

Geometry

2.1 Conditional Statements

Conditional Statements

Logical statement with two parts

- _____
- _____
- Often written in If-Then form
- If part contains _____
- Then part contains _____

If we confess our sins, then He is faithful and just to forgive us our sins. 1 John 1:9

If-then Statements

$$p \rightarrow q$$

The if part implies that the then part _____.

The then part _____ imply that the first part happened.

If you are hungry, then you should eat.

John is hungry, so... _____

Megan should eat, so... _____

Negation

$$\sim p$$

_____.

The board is white.

Converse

$$q \rightarrow p$$

If we confess our sins, then he is faithful and just to forgive us our sins.

p = _____

q = _____

Converse = If _____, then _____.

Does not necessarily make a true statement (He made be faithful and just, but many people still don't ask for forgiveness.)

Inverse

$$\sim p \rightarrow \sim q$$

_____.

If we confess our sins, then he is faithful and just to forgive us our sins.

_____ = we confess our sins

_____ = he is faithful and just to forgive us our sins

Inverse = If _____, then _____.

Not necessarily true (He is still faithful and just even if we do not confess.)

Contrapositive $\sim q \rightarrow \sim p$

If we confess our sins, then he is faithful and just to forgive us our sins.

p = we confess our sins

q = he is faithful and just to forgive us our sins

Contrapositive = If _____, then _____.

Always true.

Write the following in If-Then form and then write the converse, inverse, and contrapositive
All whales are mammals.

Biconditional Statement

Logical statement where the _____ and _____ are both true

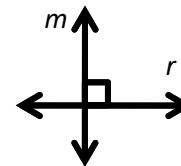
Written with "if and only if" _____

An angle is a right angle if and only if it measure 90° .

All definitions can be written as _____ and _____ statements

Perpendicular Lines

Lines that intersect to _____ $m \perp r$



Write this definition as a biconditional statement.

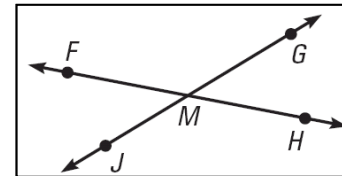
Use the diagram shown. Decide whether each statement is true. Explain your answer using the definitions you have learned.

1. $\angle JMF$ and $\angle FMG$ are supplementary

2. Point M is the midpoint of \overline{FH}

3. $\angle JMF$ and $\angle HMG$ are vertical angles.

4. $\overline{FH} \perp \overline{JG}$



Assignment: 69 #2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 26, 28, 30, 32, 49, 68, 71, 74, 76 = 20 total