Warm Up

Write the converse, inverse, and contrapositive of the following statement. Is each statement true?

If the measure of an angle is less than 90°, then the angle is acute

converse:
If in angle is a cute then it
weasures less than 90. True 1.

inverse: If the measure of m angle is

Not uss than ans then the not uss than no, then the angle is not acute. 2.

contrapositive: If the angle is not acute than the measure of an angle is not less than 70° an angle is not less than 70° 3.

Deductive Reasoning 2-3

Inductive reasoning - using simpler examples or a pattern to come up with a conjecture

Deductive reasoning - use definitions and properties to come up with a conjecture

Ex 1 Use the Law of Detachment to make a valid conclusion in the true situation.

If two angles are right angles, then they are congruent. $\angle C$ and $\angle D$ are right angles.

If Nathan is enrolled at Oregon High School, then he has an ID#. Nathan is enrolled at OHS.

Nathan has an ID#

Ex 2 Use the Law of Detachment to make a valid conclusion in the true situation.

If two segments have the same length, they are congruent. AB = CD.

Tony goes to every OHS football game. There is a football game this Friday.

Tony will go to the game.

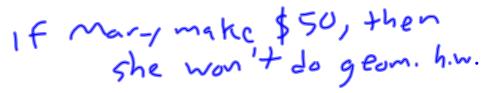
Ex 3 If possible, use the Law of Syllogism to write a new conditional statement that follows from the pair of true statements.

If Stan takes geometry this year, then he will take Algebra 2 next year. If Stan takes Algebra 2 next year, then he will graduate.

If the radius of a circle is 4 ft, then the diameter is 8 ft. If the radius of a circle is 4 ft, then its area is 16π ft².

Ex 4 If possible, use the Law of Syllogism to write a new conditional statement that follows from the pair of true statements.

If Mary makes \$50, she will buy a new video game. If she buys a new video game, she will not do her geometry homework.



If $y^3 = 8$, then y = 2. If y = 2, then 3y + 4 = 10.

Ex 5 What conclusion can be made about the product of two odd numbers?

I + will be odd

$$3.5 = 15$$
 $1.13 = 13$
 $71.11 = 781$
 $2edxti^{2}$
 $2x+12(2x+1) = -x+x+1$

Ex 6 Use the statements below to determine whether each conclusion is true or false.

If Isaac becomes a math teacher, then he will be wealthy. If Isaac graduates high school, then he will go to college. If Isaac goes to college, then he will become a math teacher. Isaac graduated high school.

- a. Isaac will be wealthy.
- b. Isaac will have fun in college.
- c. Isaac will be a math teacher.