is the tree? Justify your answer.

4) An artist wants to enlarge a 4-inch by 6-inch photo to make a canvas painting. The longer side will be 30 inches.

a) What is the measure of the shorter side? Justify your answer.

b) What is the scale factor from the photo to the painting? Justify your answer.

5) On a coordinate plane, ΔABC has vertices at A(1, 2), B(3, 2) and C(2, 5).
a) If ΔABC is dilated by a scale factor of 2 (centered at the origin) what are the new coordinates of $\Delta A'B'C'$?

b) Are ΔABC and $\Delta A'B'C'$ similar? Explain.

Part 3: Your Own Creation

For this part, write your own **original real-world problem** involving similar triangles. Your problem must be different in context and structure from the problems in Part 2; it should not be the same type of problem with only different numbers. Solve your problem step by step and show all work below, using proper notation. Include a labeled diagram either as part of the problem or as part of your solution. You may type your work, or if handwritten, insert a clear photo of both your real-world problem and your solution.

Real-World Problem:

Solution: