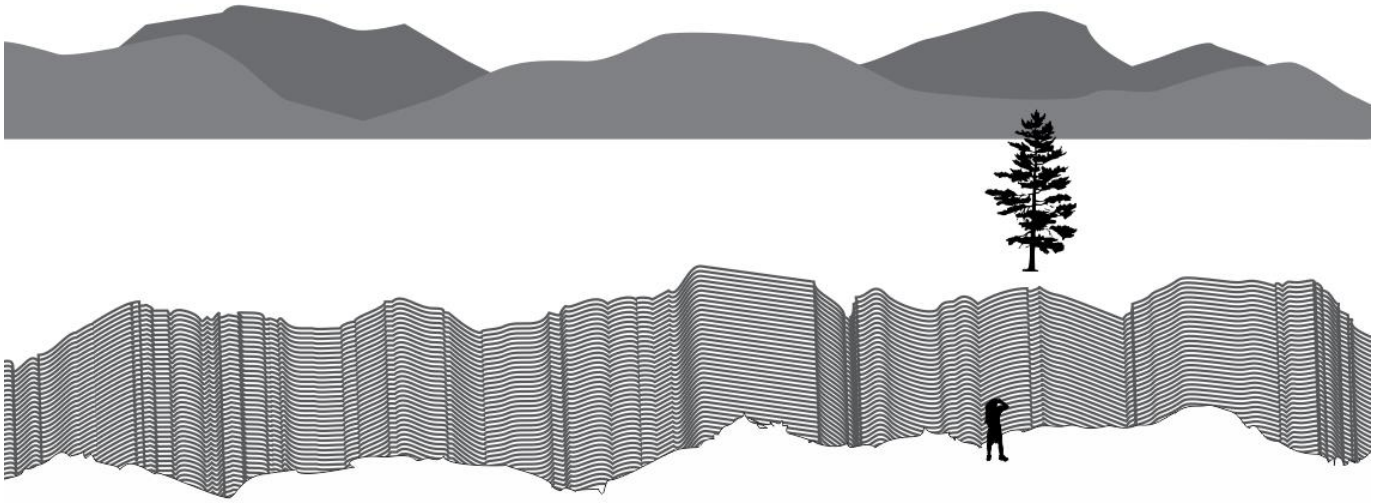
Garnet - <u>Chapter 4 Performance Task</u>

Paul wants to estimate the distance across the canyon shown in the diagram below. He stands at point Y and locates a tree at point X directly across the canyon to the north. He then walks west along the canyon 500 feet and marks point A. After walking another 500 feet in the same direction, at point B, he turns 90° and walks south, perpendicular to the canyon. He stops at point C where his location seems to form a straight line with points A and X. Paul measures the distance BC as 327 feet.

<u>Task</u>: What is the distance across the canyon? Label the diagram. Include all the given information.



Answer the following questions using complete sentences:

1. Which angles are congruent? How do you know? _____

_____

2. Which sides are congruent? How do you know? _____

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3. What is the definition of a congruent triangle? _____

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4. Can you conclude that the triangles are congruent using the definition of congruent triangles? How? If not, what additional information would you need? _____

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5. What congruence postulate or theorem can you use to prove the triangles congruent? _____

6. Prove that the two triangles are congruent using the information that was given in the problem. You may write a two-column or a flowchart proof.

7. Now you can conclude that $\overline{XY} \cong$ _____ because _____

_____

8. What is the approximate distance across the canyon? (to the nearest hundredth of a foot) _____

9. If you are hiking and get to a really wide river, show how you can stay on your side of the river and use only the length of your stride (estimate your stride as 3ft per step) and a compass (N, S, W, E) to determine the width of the river. Draw a diagram and write several sentences to explain your method.

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