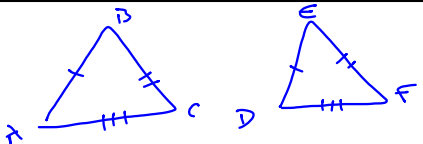
## 4.3 Proving Triangles are congruent by SAS and SSS

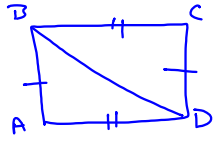
We said have to have all 3 sides and all 3 angles have to be known in order to be congruent

## SSS Triangle $\cong$

If three sides of one triangle are congruent to the corresponding sides of another triangle
then the triangles are $\cong$




If $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, $\overline{AC} \cong \overline{DF}$ then $\triangle ABC \cong \triangle DEF$ by SSS



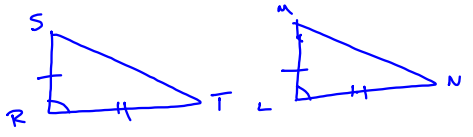

Given: $\overline{AB} \cong \overline{CD}$, $\overline{AD} \cong \overline{BC}$

Prove: $\triangle ABD \cong \triangle CDB$

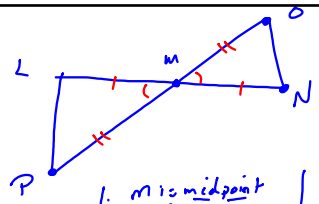
| | |
|---|---|
| $\overline{AB} \cong \overline{CD}$, $\overline{AD} \cong \overline{BC}$ | given |
| $\overline{BD} \cong \overline{BD}$ | Reflexive |
| $\triangle ABD \cong \triangle CDB$ | SSS |

## SAS (Side-Angle-side)

If two adjacent sides and the included angle are $\cong$ to corresponding parts in another triangle then the triangles are congruent




if $\overline{RS} \cong \overline{LM}$, $\overline{RT} \cong \overline{LN}$, $\angle R \cong \angle L$ then $\triangle RST \cong \triangle LMN$




Given
M is the midpoint of $\overline{LN}$, $\overline{OP}$

Prove $\triangle LMP \cong \triangle NMO$

| | |
|---|---|
| 1. M is midpoint of $\overline{LN}$, $\overline{OP}$ | given |
| 2. $\overline{LM} = \overline{LN}$, $\overline{OM} = \overline{MP}$ | Def of midpoint |
| 3. $\overline{LM} \cong \overline{LN}$, $\overline{OM} \cong \overline{MP}$ | Def of $\cong$ |
| 4. $\angle LMP \cong \angle NMO$ | Vertical $\angle \cong$ |
| 5. $\triangle LMP \cong \triangle NMO$ | SAS |

Triangles in Coordinate Planes

Looking at SSS

distance formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

P 216 - 219

2 - 36 even Skip 32

due end of hour Tomorrow