

TOPIC: IF-THEN STATEMENTS (CONDITIONALS)

If-Then Statements (Conditionals)

◆ When one statement _____ another, we combine them with 'if...', 'then...' or _____ to form a **conditional statement**.

New

Conditional Statements

p : A number is divisible by 4. q : A number is even.

If a number is divisible by 4, then it is even. = p q

antecedent **consequent**

◆ Order matters: $p \rightarrow q$ & $q \rightarrow p$ are _____ the same and do not always have the same _____.

EXAMPLE

Translate the following statements into words or symbols. Then, determine the truth value.

p : A number is divisible by 4. q : A number is even.

(A) $q \rightarrow p$

(B) A number is not divisible by 4 if it is not even.

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PRACTICE

Translate the following statements from symbols to words.

p : It is warm. q : I wear sandals. r : I eat ice cream.

(A) $\sim q \rightarrow p$

(B) $\sim q \rightarrow \sim r$

(C) $(p \wedge q) \rightarrow r$

(D) $q \rightarrow (p \vee r)$

PRACTICE

Translate the following statements from words to symbols. Then, determine the truth value.

p : The shape is a square. q : The shape has 4 sides. r : The shape is a rectangle.

(A) If a shape doesn't have 4 sides, then it isn't a rectangle.

(B) If the shape is a square or a rectangle, then it has 4 sides.

(C) If the shape has 4 sides, then it is not a rectangle.

(D) The shape is a square or rectangle if it has 4 sides.