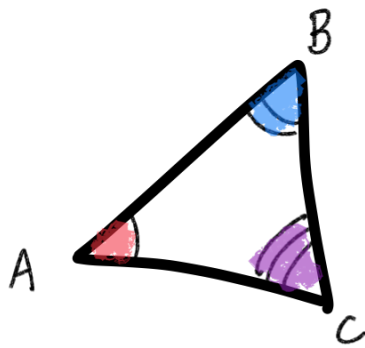
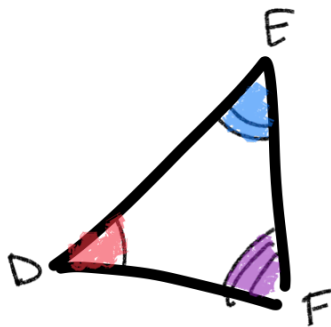


Similar Triangles
 "proportional to"
 Equal angles, but
not equal sides



$\triangle ABC$
 $\overline{1} \overline{2} \overline{3}$



$\triangle DEF$
 $\overline{1} \overline{2} \overline{3}$

- $\sphericalangle A \cong \sphericalangle D$
- $\sphericalangle B \cong \sphericalangle E$
- $\sphericalangle C \cong \sphericalangle F$

$\triangle ABC$ is similar to $\triangle DEF$

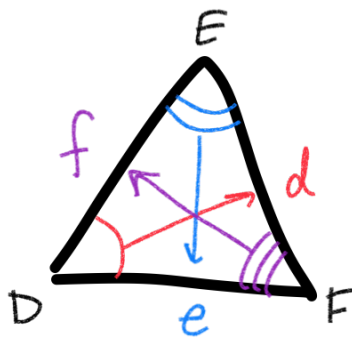
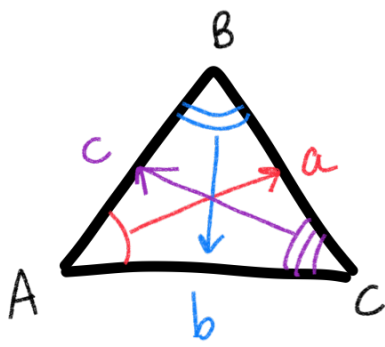
Since all angles are congruent,
 but you need one side congruency
 for $\triangle ABC \cong \triangle DEF$

~~$\triangle ABC \cong \triangle DEF$~~

We need one side
 congruency

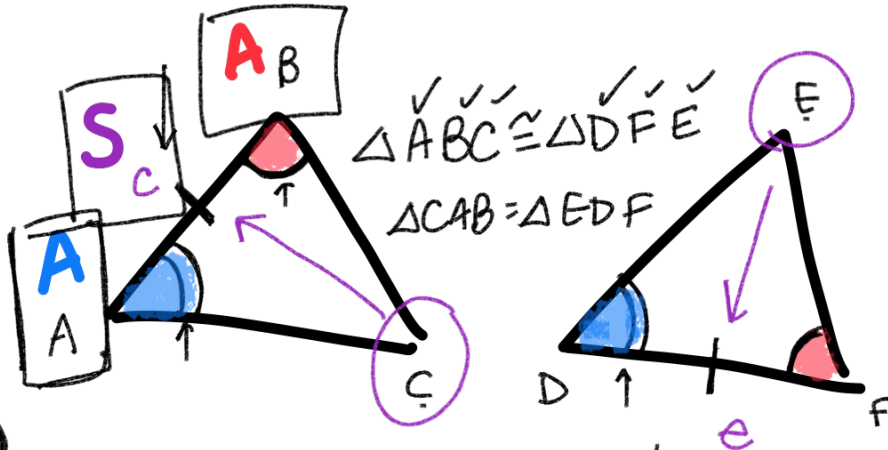
YOU NEED AT LEAST
 ONE SIDE CONGRUENCY
 TO ESTABLISH TRIANGLE
 CONGRUENCY!

AAA
 Angle-Angle-Angle
 similarity, not a congruency



CAPITAL LETTERS
to name angles

Lowercase letters
represent sides.



$$\angle B \cong \angle F$$

$$\angle A \cong \angle D$$

$$c \cong e$$

-) crescents → congruent angles
- \ notches → congruent sides

How to determine
triangle congruency:



