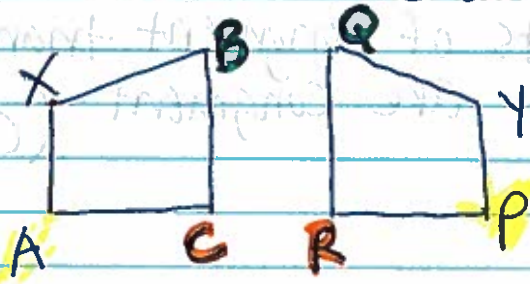


Day 33

4-1 Congruent Figures

Congruent polygons have \cong corresponding parts.

Congruent figures are always the same size and same shape.



Name \cong Polygons: $ACBX \cong PRQY$

$$\overline{AC} \cong \overline{PR}$$

$$\overline{CB} \cong \overline{RQ}$$

$$\overline{XA} \cong \overline{YP}$$

$$\overline{XB} \cong \overline{YQ}$$

$$\angle A \cong \angle P$$

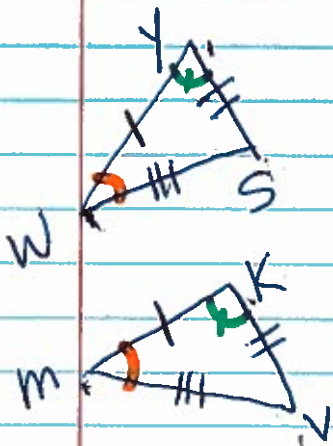
$$\angle C \cong \angle R$$

$$\angle B \cong \angle Q$$

$$\angle X \cong \angle Y$$

Quick #1: $\triangle WYS \cong \triangle MKV$

List \cong corresponding parts:



$$\angle YWS \cong \angle KMV$$

$$\angle WYS \cong \angle MKV$$

$$\angle KVM \cong \angle YSW$$

$$\overline{MV} \cong \overline{WS}$$

$$\overline{YS} \cong \overline{KV}$$

$$\overline{WY} \cong \overline{MK}$$

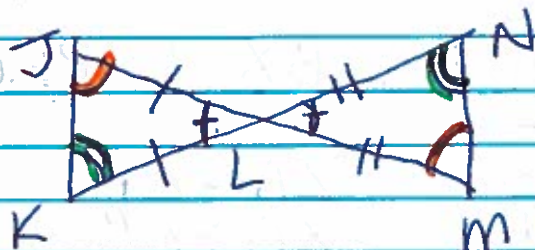
Quick ✓ #2

It is given that $\triangle WYS \cong \triangle MKV$

If $\angle Y = 35^\circ$, what is $m\angle K$?

$m\angle K = 35^\circ$ because corresponding parts of congruent triangles are congruent. (CPCTC)

Quick ✓ #3



Can you conclude

$\triangle JKL \cong \triangle MNL$?

no, because corresponding sides are not \cong .

To prove 2 figures are \cong ,

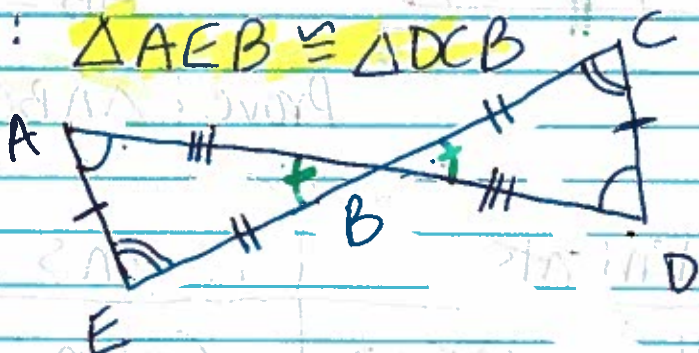
- ① all corresponding sides must be \cong
- ② and " " angles " " " " " "

Quick v # 4

Always mark pictures!

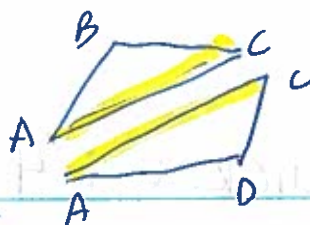
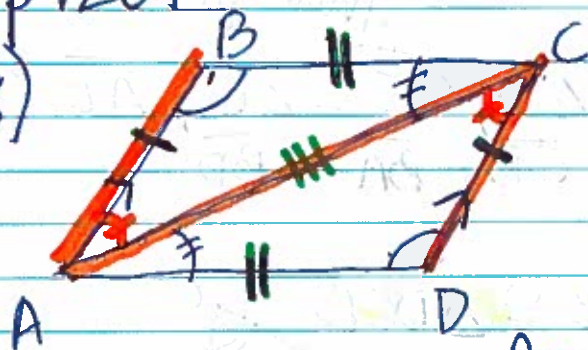
Given: $\angle A \cong \angle D$, $\angle E \cong \angle C$, $\overline{AE} \cong \overline{DC}$
 $\overline{EB} \cong \overline{CB}$, $\overline{BA} \cong \overline{BD}$

