

Group Work about Similarity

In all three figures, $AB = 5$, $AC = 4$, $BE = 7$, $CD = x$, $DE = y$, and $\angle ACB \cong \angle AED$

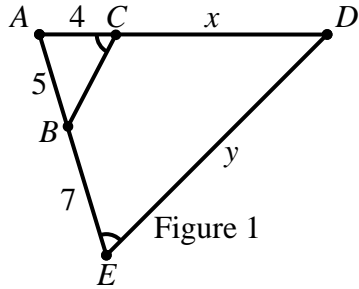


Figure 1

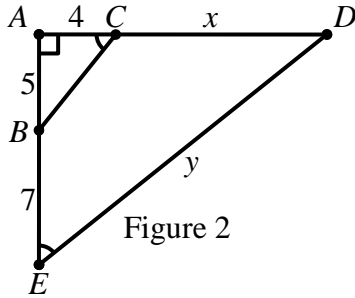


Figure 2

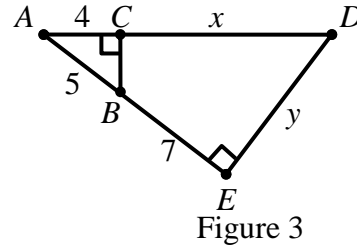


Figure 3

(A) In Figure 1, identify two similar triangles and explain how you know that they are similar. Draw them with matching orientations.

(B) Find the value of x for Figure 1. Observe that this will be the value of x for all three figures.

(C) How do you think it might be possible to find the value of y ? Discuss and write your thoughts.

(D) Figure 2 is a special case of Figure 1, the special case in which $\angle BAC$ is a right angle. Find y by using the Pythagorean Theorem and the known value of x from part (B).

(E) Figure 3 is a different special case of Figure 1, the special case in which $\angle AED$ is a right angle. Find y by using the Pythagorean Theorem and the known value of x from part (B).

Your answers to [16](C) and (D) should differ. This proves that it is not possible to find the value of y for Figure 1 using only the information shown in Figure 1. More information is needed, such as the additional information given in Figure 2 or Figure 3.