

* Good for you for checking ANSWERS!

Name ANSWERS

Period _____

Date _____

BONUS: ~~ANSWERS~~

Geometry ~~ANSWERS~~ Extra Practice with Chapter 2

Draw a triangle with a face at the top of your test for a bonus point!

1. A statement is considered a **definition** if the original conditional **AND** its converse are both true. If they are **BOTH** true, then you can write the statement as a biconditional which contains the phrase if and only if.

2. Use the following statement for questions the following questions:

All cats are felines

a. Write this as a conditional

If it is a cat, then it is a feline

b. State the hypothesis

it is a cat

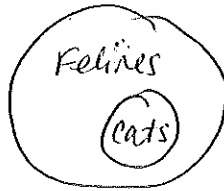
c. State the conclusion

it is a feline

d. Write the converse

If it is a feline, then it is a cat.

Draw a Venn diagram for the above example.



3. Identify the hypothesis and conclusion of the conditional. Write the converse and state whether that is true or false... if it is false, state a counter example.

If two angles are complementary, then their sum is 90°.

Hypothesis

Two angles are complementary

Conclusion

their sum is 90°

Converse

If 2 angles have a sum = 90°, then they are complementary

Converse true or false

true

Biconditional (only if true!)

Two angles are complementary if and only if their sum is 90°

Counterexample (only if false!) _____

4. Given the statement: *All adjacent angles form a linear pair.* Is the statement true or false? Explain.

False some adj. angles do not form a straight line. adjacent to $\angle 2$ and NOT a lin. pr.

5. Re-write the following statement as a **conditional** and **converse**. Give the truth value of each statement, if it is false, give a counterexample.

Two angles that are adjacent share a common vertex.

Conditional: If 2 \angle 's are adjacent, then ^{they share a} common vertex

Converse: IF 2 \angle 's share a common vertex, ~~then~~ then they are ~~adjacent~~ adjacent

6. Use the following statement to answer the following: *Vertical angles are angles that share a common vertex.*

- a. Re-write the statement as a **conditional** and **converse**.

Conditional: If 2 \angle 's are vertical, then they share a common vertex

Converse: If 2 \angle 's share a common vertex, then they are vertical \angle 's

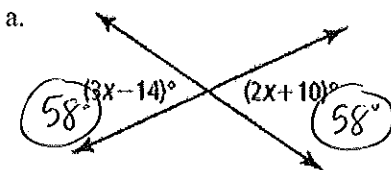
- b. Is the statement a good definition? Yes or no? Why? If yes, write it as a biconditional.

false b/c NOT reversible
Then converse is FALSE.

7. Write the **conditional** statement represented by the given diagram:

If it is a Twix, then it is candy.

8. Find the value of 'x', then the value of each of the labeled angles.

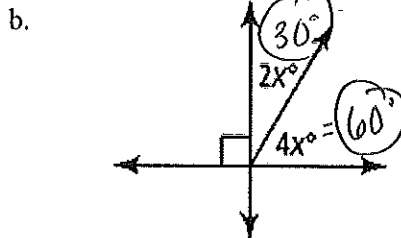


$$3x - 14 = 2x + 10$$

$$x - 14 = 10$$

$$x = 24$$

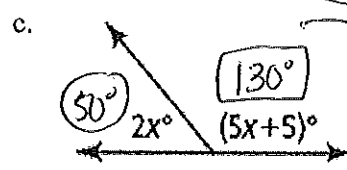
$$3(24) - 14 = 58^\circ$$



$$2x + 4x = 90$$

$$6x = 90$$

$$x = 15$$

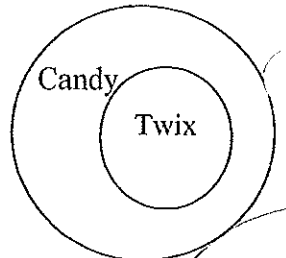


$$2x + 5x + 5 = 180$$

$$7x + 5 = 180$$

$$7x = 175$$

$$x = 25$$



* Remember the test will have a factoring problem on it!

9. Name the property of equality or congruence that justifies going from the first statement to the second statement.

a. $\angle M \cong \angle N$

$\angle N \cong \angle M$

Symmetric Property of Congruence

b. $3x = 24$

$x = 8$

Division Prop. of Equ.

c. $\overline{PQ} \cong \overline{RS}$ and $\overline{RS} \cong \overline{TU}$

$\overline{PQ} \cong \overline{TU}$

Transitive Prop. of Congruence.

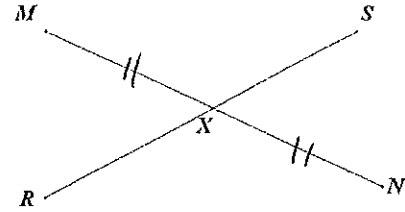
* Factor to solve: $x^2 = 2x + 3$

REMEMBER TO STUDY ALL THE PROOFS THAT HAVE BEEN DONE THROUGHOUT THE PAST COUPLE WEEKS!!!!

