IM 9–12 MATH v.1

Unit 2
Congruence

GEOMETRY

Lesson 4

Congruent Triangles, Part 2

Illustrative Mathematics®

Kendall Hunt

Learning Goal

Let's figure out if there are shortcuts for being sure two triangles are congruent.

Geometry

Make That Triangle

Warm-up

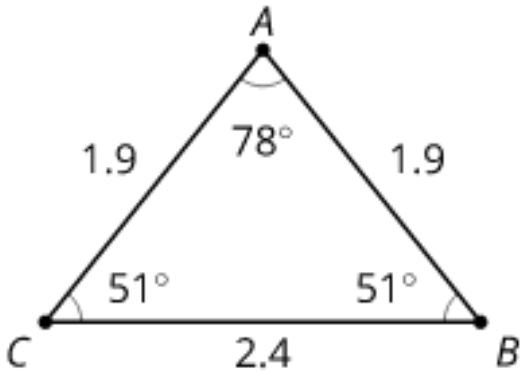
Draw triangle ABC with these measurements:

- Angle A is 40 degrees.
- Angle B is 20 degrees.
- Angle C is 120 degrees.
- Segment AB is 5 centimeters.
- Segment AC is 2 centimeters.
- Segment BC is 3.7 centimeters.

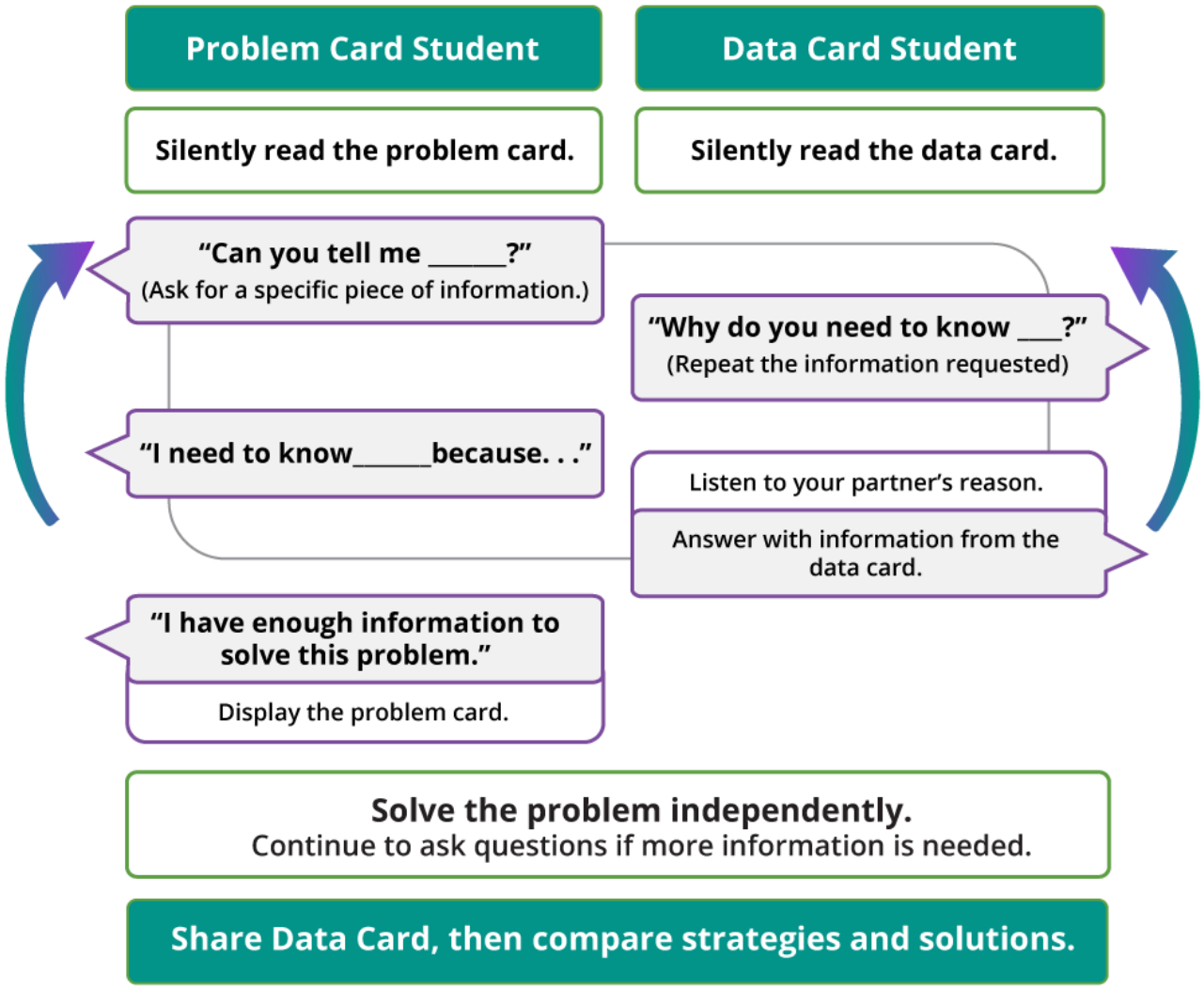
Highlight each piece of given information that you used. Check your triangle to make sure the remaining measurements match.

