Geometry Group Work: Similarity #1

In the figure, $AB = 5$, $AC = 4$, $BE = 7$, $CD = x$, $DE = y$, and $\angle ACB \cong \angle AED.$

[1] Identify two similar triangles and explain how you know that they are similar. Draw them here with matching orientations.


In the figure at right,

- $AB = AC = x$
- $BC = BD = 1$

Find $\frac{\text{Area}(\triangle ABC)}{\text{Area}(\triangle BCD)}$ in terms of $x$. Show all steps that lead to your answer.

Hint: Each triangle has two congruent sides. Cite a theorem to identify congruent angles. Then identify two similar triangles. (Draw them side-by-side with the same orientation.)
Refer to the drawing at right, which is not drawn to scale.

\[ x = AD \]
\[ DB = 3 \]
\[ BC \parallel DE \]
\[ \text{Area}(\Delta ABC) = 16 \text{Area}(\Delta ADE) \]

Find \( x \). Show your work.
Geometry Group Work: Similarity #4

A regular hexagon called $hex_1$ has sides of length $x$. A second hexagon called $hex_2$ is created by joining the midpoints of the sides of $hex_1$. Find the value of the ratio.

\[
\frac{\text{Area}(hex_1)}{\text{Area}(hex_2)}
\]

Show your work.
Refer to the drawing at right. Find $y$ in terms of $x$.

Hint: Start by identifying two similar triangles. Be sure to explain how you know that they are similar, and be sure to draw the triangles side-by-side with the same orientation and with all known parts labeled.