Prove: $\triangle AEB \cong \triangle DCB$



Statements	reasons
1. $\angle A \cong \angle D$, $\angle E \cong \angle C$	Given
2. $\overline{AE} \cong \overline{DC}$ $\overline{EB} \cong \overline{CB}$ $\overline{BA} \cong \overline{BD}$	{ Given
3. $\angle ABE \cong \angle DBC$	vertical \angle thm or thm 4.1 (if 2 \angle 's are \cong , the 3rd is also)
4. $\triangle AEB \cong \triangle DCB$	Def. of $\cong \Delta$'s

#28) p. 201



Given:

$$\overline{AB} \parallel \overline{DC}, \angle B \cong \angle D$$

$$\overline{AB} \cong \overline{DC}, \overline{BC} \cong \overline{AD}$$

Prove: $\triangle ABC \cong \triangle CDA$

Statements	Reasons
1. $\overline{AB} \parallel \overline{DC}, \angle B \cong \angle D$	Given
2. $\overline{AB} \cong \overline{DC}, \overline{BC} \cong \overline{AD}$	Given
3. $\overline{AC} \cong \overline{AC}$	reflexive property
4. $\angle BAC \cong \angle DCA$	Alt. interior \angle thm
5. $\angle BCA \cong \angle DAC$	If 2 \angle 's are \cong , then the 3rd \angle 's are \cong
6. $\triangle ABC \cong \triangle CDA$	Definition of $\cong \triangle$'s

CW: \cong Parts wkst turn-in

HW: p. 200-202

(1-12, 14-27, 29-33, 38-41, 44)

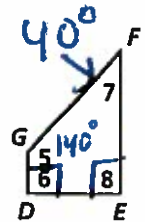
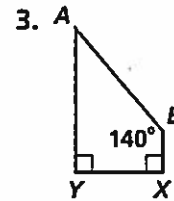
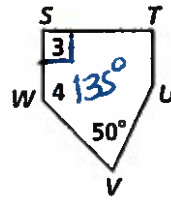
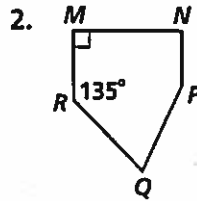
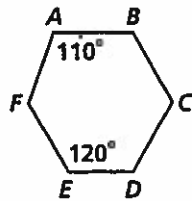
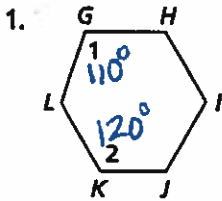
PROOF

Practice 4-1

Congruent Figures

Each pair of polygons is congruent. Find the measures of the numbered angles.

$360^\circ - 90^\circ - 90^\circ - 140^\circ$



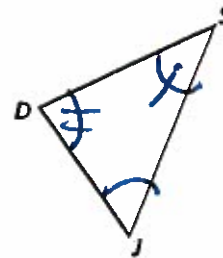
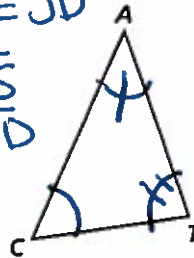
$\triangle CAT \cong \triangle JSD$. List each of the following.

4. three pairs of congruent sides

5. three pairs of congruent angles

$\angle C \cong \angle J$ $\angle T \cong \angle D$
 $\angle A \cong \angle S$

$\overline{CT} \cong \overline{JD}$
 $\overline{CA} \cong \overline{JS}$
 $\overline{AT} \cong \overline{SD}$



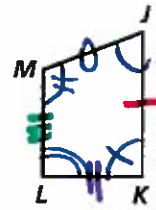
$WXYZ \cong JKLM$. List each of the following.

6. four pairs of congruent sides

7. four pairs of congruent angles

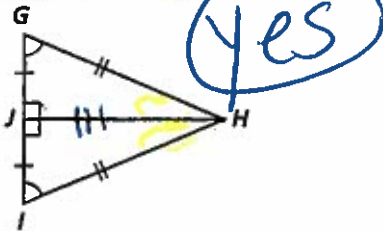
$\angle W \cong \angle J$ $\angle Y \cong \angle L$
 $\angle X \cong \angle K$ $\angle Z \cong \angle M$

$\overline{WX} \cong \overline{JK}$
 $\overline{XY} \cong \overline{KL}$
 $\overline{YZ} \cong \overline{LM}$



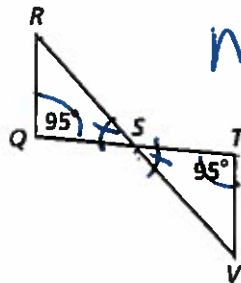
State whether the pairs of figures are congruent. Explain.

