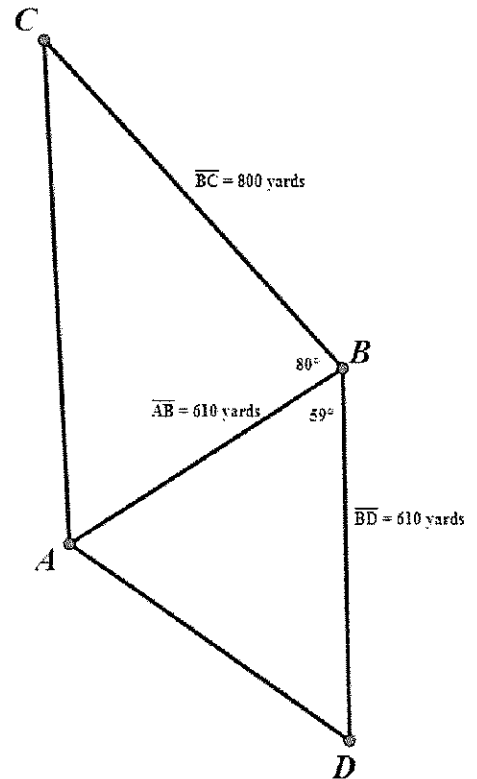


FINDING A NEW AREA FORMULA FOR TRIANGLES LEARNING TASK

A developer needs to find the area of some plots of land he is interested in buying. Each plot is owned by a different person and neither owner knows the actual area of the land. The diagram below illustrates the plots he wants to buy but he wants to know the area before buying it.

Your task is to calculate the total areas of the plots.

1. Recall that the formula for the area of a triangle is $A = \frac{1}{2}bh$ where b is the length of the base and h is the height, perpendicular to the base. Can the formula be used in this situation? Why or why not?



2. What information would be helpful in determining the area of the triangles? (Hint: Can you draw another line that would help?)
3. Calculate the height of $\triangle ABC$. Find the area. Use your strategy to calculate the area of $\triangle ABD$. What is the total area of the two properties?

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4. After working on this problem, would be possible to generalize this method for use on any triangle?

Construct any triangle. Label the angles A, B, and C. Label the side opposite from A with a, the side opposite B with b, and the side opposite C with c.

Construct any altitude from a vertex.

Now calculate the height of your triangle.

Now that you know the height of the triangle, you can write a general formula for the area of any triangle. Use $A = \frac{1}{2}bh$ as a starting point.

5. Compare your formula with another student. Did you get the same thing? Could you both be right?
6. Would it be possible to develop a third formula for the area? If so, find it. If not, explain why not.