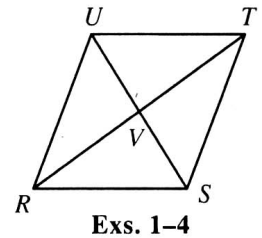


Inequalities; Inverses and Contrapositives

For use after Section 6-2

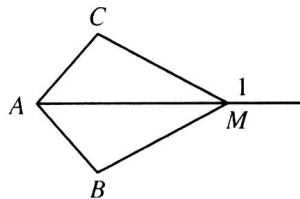
Given rhombus $RSTU$, with $RT > SU$, tell whether each statement can be deduced from what is given. Write *Yes* or *No*.



- | | |
|--|--------------------|
| 1. $\overline{ST} \cong \overline{SR}$ _____ | 2. $SU > RT$ _____ |
| 3. $VT > SV$ _____ | 4. $RV > RU$ _____ |

Supply the missing reasons in the proof.

5. Given: $\triangle ABM \cong \triangle ACM$
 Prove: $m\angle 1 > m\angle B$



Proof:

Statements	Reasons
1. $\triangle ABM \cong \triangle ACM$	1. _____
2. $\angle B \cong \angle C$, or $m\angle B = m\angle C$	2. _____
3. $m\angle 1 > m\angle C$	3. _____
4. $m\angle 1 > m\angle B$	4. _____

6. Write (a) the contrapositive and (b) the inverse of "If today is not Tuesday, then tomorrow is not Wednesday."

- a. _____
- b. _____

7. Write (a) the converse, (b) the contrapositive, and (c) the inverse of "If $x = 3$, then $|x| = 3$." Then tell whether each statement is true or false.

- a. _____
- b. _____
- c. _____

8. What can you conclude by using the statement "If a quadrilateral is a square, then it is a rectangle" together with each additional statement? If no conclusion is possible, say so.

- a. $ABCD$ is a square. _____
- b. $EFGH$ is a rectangle. _____
- c. $JKLM$ is not a rectangle. _____
- d. $PQRS$ is not a square. _____

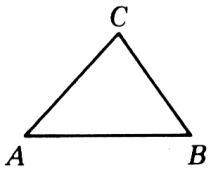
Indirect Proof

Write a correct first sentence of an indirect proof of each conditional.

1. If $m\angle B = 32$, then $m\angle A = 68$. _____
2. If $RS \neq ST$, then S is not the midpoint of \overline{RT} . _____

Complete.

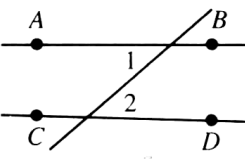
3. Given: $\angle A$ and $\angle B$ are not congruent.
Prove: \overline{AC} and \overline{BC} are not congruent.



Proof:

1. Assume temporarily that _____.
2. Then _____ since if two sides of a triangle are congruent, the angles opposite those sides are congruent.
3. But this contradicts the given information that _____.
4. Therefore the temporary assumption that _____ must be false. It follows that _____.

4. Given: $\angle 1$ and $\angle 2$ are not congruent.
Prove: $\overleftrightarrow{AB} \nparallel \overleftrightarrow{CD}$



Proof:

1. Assume temporarily that _____.
2. Then _____ since if two parallel lines are cut by a transversal, alternate interior angles are congruent.
3. But this contradicts the given information that _____.
4. Therefore the temporary assumption that _____ must be false. It follows that _____.

5. Write an indirect proof in paragraph form.

Given: $ab = 0$ and $a \neq 0$

Prove: $b = 0$

Proof: _____

