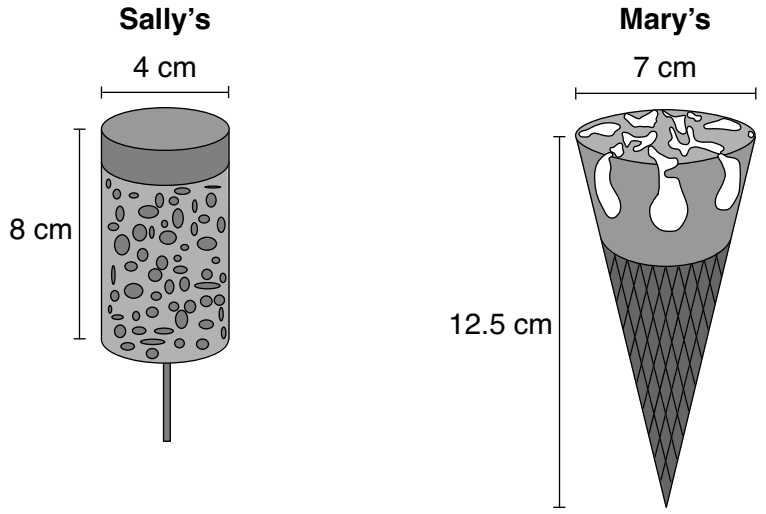
## Part III

**Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil.** [12]

**32** Sally and Mary both get ice cream from an ice cream truck. Sally's ice cream is served as a cylinder with a diameter of 4 cm and a total height of 8 cm. Mary's ice cream is served as a cone with a diameter of 7 cm and a total height of 12.5 cm. Assume that ice cream fills Sally's cylinder and Mary's cone.




Who was served more ice cream, Sally or Mary? Justify your answer.

Determine and state how much more is served in the larger ice cream than the smaller ice cream, to the *nearest cubic centimeter*.

## Part IV

**Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided to determine your answer. Note that diagrams are not necessarily drawn to scale. A correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil.** [6]

**35** Given: Triangle $DUC$ with coordinates $D(-3,-1)$, $U(-1,8)$, and $C(8,6)$

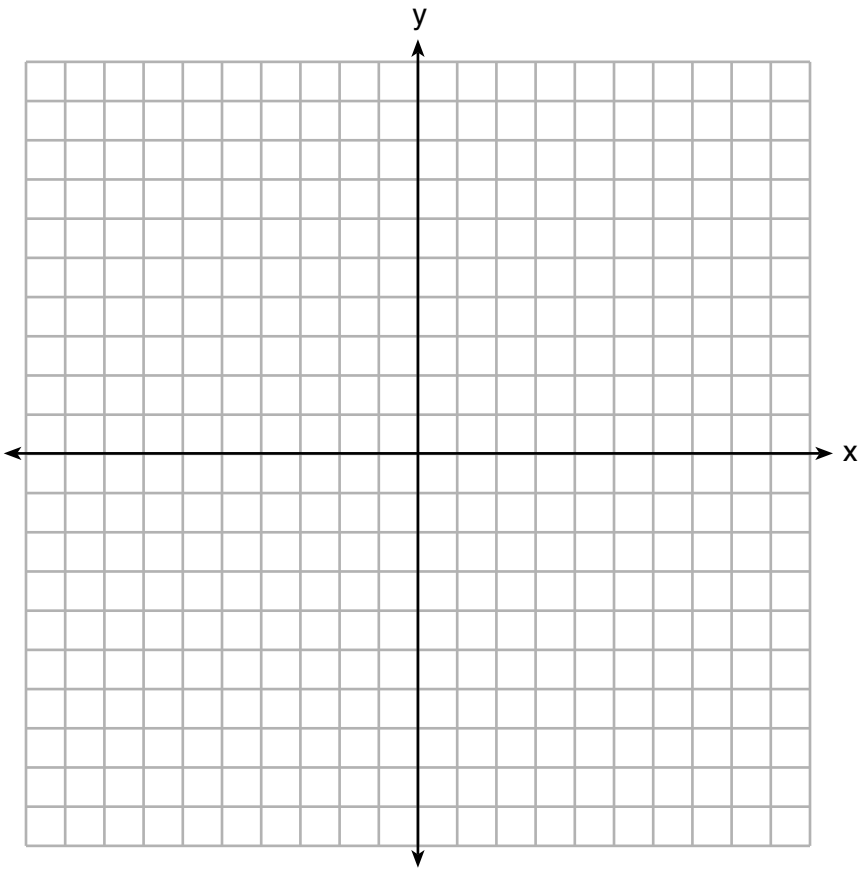
Prove: $\triangle DUC$ is a right triangle

[The use of the set of axes on the next page is optional.]

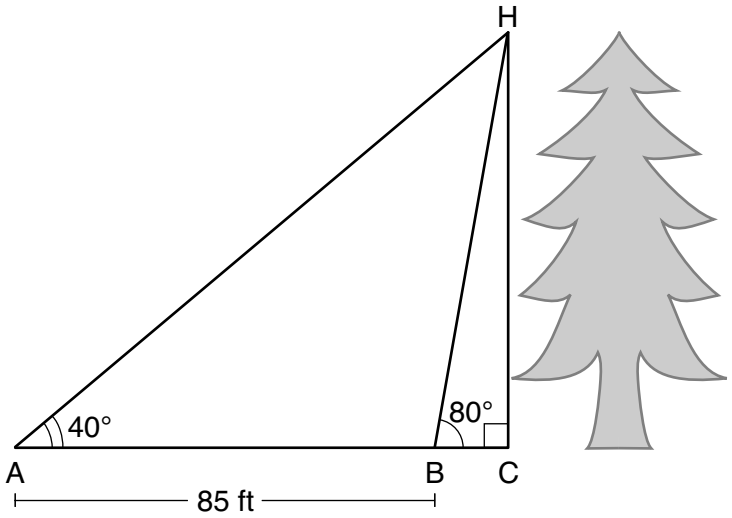
**Question 35 is continued on the next page.**

**Question 35 continued**

Point $U$ is reflected over $\overline{DC}$ to locate its image point, U′, forming quadrilateral $DUCU'$. Prove quadrilateral $DUCU'$ is a square.



**34** Barry wants to find the height of a tree that is modeled in the diagram below, where $\angle C$ is a right angle. The angle of elevation from point $A$ on the ground to the top of the tree, $H$, is 40°. The angle of elevation from point $B$ on the ground to the top of the tree, $H$, is 80°. The distance between points $A$ and $B$ is 85 feet.




Barry claims that $\triangle ABH$ is isosceles. Explain why Barry is correct.

Determine and state, to the *nearest foot*, the height of the tree.