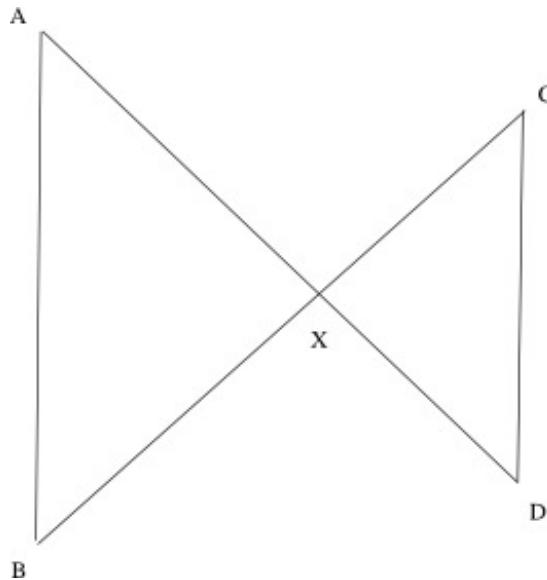


# G-SRT Are They Similar?

## Task

In the picture given below, line segments  $AD$  and  $BC$  intersect at  $X$ . Line segments  $AB$  and  $CD$  are drawn, forming two triangles  $AXB$  and  $CXD$ .



In each part (a)-(d) below, some additional assumptions about the picture are given. In each problem, determine whether the given assumptions are enough to prove that the two triangles are similar; and if so, what the correct correspondence of vertices is. If the two triangles must be similar, prove this result by describing a sequence of similarity transformations that maps one triangle to the other. If not, explain why not.

a. The lengths  $AX$  and  $XD$  satisfy the equation  $2AX = 3XD$ .

b. The lengths  $AX$ ,  $BX$ ,  $CX$ , and  $DX$  satisfy the equation  $\frac{AX}{BX} = \frac{DX}{CX}$ .

c. Lines  $AB$  and  $CD$  are parallel.

d. Angle  $XAB$  is congruent to angle  $XCD$ .



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