5.3 - SAS 2018
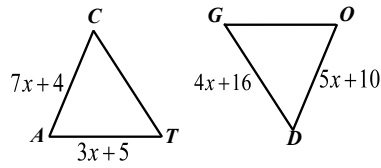
Mental Floss: Thurs. Dec 6th

Given: $\triangle CAT \cong \triangle DOG$

Find: Perimeter of $\triangle CAT$.

```
0:06:00
```

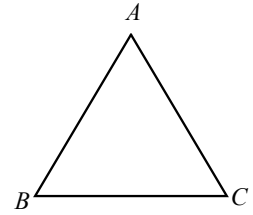Triangle CAT with sides $7x+4$, $3x+5$. Triangle GOD with sides $4x+16$, $5x+10$.

Congruent Triangles = All pairs of corresponding *parts* are congruent.
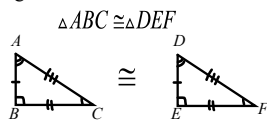
All triangles have 6 parts

3 Sides ⟶ $\overline{AB}, \overline{AC}, \overline{BC}$

3 Angles ⟶ $\angle A, \angle B, \angle C$

Triangle ABC.

Congruent Triangles

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

- All corresponding sides are congruent

$$\overline{AB} \cong \overline{DE}, \overline{AC} \cong \overline{DF}, \overline{BC} \cong \overline{EF}$$

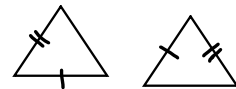- All corresponding angles are congruent

$$\angle A \cong \angle D, \angle B \cong \angle E, \angle C \cong \angle F$$

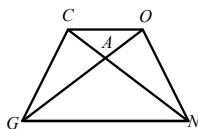Ways to Prove Triangles Congruent (Congruency Theorems)

1.) Side-Angle-Side (SAS) Congruence

If 2 sides and the *included angle* of one triangle are congruent to 2 sides and the included angle of another triangle, then the triangles are congruent.

Side	Angle
Side	Angle
Side	Angle

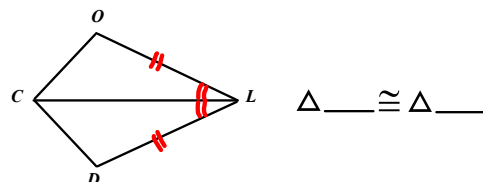*Included angle* = The angle formed between the two sides.

Given the two sides below, identify the *included angle.*

Sides	$\overline{CA}$ and $\overline{AG}$	$\overline{AN}$ and $\overline{ON}$	$\overline{CN}$ and $\overline{GN}$	$\overline{GA}$ and $\overline{AN}$	$\overline{OC}$ and $\overline{GO}$
Included Angle					

Reflexive Property
- A segment or angle is congruent to itself
- Makes a "copy" for you to use in multiple triangles

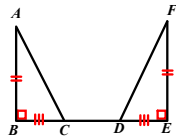$\triangle \underline{} \cong \triangle \underline{}$

4 Things You Can "Assume" From a Diagram

1. Straight Angles

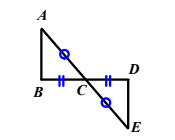2. Supplementary Angles
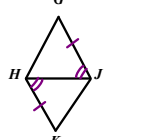
3. Vertical Angles

4. Reflexive Property

List the congruent triangles in each diagram below. If there is not enough to prove congruent triangles, list what additional information would be needed.

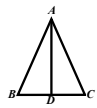$\triangle$___ $\cong$ $\triangle$___ $\triangle$___ $\cong$ $\triangle$___ $\triangle$___ $\cong$ $\triangle$___

Given: D midpoint of $\overline{BC}$
$\overline{AD} \perp \overline{BC}$ (7 Steps)
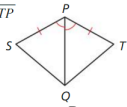Prove: $\triangle ADB \cong \triangle ADC$

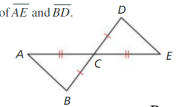| Statements	Reasons

15. Given $\overline{PQ}$ bisects $\angle SPT$, $\overline{SP} \cong \overline{TP}$
   Prove $\triangle SPQ \cong \triangle TPQ$

Statements	Reasons

17. Given C is the midpoint of $\overline{AE}$ and $\overline{BD}$.
   Prove $\triangle ABC \cong \triangle EDC$

Statements	Reasons