

## **Pop Quiz**

**Get out of a scrap sheet of paper. Everything else under your desk**

- 1. Define the converse of an if-then statement.**
- 2. Define perpendicular lines.**
- 3. Define the Law of Syllogism (chain rule).**

## Bellwork 9/09/2011

Apply the law of detachment or the law of syllogism to find a conclusion.

- 1. If a student goes to EHS, then the student takes 3 years of math. Jessi goes to EHS.**

Jessi takes 3 years  
of math.  
Detachment

- 2. Kari is older than Ryan. Ryan is older than Jon.**

1                      2    2                      3

Kari is older than Jon.  
(Chain Rule)  
Syllogism

**Geometry**  
**Review 2.1-2.3**

**Vocabulary:**

## 2.1 Inductive Reasoning

- Know how to draw the next figure in a pattern.

Describe the pattern of the numbers, then list the next three numbers in the sequence.

$$100, -101, 103, -106, 110, -115, \dots$$

Conjecture: interchanging signs  
consecutive #'s starting w/1

$$121, -128, 136$$

Show the conjecture is false by giving a counterexample.

**The average of any two consecutive even numbers is an even number.**

$$\frac{x+y}{2} = \frac{4+6}{2} = \frac{10}{2} = 5$$

Write a function rule relating x and y.

x	1	2	4
y	$1 = \frac{1}{1}$	$0.5 = \frac{1}{2}$	$0.25 = \frac{1}{4}$

$$y = \frac{1}{x}$$

## 2.2 Writing Conditional Statements

Write the statement in if-then form. Then, find the converse, inverse, and contrapositive.

**Water freezes when the temperature is below  $0^{\circ}\text{C}$ .**

If-Then:

If water is frozen, then the temp. is below  $0^{\circ}\text{C}$ .

Converse:

If temp. is below  $0^{\circ}\text{C}$ , then the water is frozen.

Inverse:

If the water isn't frozen, then the temp isn't below  $0^{\circ}\text{C}$ .

Contrapositive:

If the temp. isn't below  $0^{\circ}\text{C}$ , then the water isn't frozen.

- Know how to tell when a statement is true or not.
- Know how to show something is false by giving a counterexample.

If  $x^2=36$ , then  $x=\pm 18$ .

False.  $x=\pm 6$

Write the converse of the statement. If it is true, write the biconditional.

~~If two angles are complementary, then the sum of their measures is  $90^{\circ}$ .~~

Converse: If the sum of the measures of 2  $\angle$ 's is  $90^{\circ}$ , then they are complementary.

BC:

2  $\angle$ 's are complementary if & only if the sum of their measures is  $90^{\circ}$ .

## 2.3 Deductive Reasoning

Decide whether the conclusion reached from the two statements demonstrates the *Law of Detachment*, the *Law of Syllogism*, or *neither*.

Part 1  
 If Cedric plays in a big game, then he gets nervous.  
 Part 2  
 If Cedric gets nervous, then he performs well.  
 Part 3  
 If Cedric plays in a big game, then he performs well.

Part 1  
 Part 3  
 Syllogism

If Leanne spends more than \$30 on her car, then she'll have to wait until next week to buy Michael's birthday gift.  
 Leanne spent \$40 on her car.  
 Leanne will have to wait until next week to buy Michael's birthday gift.

• If-then  
 • Scenario  
 Detachment

Decide whether *inductive* or *deductive* reasoning was used to find a conclusion.

While shopping for a product, you notice that brand A is more expensive than brand B. You conclude that brand A is of higher quality than brand B.

Inductive, because  
 it's based on a pattern.

Because the brand A product costs \$1.50 and the brand B product costs \$ 1.00, you conclude that the brand A product is 50% more expensive.

Deductive, because the \$ are  
 facts.

- Know how to find a conclusion using the two laws of logic.

## Homework Assignment

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