

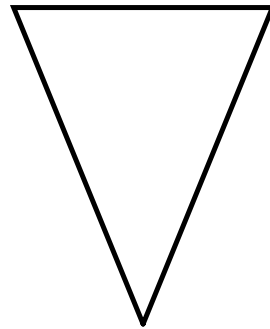
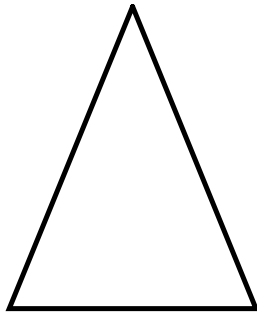
Congruent Triangles

Goal:

- to understand the minimum conditions required to state that two triangles are congruent



Are these two triangles identical? How can you tell?

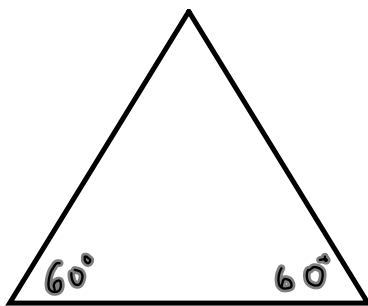


What do we need to know to tell?

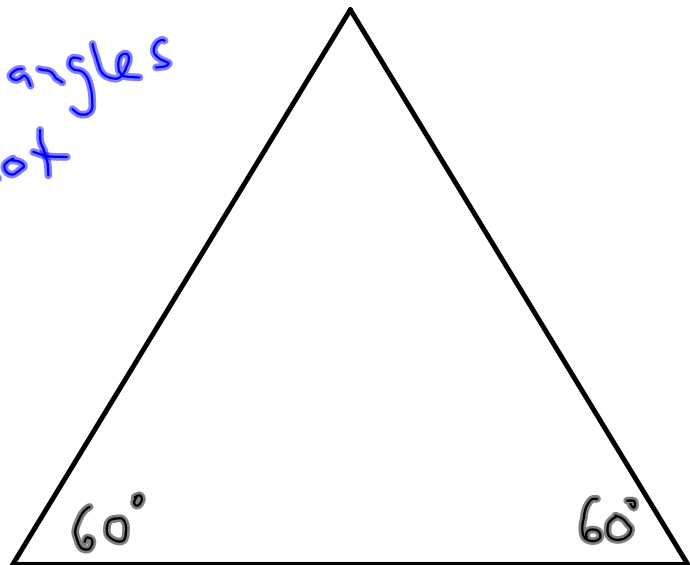
- lengths } Do you need all
- angles } angles + lengths?

↳ If two pairs of angles are the same the third pair must be also (they sum to 180°)

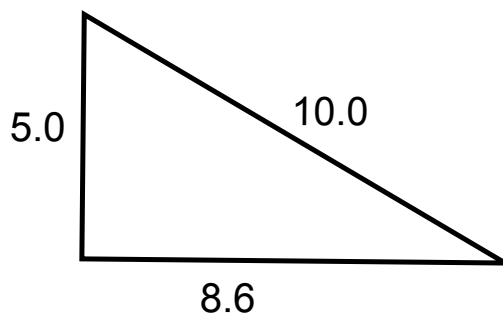
Knowing the angles only :



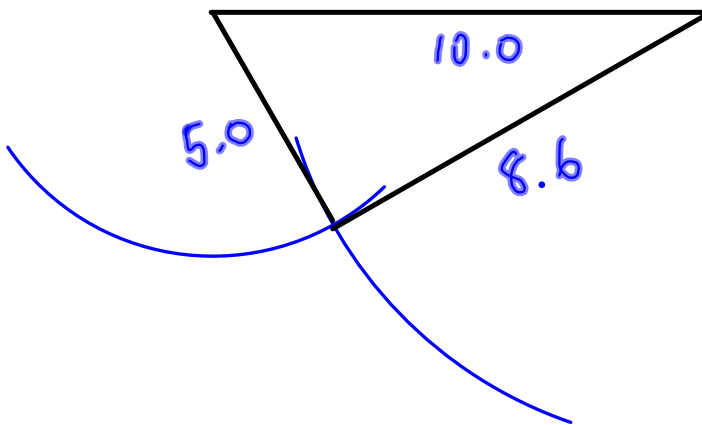
These two triangles
are similar not
congruent.



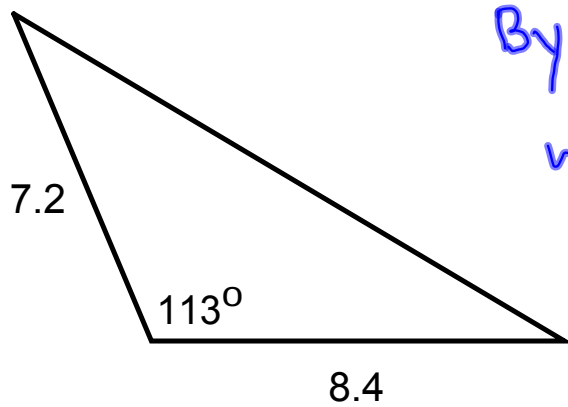
If all three pairs sides of two triangles are equal in length, then the triangles are congruent. (SSS)



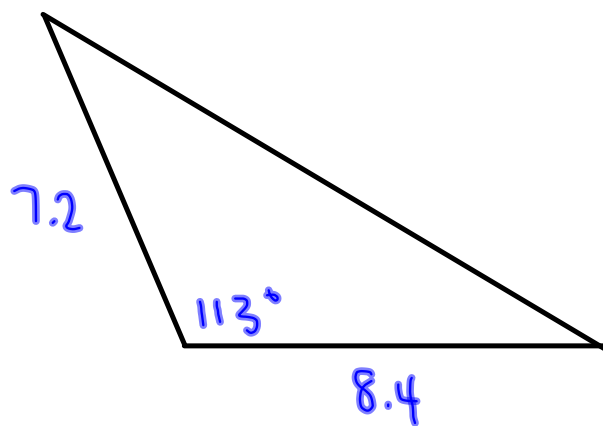
By showing SSS
we know two
triangles are
congruent.



