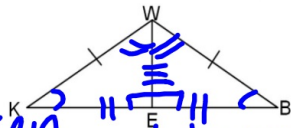


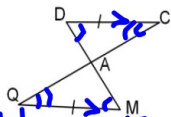
For 1 and 2, Each diagram shows two congruent triangles. Fill in the blanks and give a reason for each statement then write a congruence statement for each pair of triangles.

1. \overline{WE} is a \perp bisector of \overline{KB} & $\angle K \cong \angle B$



1. $\angle K \cong \angle B$ Reason: Given
 2. $\angle KEW \cong \angle BEW$ Reason: Def of \perp bisector
 3. $\angle KWE \cong \angle BWE$ Reason: cong Thm 4.1
 4. $\overline{KW} \cong \overline{BW}$ Reason: Given
 5. $\overline{KE} \cong \overline{BE}$ Reason: Def. of bisector
 6. $\overline{WE} \cong \overline{WE}$ Reason: Reflexive
- $\triangle WEK \cong \triangle WEB$

2. $\overline{DC} \parallel \overline{MQ}$ \overline{CQ} and \overline{DM} bisect each other.



1. $\angle MDC \cong \angle DMQ$ Reason: alt int \angle 's
2. $\angle DCQ \cong \angle MQC$ Reason: " " " "
3. $\angle QAM \cong \angle CAD$ Reason: vert. \angle 's
4. $\overline{DC} \cong \overline{MQ}$ Reason: Given
5. $\overline{DA} \cong \overline{MA}$ Reason: Ref of bisect
6. $\overline{QA} \cong \overline{CA}$ Reason: " " "

$\triangle QAM \cong \triangle CAD$

Objective: To prove two triangles congruent using the SSS and SAS Postulates

In section 4-1 you learned that if two triangles have three pairs of congruent corresponding angles and three pairs of congruent corresponding sides, then the triangles are congruent.

If you know this:

$$\begin{array}{ll} \angle A \cong \angle X & \overline{AB} \cong \overline{XY} \\ \angle B \cong \angle Y & \overline{AC} \cong \overline{XZ} \\ \angle C \cong \angle Z & \overline{BC} \cong \overline{YZ} \end{array}$$

Then you know this:

$$\triangle ABC \cong \triangle XYZ$$

However, you do not need to know that all 6 corresponding parts are \cong in order to conclude that two triangles are \cong . We have 4 'shortcuts' that we will learn in sections 4-2 and 4-3 that will help us conclude that two triangles are congruent.

Postulate 4-1: Side-Side-Side Postulate (SSS)

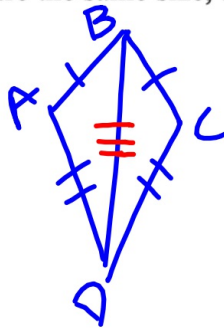
If three sides of one triangle are congruent to the three sides of another triangle, then

the two Δ 's
are \cong .

$$\triangle GHF \cong \triangle PQR$$



Example 1: The bridge girders are the same size, as marked. Explain why $\triangle ABD \cong \triangle CBD$.



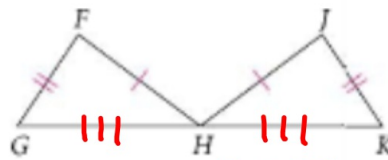
$$\begin{aligned} \overline{AB} &\cong \overline{CB} \text{ } \left. \begin{array}{l} \overline{AD} \cong \overline{CD} \\ \overline{BD} \cong \overline{BD} \text{ Refl.} \end{array} \right\} \text{ Given} \\ \triangle ABD &\cong \triangle CBD \\ &\text{by SSS} \end{aligned}$$

QC 1:

Given: $\overline{HF} \cong \overline{HJ}$, $\overline{FG} \cong \overline{JK}$,
 H is the midpoint of \overline{GK} .

Prove: $\triangle FGH \cong \triangle JKH$

by SSS
these
 Δ s are
 \cong .



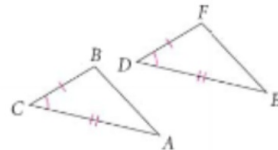
$\overline{HF} \cong \overline{HJ}$ Given
 $\overline{FG} \cong \overline{JK}$ " "
 $\overline{GH} \cong \overline{HK}$ def. of midpt.

Postulate 4-2: Side-Angle-Side Postulate (SAS)

If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then

the two Δ 's
are \cong .

$\triangle BCA \cong \triangle FDE$

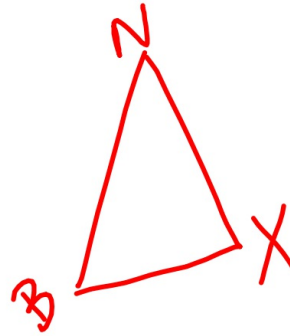


*The word included is used frequently when referring to the angles and sides of a triangle.

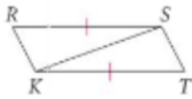
Draw $\triangle BNX$ below.

\overline{BX} is included between $\angle B$ and $\angle X$

$\angle N$ is included between \overline{NB} and \overline{NX} .



Example 2: $\overline{RS} \cong \overline{TK}$. What other information do you need to prove $\triangle RSK \cong \triangle TKS$ by SAS?

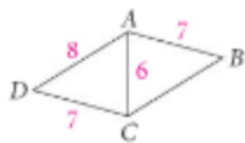


$\overline{RS} \cong \overline{TK}$ Given

$\overline{KS} \cong \overline{KS}$ Refl.

You need $\angle RSK \cong \angle TKS$
to prove $\triangle RSK \cong \triangle TKS$
by SAS.

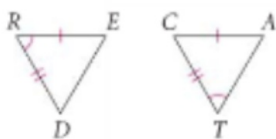
QC 2: What other information do you need to prove $\triangle ABC \cong \triangle CDA$ by SAS?



$\overline{DC} \cong \overline{AB}$ Given
 $\overline{AC} \cong \overline{AC}$ Refl.
 $\angle DAC \cong \angle BAC$ to prove
 $\triangle's are \cong$ by SAS.

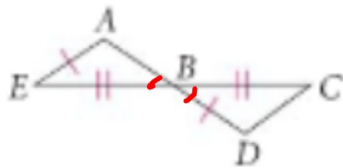
Example 3: From the information given, can you prove the two triangles congruent?

A) $\triangle RED \cong \triangle CAT$



Not enough
 info to prove
 this.

B) $\triangle AEB \cong \triangle DBC$



$$\angle E \cong \angle DBC$$

HW #21 - due tomorrow

Sect. 4-2

Pages: 208-210

Problems: 1, 2, 5-9, 20-25, 28-30

IXL #11 - G.2/G.3 & J.1 due tomorrow at 4pm!