

2.1 – Conditional Statements

State the hypothesis and the conclusion of each conditional.

1) If $2x - 1 = 5$, then $x = 3$.
hypothesis conclusion

2) $8y = 40$ implies $y = 5$.
hypothesis conclusion

3) $\angle 1 \cong \angle 2$ if $m\angle 1 = m\angle 2$
conclusion hypothesis

Rewrite the conditional statements in if-then form.

4) When $x = 6$, $x^2 = 36$.

If $x = 6$, then $x^2 = 36$

5) The measure of a straight angle is 180° .

If an angle is a straight angle, then it has a measure of 180°

6) Only people who are registered are allowed to vote.

If people are registered, then they are allowed to vote.

For the given statements, write the if-then form, the converse, the inverse, and the contrapositive.

7) The complementary angles add up to 90° .

If-then - *If angles are complementary, then they add up to 90°*

Converse - *If angles add up to 90° , then they are complementary.*

Inverse - *If angles are not complementary, then they don't add up to 90°*

Contrapositive - *If angles don't add up to 90° , then they are not complementary.*

8) $3x + 10 = 16$, because $x = 2$.

If-then - *If $x = 2$, then $3x + 10 = 16$*

Converse - *If $3x + 10 = 16$, then $x = 2$*

Inverse - *If $x \neq 2$, then $3x + 10 \neq 16$*

Contrapositive - *If $3x + 10 \neq 16$, then $x \neq 2$*

Decide whether the statement is true or false. If false, provide a counterexample.

- 9) If a polygon has five sides, then it is a regular polygon.

F



- 10) If $m\angle A$ is 85° , then the measure of the complement of $\angle A$ is 5° .

T

- 11) Supplementary angles are always linear pairs.

F

120°

60°

- 12) If a number is an integer, then it is rational.

T

- 12) If a number is a real number, then it is irrational.

F 4

Rewrite the definitions as a biconditional statement.

- 14) An angle with a measure between 90° and 180° is called obtuse.

An angle is obtuse if and only if it has a measure between 90° and 180° .

- 15) Coplanar points are points that lie in the same plane.

Points are coplanar if and only if they lie on the same plane.

Determine whether the statement is a valid definition (Answer: Valid or Not Valid).

- 16) If two rays are opposite rays, then they have a common endpoint.

valid

- 17) If an angle is a right angle, then its measure is greater than that of an acute angle.

valid

Write the converse of each true statement. Tell whether the converse is true. If false, explain why.

- 18) If $x > 4$, then $x > 0$.

*If $x > 0$, then $x > 4$ **F***

~~x > 4~~ x can be between 0-4.

- 19) If $x < 6$, then $-x > -6$.

*if $-x > -6$, then $x < 6$ **T***

- 20) If $x \leq -x$, then $x \leq 0$.

*If $x \leq 0$, then $x \leq -x$ **T***