M-G Geometry Week 6 10/16

Conditional Statements "If... then"

If you call your mom "chunky", then you will die a painful death.

hypothesis

conclusion

Good definition: must be true forwards and backwards

Converse: switch the order of the hypothesis and conclusion statements.

Converse: If you died a painful death, then you called your mom "chunky."

false

A good definition means the converse is also true.

If you watch a Marvel movie, then you stay for the end credits.

hypothesis

conclusion

Converse: If you stay for the end credits, then you are watching a Marvel movie.

false

If you are in the presence of Nate, hypothesis
then you are in the presence of a national treasure. conclusion.

Converse: If you are in the presence of a national treasure, then you are in the presence of Nate.

true

A Good Definition... sort of

Biconditional Statement (order does not matter)

~~If~~ You are in the presence of Nate if, and only if, ~~then~~ you are in the presence of a national treasure.

not true

- Identify hypothesis & conclusion.
- Write the converse.
- If the converse is true, then write as a biconditional statement.

1.) If you are eating an orange, then you are eating something disgusting.

hyp

conclusion

Converse: If you are eating something disgusting, then you are eating an orange.

$\boxed{\text{false}}$

2.) If you are in Geometry class, then you are looking at Nate's hideous face.

hyp

conc.

Converse: If you are looking at Nate's hideous face, then you are in Geometry class.

$\boxed{\text{false}}$

3.) If it is October 31st, then it is Halloween.

hyp

conc.

Converse: If it is Halloween, then it is Oct 31st.

True

Biconditional statement: It is Oct 31st if, and only if, it is Halloween.

1.) If $n = 8$, then $n^2 = 64$

Converse: If $n^2 = 64$, then $n = 8$

false

counter example $n = -8$

$n^2 = 64$

$8^2 = 64$ $\quad$ $(-8)^2 = 64$

$8 \cdot 8 = 64$ $\quad$ $-8 \cdot -8 = 64$

2.) If you are in the capitol of NC, then you are in Raleigh.

Converse: If you are in Raleigh, then you are in the capitol of NC.

Biconditional: You are in Raleigh if, and only if, you are in the capitol of NC.

A $\quad$ B

If you make fun of Nate, then he will be sad.

B

If Nate is sad, then he will eat four dozen donuts.

C

Law of Syllogism (Transitive Property)

$A \rightarrow B \qquad B \rightarrow C \qquad A \rightarrow C$

If you make fun of Nick, then he will eat four dozen donuts.

If you have incredible fashion sense, then you need That One Math Guy merch.
If you need That One Math Guy merch, then you should visit the TOMG website.

Law of Syllogism

If you have incredible fashion sense, then you should visit the TOMG website.

Law of Detachment

If you are a math teacher, hypothesis

then you are a sad... sad... oh so sad, and lonely person. conclusion

If the prompt contains the hypothesis, then you return the conclusion.

- Jade is a math teacher.

She is a sad, lonely person.

- Elijah is a sad, lonely person.

No conclusion

If prompt contains the conclusion, you cannot return the hypothesis.

If you eat at Taco Bell, then they will call you ho-ho. conc.

hyp

1.) Vanessa went to Taco Bell.

She was called ho-ho.

2.) John was called ho-ho.

No conclusion