Info Gap: Too Much Information

What is the least amount of information you need to construct a triangle that is congruent to your partner's?

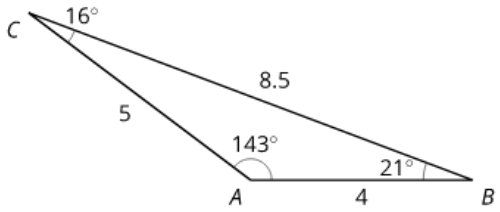


Info Gap: Too Much Information



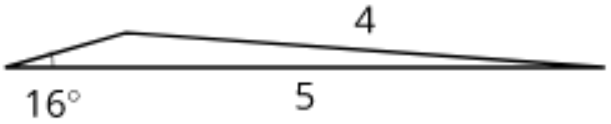
Too Little Information?

Jada and Tyler were playing the Info Gap, using Card 3.



Tyler asked, "Can I have 2 sides and an angle?"

Jada told Tyler that one angle was 16° , one side was 5 cm, and one side was 4 cm. Here is the triangle Tyler made:



1. Is Tyler's triangle congruent to the triangle on the Data Card?
2. Did Tyler do anything that didn't match Jada's instructions?
3. How could Tyler have made a more specific request for 2 sides and an angle so that his triangle was guaranteed to match Jada's?

Congruent Triangles, Part 2

Lesson Synthesis

Triangle Congruence Criteria Conjectures.

- Angle-Side-Angle “Two angles and the side between them.”
- Side-Angle-Side “Two sides and the angle between them.”
- Side-Side-Side “All three sides.”

I can write conjectures about what I need to know to prove two triangles are congruent.

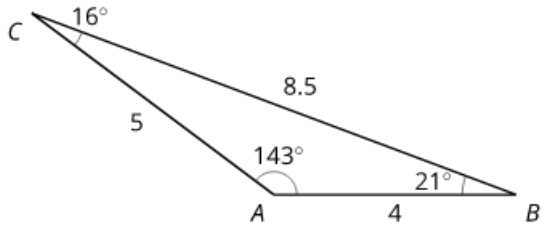
Learning Targets

Geometry

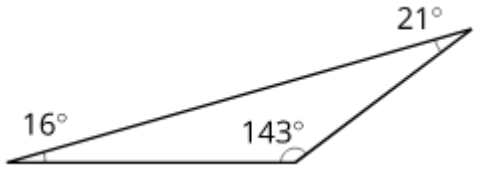
Angles All the Way

Cool-down

Andre and Lin were playing Info Gap: TMI, using Card 3.



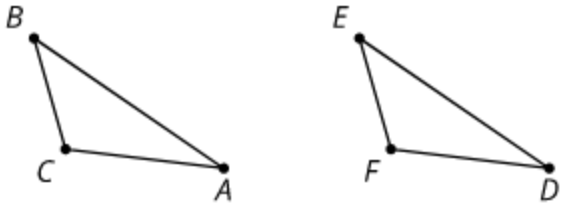
Andre asked, "Can I have all 3 angles?" Lin told Andre that one angle was 16°, one angle was 143°, and one angle was 21°. Here is the triangle that Andre made:



1. Is Andre's triangle congruent to the one on the Data Card?
2. What other information could Andre have asked for to be sure the triangle he drew is congruent?

corresponding

For a rigid transformation that takes one figure onto another, a part of the first figure and its image in the second figure are called corresponding parts. We also talk about corresponding parts when we are trying to prove two figures are congruent and set up a correspondence between the parts to see if the parts are congruent.



In the figure, segment *AB* corresponds to segment *DE*, and angle *BCA* corresponds to angle *EFD*.