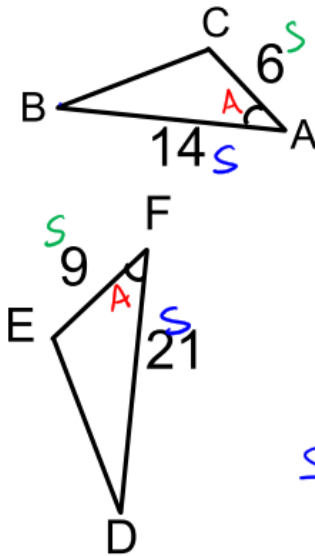


Congruence

Warm-up



What side corresponds to \overline{BC} in $\triangle DEF$?

\overline{DE}

What angle in $\triangle ACB$ corresponds to $\angle EDF$?

$\angle CBA$

Is $\triangle ACB \sim \triangle FED$? Yes by SAS

Similar $\left\{ \begin{array}{l} \text{sides are proportional} \\ \text{angles are congruent} \end{array} \right.$

$$\frac{21}{14} = \frac{9}{6}$$

$$\frac{3}{2} = \frac{3}{2}$$

Corresponding proportional sides

$$\angle CAB \cong \angle EFD$$

Congruent corr. \angle 's

Goals for today:

- What does it mean for a triangle to be congruent?
- What are the shortcuts for showing triangle congruence?

Triangle Congruence - when all corresponding sides are equal in length, and all corresponding angles are equal in size.

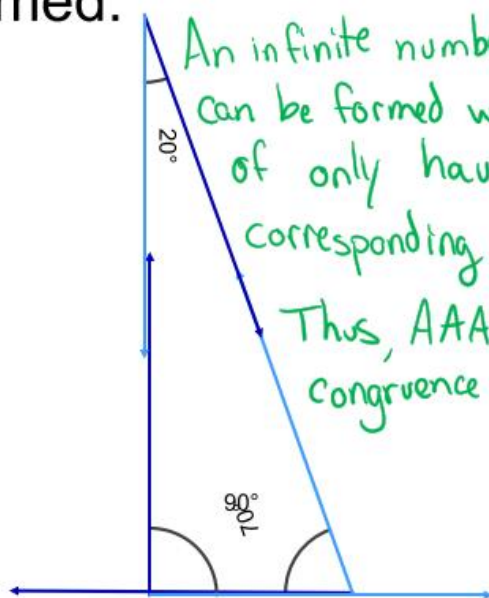
Congruence

For the following task you will need

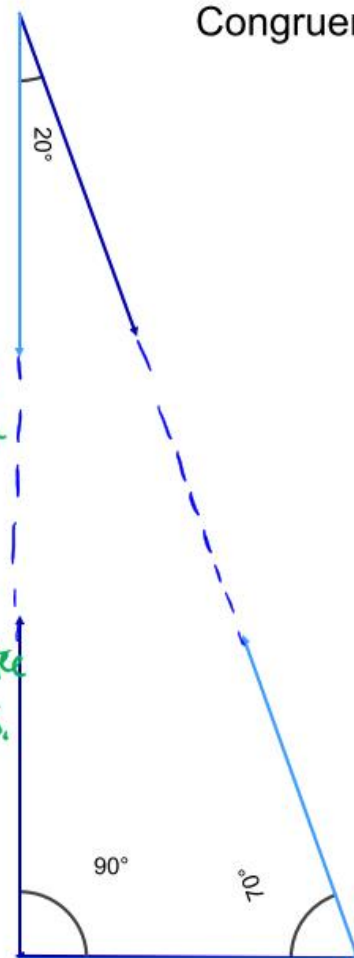
- 5 pieces of spaghetti broken into 1in, 2in, 3in, 4in, 5in pieces.
- Angle measurements
- a ruler
- a pencil

Lets start with AAA

pick up your 20, 70, 90 angles.
arrange them so that if you
connect the rays a triangle is
formed.