10. Complete the following fill-in proofs.

A. **Given:** X is the midpoint of \overline{MN} ; $MX = RX$

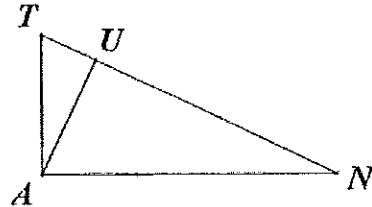
Prove: $RX = XN$



STATEMENTS	REASONS
1) X is the midpoint of \overline{MN}	1) Given
2) $\overline{XN} \cong \overline{MX}$	2) Defn. midpoint
3) $XN = MX$	3) Defn. \cong
4) $MX = RX$	4) given
5) $XN = RX$	5) Substitution
6) $RX = XN$	6) Symmetric

B. **Given:** $\angle 1$ and $\angle 2$ are complementary; $m\angle 2 = m\angle 3$

Prove: $\angle 1$ and $\angle 3$ are complementary



STATEMENTS	REASONS
1) $\angle 1$ and $\angle 2$ are complementary	1) Given
2) $m\angle 1 + m\angle 2 = 90$	2) Definition of complementary angles
3) $m\angle 2 = m\angle 3$	3) Given
4) $m\angle 1 + m\angle 3 = 90$	4) substitution POE
5) $\angle 1$ and $\angle 3$ are complementary	5) Defn. of complementary

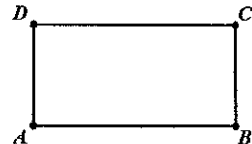
C. **Given:** $3(x + 1) = 2x + 7$

Prove: $x = 4$

STATEMENTS	REASONS
1) $3(x + 1) = 2x + 7$	1) Given
2) $3x + 3 = 2x + 7$	2) Distributive
3) $x + 3 = 7$	3) Subtraction
4) $x = 4$	4) Subtraction

D. **Given:** $\angle A$ is a right angle; $\angle B$ is a right angle; $\angle B \cong \angle C$

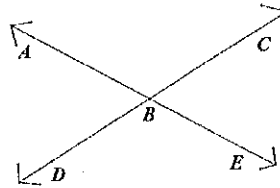
Prove: $\angle A \cong \angle C$



STATEMENTS	REASONS
1) $\angle A$ is a right angle; $\angle B$ is a right angle	1) Given
2) $\angle A \cong \angle B$	2) all right angles are congruent
3) $\angle B \cong \angle C$	3) given
4) $\angle A \cong \angle C$	4) transitive

E. Given: $m\angle ABC = 2x - 3$; $m\angle EBD = 85$

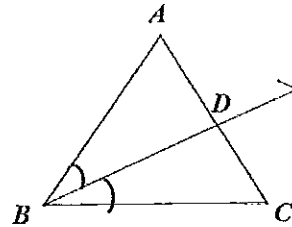
Prove: $x = 44$



STATEMENTS	REASONS
1) $m\angle ABC = 2x - 3$; $m\angle EBD = 85$	1) Given
2) $\angle ABC$ and $\angle EBD$ are vertical \angle 's	2) definition of vertical angles
3) $\angle ABC \cong \angle DBE$	3) Vertical \angle 's Thm
4) $m\angle ABC = m\angle DBE$	4) definition of congruent
5) $2x - 3 = 85$	5) Substitution
6) $2x = 88$	6) Addition
7) $x = 44$	7) Division

F. Given: \overline{BD} bisects $\angle ABC$; $m\angle ABD + m\angle C = 90$

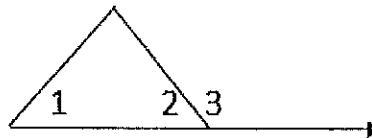
Prove: $\angle DBC$ and $\angle C$ are complementary



STATEMENTS	REASONS
1) \overline{BD} bisects $\angle ABC$	1) Given
2) $\angle ABD \cong \angle DBC$	2) Defn. of \angle bisector
3) $m\angle ABD = m\angle DBC$	3) Definition of congruence
4) $m\angle ABD + m\angle C = 90$	4) Given
5) $m\angle DBC + m\angle C = 90$	5) Substitution
6) $\angle DBC$ and $\angle C$ are complementary	6) Defn. of complementary

G. Given: $m\angle 1 + m\angle 3 = 180$

Prove: $\angle 1 \cong \angle 2$



STATEMENTS	REASONS
1) $m\angle 1 + m\angle 3 = 180$	1) Given
2) $\angle 2$ and $\angle 3$ form a linear pair	2) Defn. Lin. Pr.
3) $\angle 2$ and $\angle 3$ are supplementary	3) Lin. Pr. Postulate
4) $m\angle 2 + m\angle 3 = 180$	4) Defn. Supplementary
5) $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	5) Substitution (or transitive)
6) $m\angle 1 = m\angle 2$	6) Subtraction Property of Equality
7) $\angle 1 \cong \angle 2$	7) Defn. \cong