

Geometry

Review Ch. 2

Test is Wed. (at least one proof)

Quiz 2.7-2.8

2-1 Inductive Reasoning and Conjecture

Determine whether each conjecture is *true* or *false*. If false, give a counterexample.

11. If $\angle 1$ and $\angle 2$ are supplementary angles, then $\angle 1$ and $\angle 2$ form a linear pair. **F**
12. If $W(-3, 2)$, $X(-3, 7)$, $Y(6, 7)$, $Z(6, 2)$, then quadrilateral $WXYZ$ is a rectangle.



2-3 Conditional Statements

If $A \Rightarrow B$

Determine the truth value of each conditional statement. If *true*, explain your reasoning. If *false*, give a counterexample.

18. If you square an integer, then the result is a positive integer.

$$(\quad)^2 = 703$$

19. If a hexagon has eight sides, then all of its angles will be obtuse.

T

20. Write the converse, inverse, and contrapositive of the following true conditional. Then, determine whether each related conditional is *true* or *false*. If a statement is false, find a counterexample.

$A \rightarrow B$

con $B \rightarrow A$

inv $\sim A \rightarrow \sim B$

CP $\sim B \rightarrow \sim A$

If two angles are congruent, then they have the same degree measure.

If $\cong$ then degree: T

Con V. If same degree then $\cong$ T

inv. If not $\cong$ then not same degree T

CP If not same degree then not $\cong$ T

Example 4

Use the Law of Syllogism to determine whether a valid conclusion can be reached from the following statements.

- (1) If the measure of an angle is greater than 90, then it is an obtuse angle.
- (2) If an angle is an obtuse angle, then it is not a right angle.

if > 90 then obtuse

if obtuse then... not rt.



2-5

Postulates and Paragraph Proofs

Determine whether each statement is *always*, *sometimes*, or *never* true. Explain.

24. Two planes intersect at a point. **N**

25. Three points are contained in more than one plane. **N**

26. If line m lies in plane X and line m contains a point Q , then point Q lies in plane X . **A**

27. If two angles are complementary, then they form a right angle. **A**

T depends

A $\rightarrow$ B

A

B

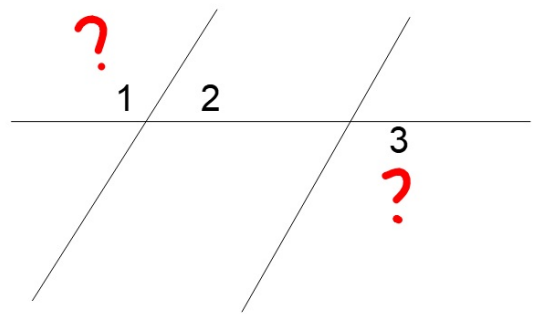
A $\rightarrow$ B

B

A

"))

Given: $\angle 1$ and $\angle 2$ form a linear pair, $\angle 2$ and $\angle 3$ are supplementary
 Prove $\angle 1 = \angle 3$



1. $\angle 1 + \angle 2 = 180^\circ$
 $\angle 2$ & $\angle 3$ are supp
2. $\angle 1 + \angle 2 = 180$
3. $\angle 2 + \angle 3 = 180$
4. $\angle 1 + \angle 2 = \angle 2 + \angle 3$
5. $\angle 1 = \angle 3$

1. given
2. def CP
3. def supp
4. sub
5. subtr

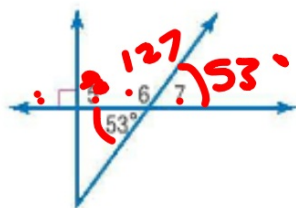
2-8 Proving Angle Relationships

Find the measure of each angle.

40. $\angle 5 = 90^\circ$

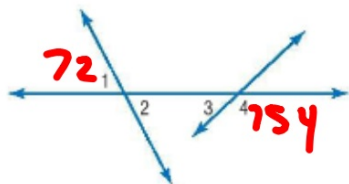
41. $\angle 6 = 127^\circ$

42. $\angle 7 = 53^\circ$



Example 8

Find the measure of each numbered angle if $m\angle 1 = 72$ and $m\angle 3 = 26$.



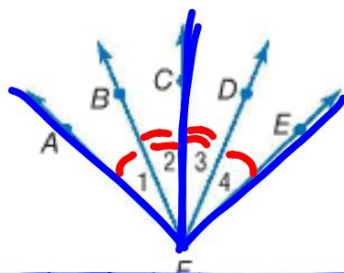
$$\angle 2 = 72^\circ$$

$$\angle 4 = 154^\circ$$

43. **PROOF** Write a two-column proof.

Given: $\angle 1 \cong \angle 4$, $\angle 2 \cong \angle 3$

Prove: $\angle AFC \cong \angle EFC$



1. $\angle 1 = \angle 4$ $\angle 2 = \angle 3$ $\angle 2 = \angle 3$	1. given
2. $\angle 1 + \angle 2 = \angle 3 + \angle 4$	2. add.
3. $\angle 1 + \angle 2 = \angle AFC$ $\angle 3 + \angle 4 = \angle EFC$	3. $\angle$ add
4. $\angle AFC = \angle EFC$	4. subs

$$a \wedge b$$

Truth tables

a and b

a or b

conditional statements (h & c)

a	b	$a \vee b$	
T	T	T $\vee$ T	T
T	F	T $\vee$ F	T
F	T	F $\vee$ T	T
F	F	F $\vee$ F	F