Geometry 2-2 Logic

Name: _____   Time› Start: _____   Finish: _____   Total Time = _____

Consider the following statements:

a: you like flowers   c: you have green eyes
b: you can't run fast   d: you can't whistle

Tell what the following mean.

1. a → b   _____

2. a → ~c   _____

3. ~d → b   _____

4. ~c → ~b   _____

5. c → d   _____

6. d → ~d   _____

7. ~b → ~c   _____

_____8.   "If you have a laptop, then you have a computer" is represented by p → q.
                    What is the symbolic representation of "If you have a computer, then you
                    don't have a laptop"? (2007 SOL question)

_____9.   If p → q, and q → r, then   (2007 SOL question)

                    A. r → p   B. p → r   C. ~r → p   D. r → ~p

_____10.   Let p represent $\sqrt{11} = z$, and let q represent z is a rational number.
                    Which is a representation of the statement: "*If $\sqrt{11} = z$, then z is not a
                    rational number*"?   (2005 SOL question)

                    A. ~p → ~q   B. p → q   C. p → ~q   D. ~q → ~p

_____11. Consider the following statements:
                    p: The sum of two angles is 90°.
                    q: The two angles are complements.
                    Which of the following is a symbolic representation of the statement:
                    "*If two angles are not complements, then the sum of the two angles is not 90°*"?
                    (2004 SOL question)

                    A. ~q → ~p   B. ~p → ~q   C. q → p   D. p → q

12. Let the following represent the given statements:
    p: ∠A is acute
    q: ∠B is acute
    n: ∠C is obtuse
    Use symbolic language to represent the following (don't worry if the statement makes any sense or not)

    _____ A.) ∠A is acute if and only if ∠B is acute

    _____ B.) ∠A is acute or ∠B is acute

    _____ C.) Therefore, ∠A is acute and ∠B is acute

    _____ D.) If ∠A is acute or ∠B is acute, then ∠C is not obtuse.

    _____ E.) If ∠C is obtuse, then ∠A is acute and ∠B is acute.

13.   Let p represent $x^2 = 21$
        and let q represent *x is not a whole number.*
        Which is a representation of the statement below?   _____   (2008 SOL question)
        If x is a whole number, then $x^2 \neq 21$.

        A. ~p → ~q   B. ~p → q   C. p → ~q   D. ~q → ~p

14.   Let p = *An equation is of the form $y = mx + b$.*   (2010 SOL question)
        Let q = *Its graph is a line.*

    Argument: *If an equation is of the form $y = mx + b$, then its graph is a line.*
                 The graph is not a line.
                 Therefore, the equation is not of the form $y = mx + b$.

    Which of the following is a symbolic representation of the given argument? _____

    A.
    $$p \rightarrow q$$
    $$\sim q$$
    $$\therefore \quad \sim p$$

    B.
    $$p \rightarrow q$$
    $$q$$
    $$\therefore \quad p$$

    C.
    $$p \rightarrow q$$
    $$\sim q$$
    $$\therefore \quad \sim q$$

    D.
    $$p \rightarrow q$$
    $$p$$
    $$\therefore \quad q$$