If two pairs of sides are equal in length and the angles contained are equal in measure, the triangles are congruent. (SAS)

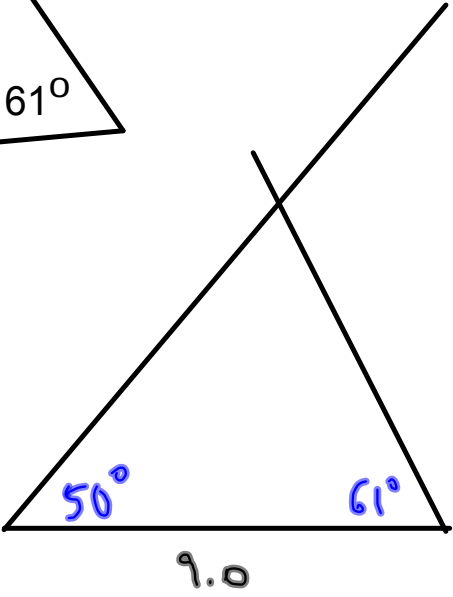
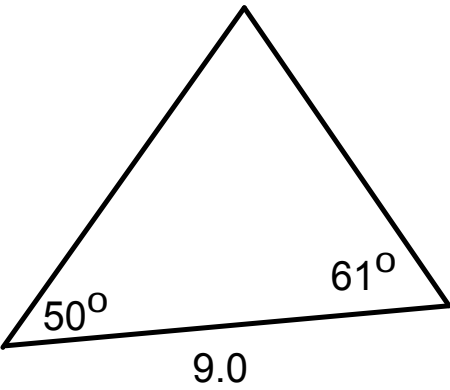


By showing SAS
we know two
triangles are
congruent.



If two pairs of angles are equal in measure and the contained sides are equal in length, then the triangles are congruent. (ASA)

By showing ASA we know two triangles are congruent.



Three minimum conditions:

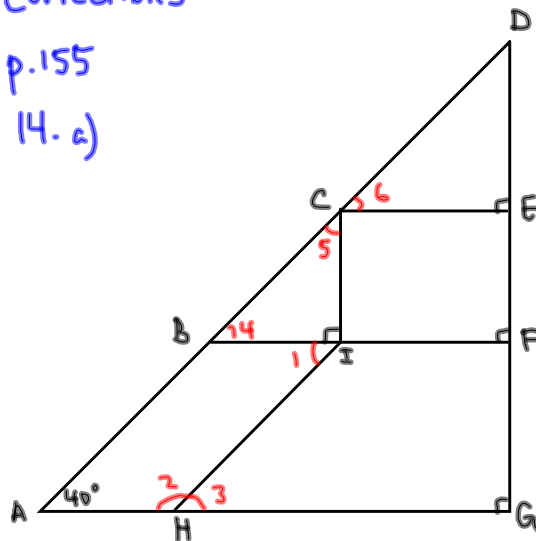
- ASA
- SAS
- SSS

Homework: p. 162 #1, 2, 6, 9, 11

Corrections:

p. 155

14. a)



1. $m\angle A = m\angle 3 = 40^\circ$
 $m\angle A = m\angle 4 = 40^\circ$
 $m\angle A = m\angle 6 = 40^\circ$

2. Corresponding angles formed by a transversal and parallel lines are congruent

$$m\angle 3 = m\angle 1 = 40^\circ$$

Alternate-interior angles are congruent

$$m\angle 2 = 180 - 40^\circ$$

$\angle 2$ and $\angle 3$ are supplementary

$$m\angle 5 = 180^\circ - (90 + 40) = 50^\circ$$

Sum of interior angles in triangle is 180°

$$b) \quad m\angle 1 = 180 - 84 \\ = 96$$

supplementary

$$m\angle 2 = 84^\circ$$

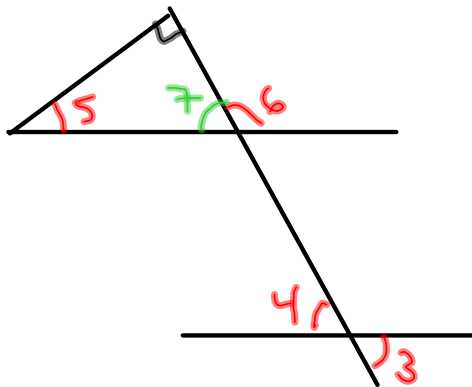
alt-exterior ...

$$m\angle 3 = 180 - (84 + 31) \\ = 65^\circ$$

sum of interior angles

$$m\angle 4 = m\angle 3 = 65^\circ$$

vertically opposite



$$m\angle 7 = m\angle 4 = 65^\circ$$

corresponding

or

$$m\angle 7 = m\angle 3 = 65^\circ$$

alt-exterior

$$m\angle 6 = 180 - 65^\circ \\ = 115^\circ$$

supplementary angles

$$m\angle 5 = 180 - (65 + 90) \\ = 25^\circ$$

interior angles in triangle