MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Worksheet 8. (Sec 3.2-3.3) Please indicate the most suitable answer on blank near the right margin.

Name___________________________________

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Given that \( p \) and \( q \) each represents a simple statement, write the indicated compound statement in its symbolic form.

1) \( p: \) She drives at 80 mph.
\( q: \) She gets a speeding ticket.
She drives at 80 mph or she does not get a speeding ticket.
\[ A) p \to \neg q \quad B) p \lor \neg q \quad C) p \lor q \quad D) p \land \neg q \]

2) \( p: \) The cone has three scoops.
\( q: \) The cone costs $1.85.
The cone does not have three scoops if and only if the cone does not cost $1.85.
\[ A) \neg p \leftrightarrow \neg q \quad B) \neg p \land \neg q \quad C) \neg p \to \neg q \quad D) p \leftrightarrow \neg q \]

3) \( p: \) The outside humidity is low.
\( q: \) The central humidifier is running.
\( r: \) The air in the house is getting dry.
It is not the case that if the air in the house is getting dry, then the central humidifier is not running.
\[ A) \neg r \to \neg q \quad B) \neg (r \land \neg q) \quad C) \neg (r \to q) \quad D) \neg (r \to \neg q) \]

Given that \( p \) and \( q \) each represents a simple statement, write the indicated symbolic statement in words.

4) \( p: \) Bob respects Linda
\( q: \) Linda respects Bob
\( \neg p \land q \)
\[ A) \text{Bob and Linda do not respect each other.} \quad B) \text{Bob does not respect Linda, but Linda respects Bob.} \quad C) \text{Bob does not respect Linda, or Linda respects Bob.} \quad D) \text{It is not true that Bob respects Linda and Linda respects Bob.} \]

5) \( p: \) The car has been repaired.
\( q: \) The kids are home.
\( r: \) We will visit Aunt Tillie.
\( p \land (q \to r) \)
\[ A) \text{The car has been repaired, and we will visit Aunt Tillie if the kids are home.} \quad B) \text{The car has been repaired and the kids are home, so we will visit Aunt Tillie.} \quad C) \text{If the car has been repaired, we will visit Aunt Tillie if the kids are home.} \quad D) \text{If the car has been repaired or the kids are home, we will visit Aunt Tillie.} \]
6) p: The air freshener is working.
q: The basement is smelly.
\sim p \land q
A) The air freshener is not working if and only if the basement is smelly.
B) If the basement is smelly, then the air freshener is not working.
C) The air freshener is working and the basement is smelly.
D) The air freshener is not working and the basement is smelly.

7) p: The refrigerator is working.
q: The milk is warm.
p \iff \sim q
A) If the refrigerator is working, then the milk is not warm.
B) The refrigerator is working and the milk is not warm.
C) The refrigerator is working if and only if the milk is not warm.
D) The refrigerator is not working if and only if the milk is not warm.

Let p, q, and r represent the following simple statements:
p: There is a blizzard outside.
q: We do not have to go to school.
r: We go sledding.
First place parenthesis as needed before and after the most dominant connective and then translate the symbolic statement into English.

8) \sim p \to r \lor q
A) If there is not a blizzard outside, then we go sledding and we do not have to go to school.
B) If there is not a blizzard outside, then we go sledding or we do not have to go to school.
C) If there is a blizzard outside, then we go sledding and we do not have to go to school.
D) If there is a blizzard outside, then we go sledding or we do not have to go to school.

Write the statement in symbolic form to determine the truth value for the statement.

9) 5 \times 3 = 15 or French is a language.
A) True
B) False
In a small town shopping mall in 1999, market researchers recorded the top five gifts that children requested while visiting "Santa." The bar graph below shows the number of children who requested each gift. Use the information given by the graph to determine the truth value of the statement.

10) More than 90 children requested computer games and more children requested dolls than sports equipment.
   A) False  B) True  C)  D)

Complete the truth table by filling in the required columns.

11) p \land \neg q

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A)  

B)  

C)  

D)  

3
Construct a truth table for the statement.

12) \((w \land s) \land (\neg s \lor t)\)

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Let \(p\) represent a true statement and let \(q\) represent a false statement. Find the truth value of the given compound statement.

13) \(p \lor \neg q\)

A) True

Let \(p\) represent a true statement, while \(q\) and \(r\) represent false statements. Find the truth value of the compound statement.

14) \(\neg(p \land q) \land (r \lor \neg q)\)

A) True

Use the information in the graphs to determine the truth value of the compound statement.

15) From 1985 though 2005, the percentage of science majors increased or the percentage of liberal arts majors increased, and those who were undecided did not decrease.

A) True

B) False