

Geometry _____ Logic Chains _____ Name:

1. Write a statement that is logically equivalent to the statements below

a) if it is a triangle then it has three sides

b) if you have a drivers license then you are not five years old

c) If it is not even then it is odd

2. Use a chain of reasoning to combine each of the following sets of statements into one conditional.

a)

$$p \rightarrow q$$

$$r \rightarrow p$$

$$q \rightarrow \sim t$$

b)

if it is a dog then it has four legs

if it barks then it is a dog

if it has four legs then it has a tail

c)

if the sides are perpendicular then they form right angles

if it is a rectangle then the sides are perpendicular

If the angles are right, then the angles are congruent

3. Write the indicated form of the conditional below:

a) *If there is smoke then there is fire.* (inverse)

b) *If you eat then you can't swim.* (contrapositive)

c) *If a triangle has congruent sides then it has congruent angles.* (converse)

d) Which of the statements you wrote for #3 is logically equivalent to the original conditional?

4. Given the two statements... *she plays soccer* *she doesn't play volleyball*

a) write a conjunction using both statements

b) write a disjunction using both statements

c) write a conditional using both statements

d) write the negation of each statement