8. $\triangle GHJ$ and $\triangle IHJ$



Yes

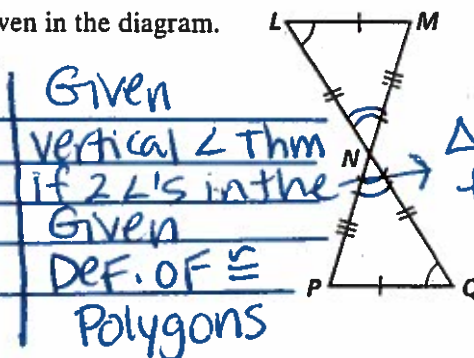
9. $\triangle QRS$ and $\triangle TVS$



no, not enough info because sides aren't marked

10. Developing Proof Use the information given in the diagram. Give a reason that each statement is true.

- a. $\angle L \cong \angle Q$
- b. $\angle LNM \cong \angle PNQ$
- c. $\angle M \cong \angle P$
- d. $\overline{LM} \cong \overline{QP}$, $\overline{LN} \cong \overline{QN}$, $\overline{MN} \cong \overline{PN}$
- e. $\triangle LNM \cong \triangle QNP$



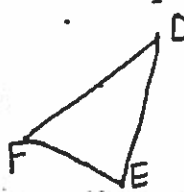
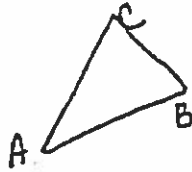
Given
 vertical \angle Thm
 if 2 \angle 's in the
 Given
 DEF. OF \cong
 Polygons

\triangle are \cong ,
 the 3rd \angle 's
 are also \cong

Name: _____

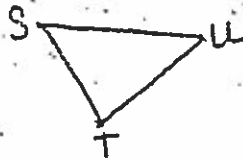
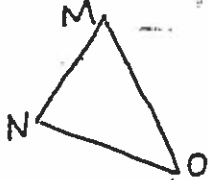
Congruent Parts

1. $\triangle ABC \cong \triangle DEF$. Name 3 pairs of congruent sides.



mark the sides that are \cong with tick marks.

2. $\triangle MNO \cong \triangle STU$. Name 3 pairs of congruent angles.



mark \cong \angle s with tick marks.

3. If $\triangle XYZ \cong \triangle GHI$, name three congruent angles.

4. If $\triangle WVU \cong \triangle KLM$, name a congruent side.

5. If $\triangle ABC \cong \triangle DEF$, then $\overline{AC} \cong$ _____.

6. If $\triangle ABC \cong \triangle DEF$, then $\angle A \cong$ _____.

7. If $\triangle ABC \cong \triangle DEF$, then $\overline{AB} \cong$ _____.

8. If $\triangle ABC \cong \triangle MNO$, then $\angle B \cong$ _____.

9. If $\triangle ABC \cong \triangle MNO$, then $\overline{AC} \cong$ _____.

10. If $\triangle ABC \cong \triangle MNO$, then $\angle C \cong$ _____.

11. If $\triangle STU \cong \triangle XYZ$, then $m\angle S =$ _____.

12. If $\triangle STU \cong \triangle XYZ$, then $m\angle U =$ _____.

13. If $\triangle DEF \cong \triangle MNO$, then $\overline{EF} \cong$ _____.

14. If $\overline{AB} \cong \overline{DC}$ and $\overline{DC} \cong \overline{EF}$, then $\overline{AB} \cong$ _____. [_____] property

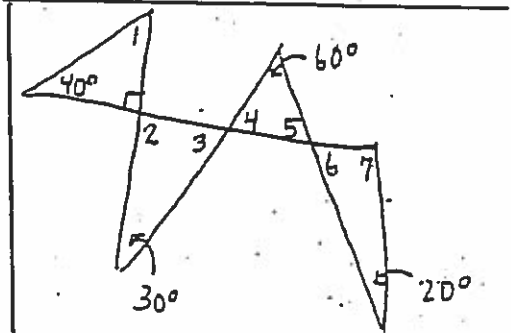
15. If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle HIJ$, then $\triangle ABC \cong$ _____.

16. If line $l \parallel$ line m and line $m \parallel$ line n , then line $l \parallel$ _____.

Always, sometimes or never.

17. An isosceles triangle is _____ a right triangle.

18. A right triangle is _____ an isosceles triangle.



19. $m\angle 1 =$ _____

20. $m\angle 2 =$ _____

21. $m\angle 3 =$ _____

22. $m\angle 4 =$ _____

23. $m\angle 5 =$ _____

24. $m\angle 6 =$ _____

25. $m\angle 7 =$ _____