

Geometry - Warm Up 2/10/09

p	q	$\sim p$	$\sim q$	$\sim p \wedge q$	$(\sim p \wedge q) \vee p$

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Conditionals - "If, Then"



Ex 1: p : It is January.

q : It is winter.

$p \rightarrow q$: If it is January, then it is winter.

$q \rightarrow p$: If it is winter, then it is January.

A conditional is false only when a _____ hypothesis leads to a false conclusion.

In all other cases, the conditional is true.

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Ex 2: p: You get an A in Geometry.
 q: I will buy you a new graphing calculator.

If you get an A in Geometry,
 then I will buy you a new graphing calculator.

p	q	$p \rightarrow q$

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

p: JoAnne cleans her room

q: JoAnne gets an A on her math test

r: JoAnne goes to her friends house on Saturday

1.) JoAnne's mother told JoAnne that she can go to her friends house on Saturday if JoAnne cleans her room and gets an A on her test. JoAnne didn't clean her room, but her mom let her go to her friends house anyway. Did JoAnne's mother tell JoAnne a false statement?

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Hidden Conditional:

Some conditional statements try to disguise themselves!

Re-write these conditionals so they are in the if, then form:

1. When I finish my homework, I will go to the movies.

2. In order to succeed, you must work hard.



3. $2x = 10$; therefore $x = 5$

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"Quitters never win and
winners never quit!"

p: Quit

q: win

Write this quote using logic notation:

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Create a truth table for the quote:

p: Quit
q: win

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"Quitters never win and
winners never quit!"

p	q	$\sim p$	$\sim q$	$p \rightarrow \sim q$	$q \rightarrow \sim p$	$(p \rightarrow \sim q) \wedge (q \rightarrow \sim p)$
T	T	F	F	F	F	F
T	F	F	T	T	T	T
F	T	T	F	T	T	T
F	F	T	T	T	T	T

When is the quote true?

When is the quote false?

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Biconditionals

"If and only if"



Biconditional $(p \rightarrow q) \wedge (q \rightarrow p)$ or $p \leftrightarrow q$

$p \leftrightarrow q$ is read as "p if and only if q"

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p	q	$p \rightarrow q$	$q \rightarrow p$	$(p \rightarrow q) \wedge (q \rightarrow p)$	$p \leftrightarrow q$

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Using the statement:

" I go to basketball practice on Monday and Thursday"

Determine the truth value of:

a) If today is Monday,
then I go to basketball practice.

b) If I go to basketball practice,
then today is Monday.

c) Today is Monday if and only if I go to basketball practice.

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Using the statement:

" I go to basketball practice on Monday and Thursday"

a) If today is Monday, then I go to basketball practice.

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Using the statement:

" I go to basketball practice on Monday and Thursday"

b) If I go to basketball practice, then today is Monday.

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Using the statement:

" I go to basketball practice on Monday and Thursday"

c) Today is Monday if and only if I go to basketball practice.

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Closure Question:

Shalana, Ken, Rolon and Erica each take their pets to Dr. McDermott for veterinary care. They each have a different pet: a dog, a cat, a gerbil or a parrot. Use the following information to match each person with his or her pet:

- Rolan lives next door to the person with the gerbil
- Erica and Ken frequently care for the dog when its owner is out of town
- Shalana cannot have a dog or cat because of allergies
- Erica has the parrot

	Dog	Cat	Gerbil	Parrot
Shalana				
Ken				
Rolon				
Erica				

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