January 06, 2014

Do-now:

Determine the truth value of the statement at your table. Be prepared to justify your response.

A polygon is a square if and only if it has four congruent sides.

p q

F

If a polygon is a square, then it has 4 ≅ sides.

T

If a polygon has 4 ≅ sides, then it is a square.

F

A polygon is a triangle if and only if the sum of its angles is 180 degrees.

p

q

T

$p \rightarrow q$ T

$q \rightarrow p$ T

1 + 2 = 12 if and only if 3 + 4 = 34. T

$p \rightarrow q$ T

$q \rightarrow p$ T

Two angles are supplementary if and only if they add up to 180 degrees. T

$p \rightarrow q$ T

$q \rightarrow p$ T

Two lines are parallel if and only if the alternate interior angles are congruent. (T)

$p \rightarrow q$ (T)

$q \rightarrow p$ (T)

A point is a line if and only if the orientation of a reflected shape does not change. T

$p \rightarrow q$ T

$q \rightarrow p$ T

Biconditional = a compound statement that uses the phrase ***if and only if***

A biconditional can only be written if a conditional and its converse have the ***SAME TRUTH VALUE****.*

is true!

"if and only if"

iff

$p \leftrightarrow q$

Two lines are parallel if and only if the alternate interior angles are congruent.

p

q

$p \rightarrow q$

$q \rightarrow p$

Consider the conditionals and their converses from yesterday - for which scenarios can we write a biconditional?

Original Conditional: If a shape has four sides, then it is a rectangle. F

converse

~~**New Conditional**~~: If a shape is a rectangle, then it has four sides. T

Original Conditional: If a polygon is a square, then it does not have three sides. T

~~**New Conditional**~~**: If a polygon does not have three sides, then it is a square.** F

Original Conditional: If two lines do not intersect, then they are parallel. T

~~**New Conditional**~~**: If two lines are parallel, then they do not intersect.** T ✓

Original Conditional: If 1 + 1 = 3, then 2 + 2 = 5. T ✓

~~**New Conditional**~~**: If 2 + 2 = 5, then 1 + 1 = 3.** T

1. Take out your HW from yesterday. (If you did not do it, now is the time!)

2. Write a biconditional using the theorem you selected. Determine the truth value of the biconditional and justify your response.

3. Hand in your work when done.

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