ΔABC

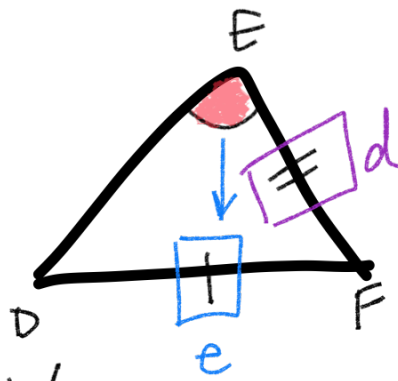
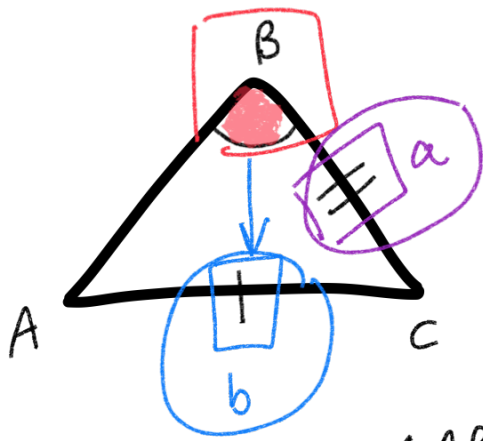
ASA
angle-side-angle

Do you
have one
lowercase

Do you
have every
letter

- 1.) You need at least one side congruency
- 2.) You need at least one representative from each angle-side pair

Uppercase → angle → A
lowercase → side → c



$$\angle B \cong \angle E$$

$$b \cong e$$

$$a \cong d$$

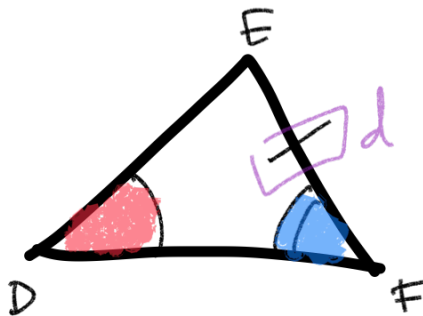
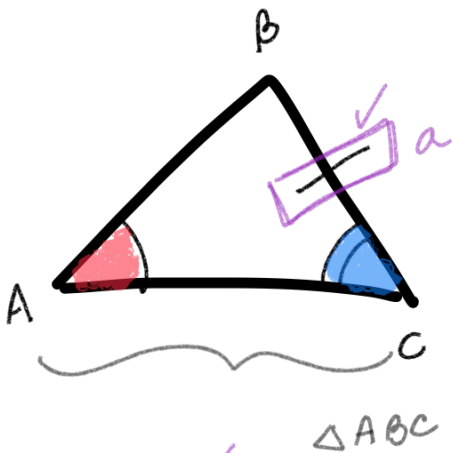
$\triangle ABC \not\cong \triangle DEF$

[B a b]

~~ASS~~

1) You need at least one lowercase letter \rightarrow side congruency ✓

2) You need at least one representative from each angle-side pair representative from X each angle-side pair
Now!



$$\angle A \cong \angle D$$

$$\angle C \cong \angle F$$

$$a \cong d$$

A C a ✓

$\downarrow \downarrow \downarrow$
A A S

$\triangle ABC \cong \triangle DEF$

AAS

B2G1 Free!!

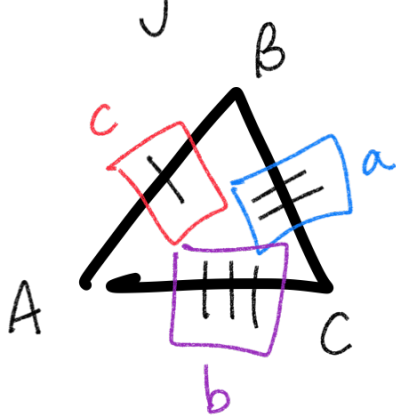
1) You need at least one side congruency ✓

2) You need at least one representative from each angle-side pair

If you have 2 congruent angles, you actually have 3!!

$$\begin{array}{l} \boxed{A} + \boxed{B} + \boxed{C} = \boxed{180^\circ} \\ \boxed{D} + \boxed{E} + \boxed{F} = \boxed{180^\circ} \end{array}$$

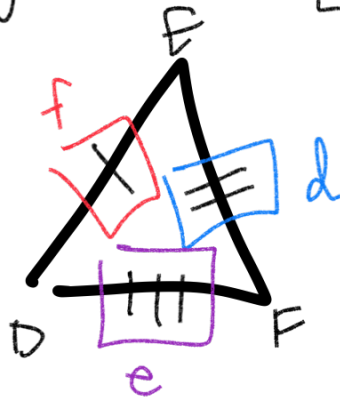
Triangle Congruencies: SSS, SAS, ASA, AAS



$c \ a \ b$

$\triangle ABC \cong \triangle DEF$

SSS

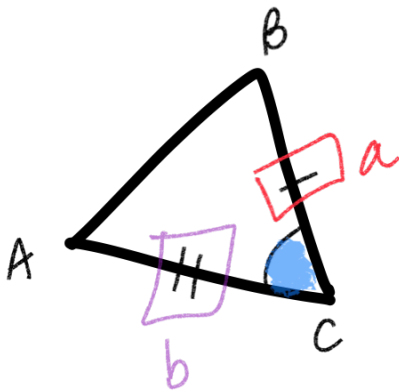


$c \cong f$

$a \cong d$

$b \cong e$

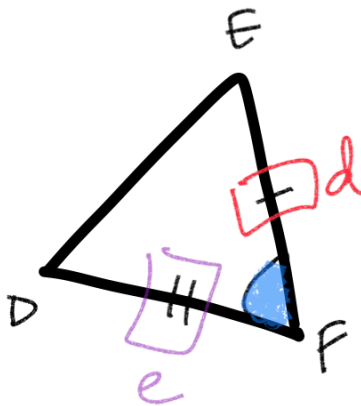
- 1.) You need at least one side congruency ✓
- 2.) You need at least one representative from each angle-side pair ✓



