

Logic

~ 1 ~

Conditional and Biconditional Statements

1. Write the converse of "If the ice melts, then it is above freezing."
2. If Carlos lives in Portland, then he lives in Oregon. What is the contrapositive of the statement?
3. Write the conditional, converse, inverse, and contrapositive of the following statements: "Plants grow if you water them."
4. Write the definition of acute angle as a conditional and its converse. An angle is acute if and only if its measure is greater than 0° and less than 90° .
5. Give a counterexample to the conditional "If $r \leq 35$, then $r < 35$ ".
6. Given $r \rightarrow s$, state the inverse?
7. "If you come home late, then your parents will take away your cell phone". The underlined part of the conditional is called the _____.

Reasoning

8. George's sister told him, "If you do my chores, then you will get a dollar." Later that day, George had a dollar to spend on candy. Did he do his sister's chores? Explain your reasoning.
9. For the last 4 days you have noticed that the weather has been overcast and rainy. You believe that tomorrow will be overcast and rainy. This is an example of what kind of reasoning?
10. Reasoning based on rules, definitions and known truths is called _____ reasoning.

Geometric Logic

11. Two sides of a triangle have lengths 32 and 48. How long could the third side be?
12. Make a Venn diagram showing the relationships among the following: Polygons, triangles, quadrilaterals, squares and equilateral triangles.

Logic
~ 2 ~

13. For which of the following statements is the converse always true?

- A. If 2 angles are right angles, then they are congruent.
- B. If 2 angles are straight angles, then they are congruent.
- C. If a triangle has sides of length 3, 4, and 5, then the perimeter is 12.
- D. If it is 4:00, then the angle formed by the minute hand and hour hand is obtuse.
- E. If a ray bisects an angle, then the ray divides the angle into 2 congruent angles.