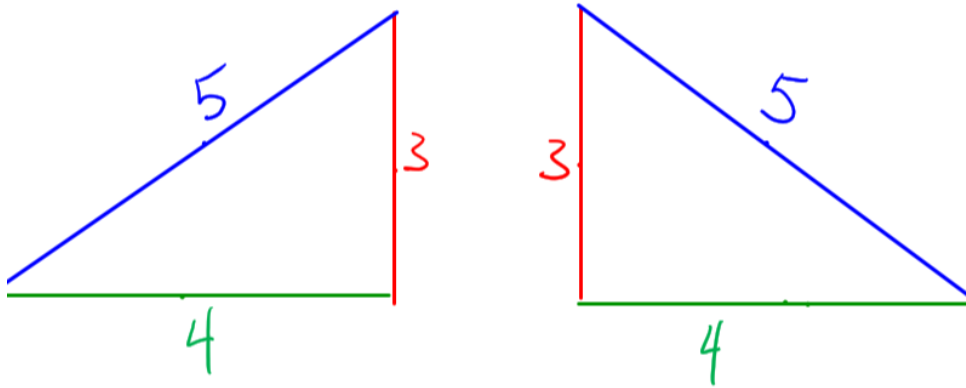
An infinite number of triangles
can be formed with the criteria
of only having 3 pairs of
corresponding congruent \angle 's.
Thus, AAA does not guarantee
congruence between triangles.



Congruence

SSS

Take out your 3,4, and 5 inch spaghetti and arrange them however you want so that they make a triangle



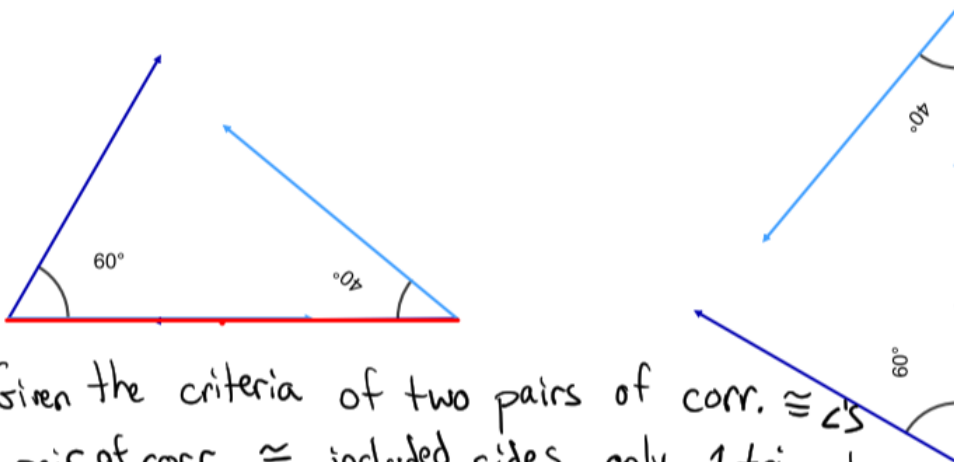
If two triangles have three pairs of corresponding congruent sides then both triangles must be congruent. SSS will prove triangle congruence.

ASA

You will need the

40° , 4in, and 60°

Make a triangle out of them.

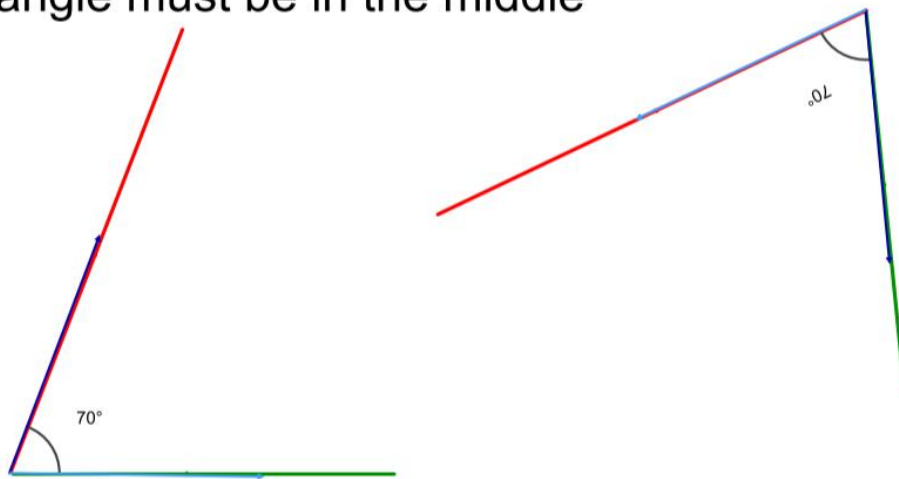


Given the criteria of two pairs of corr. $\cong \angle$ s and a pair of corr. \cong included sides, only 1 triangle can be made. Thus ASA will prove triangle congruence.