$a \ C \ b$
 $\downarrow \ \downarrow \ \downarrow$
 S A S

S A S

side-angle-side



$a \cong d$
 $\sphericalangle C \cong \sphericalangle F$
 $b \cong e$

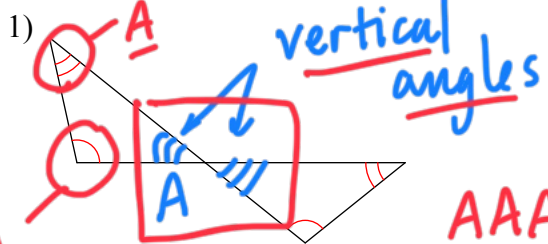
- 1.) You need at least one side congruency ✓
- 2.) You need at least one representative from each angle-side pair ✓

Assignment

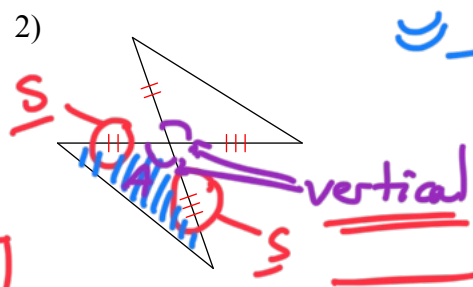
you need at least one side congruency

Determine if the two triangles are congruent. If they are, state how you know.

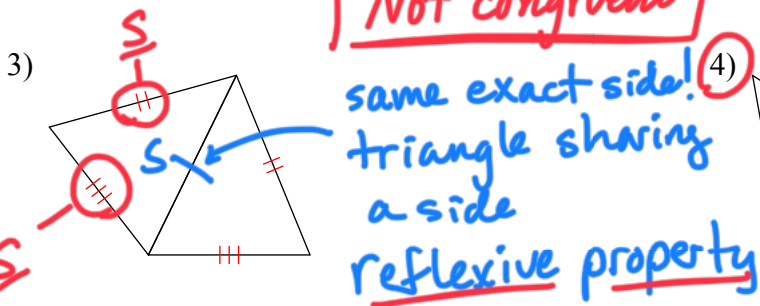
$\parallel \rightarrow$ Sides
 $\sphericalangle \rightarrow$ Angles



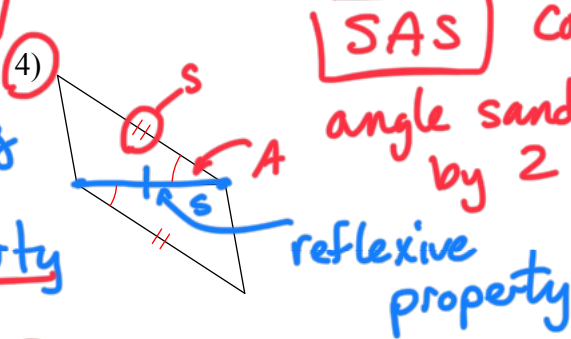
AAA
Not congruent



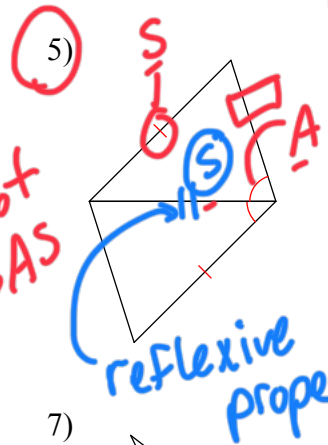
SAS Congruent
angle sandwiched by 2 sides



same exact side!
triangle sharing a side
reflexive property

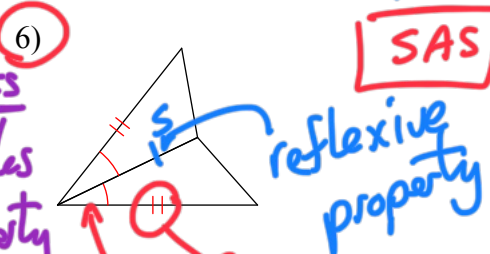


SAS ✓
reflexive property



Not SAS

SSS ✓
3 characteristics
1.) vertical angles
2.) reflexive property
3.) Alternate interior angles \rightarrow parallel lines



SAS ✓
reflexive property

