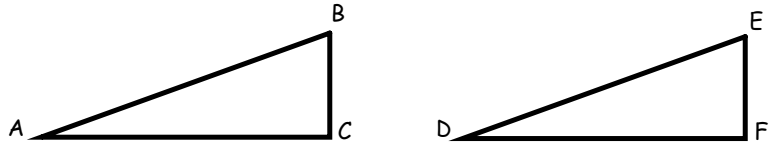


Definition: Congruent triangles are triangles having the exact size and shape.

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

$$\begin{aligned} \overline{AB} &\cong \overline{DE} & \angle A &\cong \angle D \\ \overline{BC} &\cong \overline{EF} & \angle B &\cong \angle E \\ \overline{AC} &\cong \overline{DF} & \angle C &\cong \angle F \end{aligned}$$

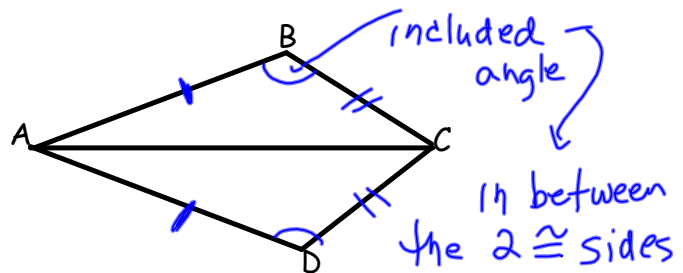
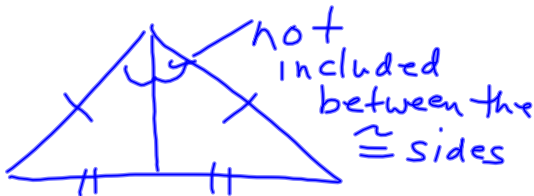


Proving two triangles congruent (1 method)

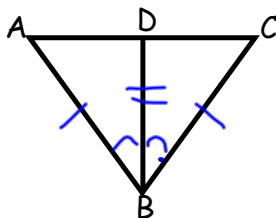
Side - Angle - Side (SAS) Congruent triangle postulate.

Two triangles are congruent if 2 sides and the included angle of one triangle are congruent, respectively, to two sides and the included angle of the other triangle.

Ex.1 Illustrate how $\triangle ABC \cong \triangle ADC$ by SAS



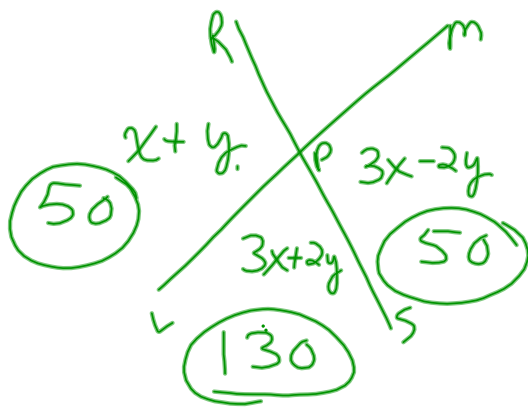
Ex 2.



Given: \overline{BD} bisects $\angle ABC$
 $\overline{AB} \cong \overline{BC}$

Prove: $\triangle ADB \cong \triangle CDB$

statement	reason
1) \overline{BD} bisects $\angle ABC$	1) given
2) $\angle ABD \cong \angle CBD$	2) If a ray bisects an angle, it divides it into 2 congruent angles
3) $\overline{AB} \cong \overline{BC}$	3) given
4) $\overline{BD} \cong \overline{BD}$	4) reflexive
5) $\triangle ADB \cong \triangle CDB$	5) SAS \cong SAS



$$x + y = 3x - 2y$$

$$3x + 2y + 3x - 2y = 180$$

$$\frac{6x}{6} = \frac{180}{6}$$

$$x = 30$$

$$30 + y = 3(30) - 2y$$

$$30 + y = 90 - 2y$$

$$\begin{array}{r} +2y \quad \quad +2y \\ \hline 30 + 3y = 90 \end{array}$$

$$\begin{array}{r} 30 + 3y = 90 \\ -30 \quad \quad -30 \\ \hline 3y = 60 \end{array}$$

$$y = 20$$

Supplement angle x (130)
 Supplement $x - 80$
 $130 - 80 = 50$

Angles are 130 & 50

$$\begin{array}{r} x + x - 80 = 180 \\ 2x - 80 = 180 \\ +80 \quad +80 \\ \hline 2x = 260 \\ x = 130 \end{array}$$