Q1: A. Complete the truth table below.

<table>
<thead>
<tr>
<th>p</th>
<th>q</th>
<th>~p</th>
<th>~p \rightarrow q</th>
<th>p \lor q</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>F</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>T</td>
</tr>
<tr>
<td>F</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>F</td>
<td>F</td>
<td>T</td>
<td>F</td>
<td>F</td>
</tr>
</tbody>
</table>

B. Circle. Using the truth table above, which of the following is true?

a. \((\neg p \rightarrow q) \Rightarrow (p \lor q)\)  
b. \((p \lor q) \Rightarrow (\neg p \rightarrow q)\)

c. both a and b are true  
d. both a and b are false

Q2: State the contrapositive of the proposition: "If \(3a = 15\), then \(6a = 30\)"

\(\text{If } 6a \neq 30, \text{ then } 6a \neq 15.\)

Q3: Write the resulting set.

A. \(\{1, 2\} \cup \{2, 3, 4\} = \{1, 2, 3, 4\}\)

B. \(\{4, 5, 6\} \cap \{7, 8, 9\} = \emptyset\)

C. For \(U = \{7, 8, 9, 10, 11\}\) and \(A = \{7, 11\}\), what is \(A'\)? \(A' = \{8, 9, 10\}\)

Q4: A marketing survey of 1,000 car commuters found that 500 answered yes to listening to the news, 400 answered yes to listening to music, and 300 answered yes to listening to both. Let

\(N\) = the set of commuters who listen to news
\(M\) = the set of commuters who listen to music

A. How many commuters are in \(N \cup M\)? \(1000\)

B. How many commuters listen to the news and do not listen to music? \(200\)
Q1: A. Complete the truth table below.

<table>
<thead>
<tr>
<th>p</th>
<th>q</th>
<th>p ∨ q</th>
<th>¬p</th>
<th>¬p → q</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T</td>
<td>F</td>
<td>T</td>
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<td>T</td>
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<td>F</td>
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<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>

B. Circle. Using the truth table above, which of the following is true?

a. (¬p → q) ⇒ (p ∨ q)  
b. (p ∨ q) ⇒ (¬p → q) 
c. both a and b are false  
d. both a and b are true

Q2: State the converse of the proposition: "If 3a = 15, then 6a = 30"

If 6a = 30, then 3a = 15

Q3: Write the resulting set.

A. {0,1,2} ∪ {2,3,4} = \{0,1,2,3,4\}

B. {5,6,7} ∩ {7,8,9} = \{7\}

C. For U = \{7,8,9,10,11\} and A = \{8,9,10\}, what is A'?  A' = \{7,11\}

Q4: A marketing survey of 1,000 car commuters found that 600 answered yes to listening to the news, 400 answered yes to listening to music, and 100 answered yes to listening to both. Let

N = the set of commuters who listen to news  
M = the set of commuters who listen to music

A. How many commuters are in N ∪ M? 900

B. How many commuters listen to the news and do not listen to music? 500
Q1: A. Complete the truth table below.

<table>
<thead>
<tr>
<th>p</th>
<th>q</th>
<th>(-p)</th>
<th>(-p \rightarrow q)</th>
<th>(p \lor q)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
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</tbody>
</table>

B. Circle. Using the truth table above, which of the following is true?

- a. \((-p \rightarrow q) \Rightarrow (p \lor q)\)
- b. \((p \lor q) \Rightarrow (-p \rightarrow q)\)
- c. both a and b are true
- d. both a and b are false

Q2: State the contrapositive of the proposition: "If \(3a = 15\), then \(6a = 30\)"

Q3: Write the resulting set.

A. \(\{1, 2\} \cup \{2, 3, 4\}\) = ________________

B. \(\{4, 5, 6\} \cap \{7, 8, 9\}\) = ________________

C. For \(U = \{7, 8, 9, 10, 11\}\) and \(A = \{7, 11\}\), what is \(A'\) ? \(A'\) = ________________

Q4: A marketing survey of 1,000 car commuters found that 500 answered yes to listening to the news, 400 answered yes to listening to music, and 300 answered yes to listening to both. Let

- \(N\) = the set of commuters who listen to news
- \(M\) = the set of commuters who listen to music

A. How many commuters are in \(N \cup M\) ? ____________

B. How many commuters listen to the news and do not listen to music? ____________
Q1:  A. Complete the truth table below.

<table>
<thead>
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</table>

B. Circle. Using the truth table above, which of the following is true?

a. (¬p → q) ⇒ (p ∨ q)  
b. (p ∨ q) ⇒ (¬p → q)  
c. both a and b are false  
d. both a and b are true

Q2:  State the converse of the proposition: "If 3α = 15, then 6α = 30"

______________________________

Q3:  Write the resulting set.

A. \{0, 1, 2\} ∪ \{2, 3, 4\} = ________________

B. \{5, 6, 7\} ∩ \{7, 8, 9\} = ________________

C. For \(U = \{7, 8, 9, 10, 11\}\) and \(A = \{8, 9, 10\}\), what is \(A'\)? \(A' = ________________\)

Q4:  A marketing survey of 1,000 car commuters found that 600 answered yes to listening to the news, 400 answered yes to listening to music, and 100 answered yes to listening to both. Let

\(N =\) the set of commuters who listen to news
\(M =\) the set of commuters who listen to music

A. How many commuters are in \(N ∪ M\)? ___________

B. How many commuters listen to the news and do not listen to music? ___________