

4.4 Investigate Triangles and Congruence

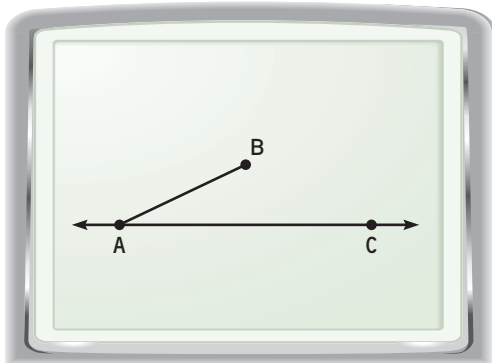
MATERIALS • graphing calculator or computer

QUESTION Can you prove triangles are congruent by SSA?

You can use geometry drawing software to show that if two sides and a nonincluded angle of one triangle are congruent to two sides and a nonincluded angle of another triangle, the triangles are not necessarily congruent.

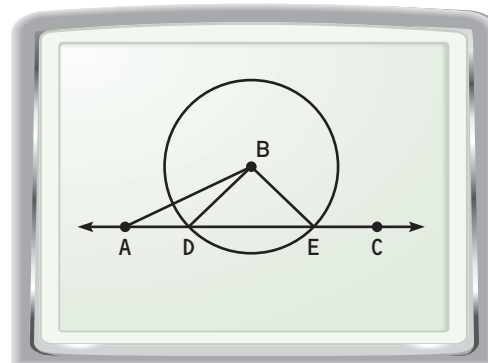
EXAMPLE Draw two triangles

STEP 1



Draw a line Draw points A and C . Draw line \overleftrightarrow{AC} . Then choose point B so that $\angle BAC$ is acute. Draw \overline{AB} .

STEP 2



Draw a circle Draw a circle with center at B so that the circle intersects \overleftrightarrow{AC} at two points. Label the points D and E . Draw \overline{BD} and \overline{BE} . Save as “EXAMPLE”.

STEP 3 Use your drawing

Explain why $\overline{BD} \cong \overline{BE}$. In $\triangle ABD$ and $\triangle ABE$, what other sides are congruent? What angles are congruent?

PRACTICE

1. Explain how your drawing shows that $\triangle ABD \not\cong \triangle ABE$.
2. Change the diameter of your circle so that it intersects \overleftrightarrow{AC} in only one point. Measure $\angle BDA$. Explain why there is exactly one triangle you can draw with the measures AB , BD , and a 90° angle at $\angle BDA$.
3. Explain why your results show that SSA cannot be used to show that two triangles are congruent but that HL can.