SAS

Arrange your 4in, 70° , 5in to form a triangle.

Remember that order matters here. The angle must be in the middle

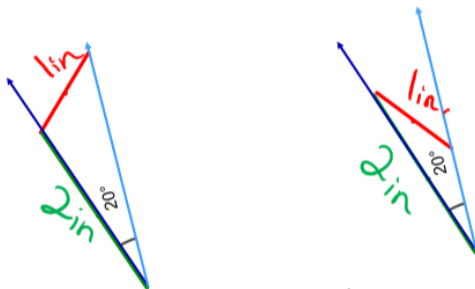


Given that two pairs of corresponding sides and the pair of included angles are congruent, only 1 distinct triangle can be created. This means that SAS will guarantee congruent triangles.

SSA

1in, 2 in, 20°

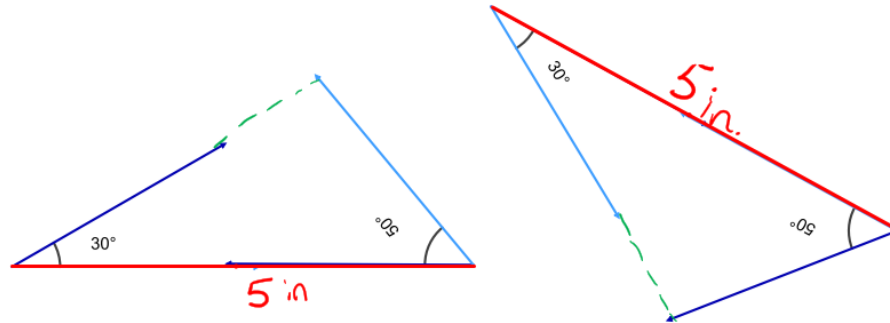
Arrange



It is possible to create two triangles from the given criteria of SSA. This means that SSA cannot guarantee congruent figures.

AAS

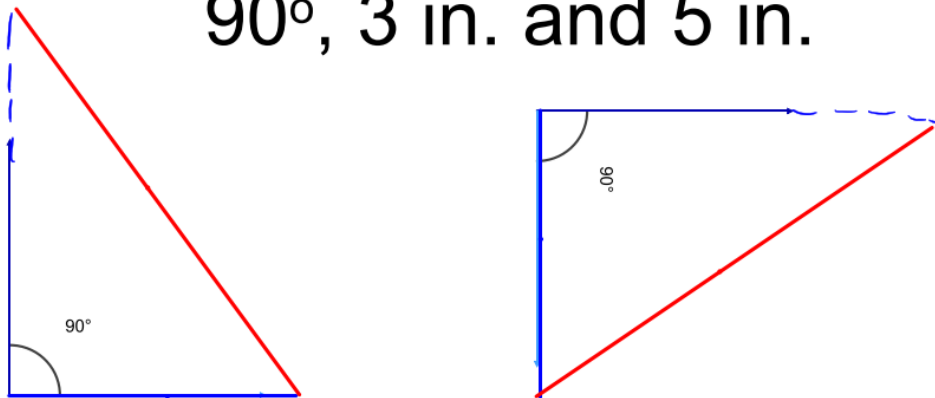
$30^\circ, 50^\circ$, and 5 in.



When two triangles have two pairs of corresponding congruent angles and a pair of corresponding congruent sides that are included in the angles, the two triangles must be the same size and shape.

HL

90° , 3 in. and 5 in.



When a right triangle has a congruent hypotenuse to the hypotenuse of another right triangle and a pair of corresponding congruent legs, the two triangles will always be congruent.

Thus HL will prove triangle congruence.

Match Each theorem to the correct column
TRIANGLE CONGRUENCE

Proves It	Does not
SAS	AAA
HL	SSA
ASA	
SSS	
AAS	

Let's get some practice

On problems 1-9 odd highlight the corresponding sides and identify the postulate you would use to prove them congruent

Answers

