Show your work.

Q1: Complete the truth table in A. Then use the truth table to answer the question B.

\[\begin{array}{cccc}
  p & q & p \lor q & \neg p & \neg p \to (p \lor q) \\
  T & T & T & F & T \\
  T & F & T & F & T \\
  F & T & T & T & T \\
  F & F & F & T & F \\
\end{array}\]

B. Circle one: \( p \lor \neg p \) is a:

a. Contingency
b. Tautology
c. Contradiction

Q2: Use the following sets to answer A – C. The set \( U \) is the Universe for this set of questions.

\[U = \{2, 3, 5, 7, 11, 13\} \quad R = \{3, 7\} \quad T = \{7, 11, 13\}\]

A. List the elements of each of these sets

1. \( R \cup T = \{2, 3, 7, 11, 13\} \)
2. \( R' = \{2, 5, 11, 13\} \)

B. Circle all true statements:

\( R \subseteq T \quad 11 \notin R \quad R \cap U = R \quad \emptyset \in T \)

C. List all subsets of the set \( R \)

\( \emptyset, \{3\}, \{3, 7\}, \{7\}, \{5\}, \{5, 13\} \)

Q3: This semester 1000 students are taking Math courses. 70 students are taking Finite Math, 320 are taking Elementary Statistics and of these, 25 are taking both Finite Math and Statistics.

Let \( F = \) the math students taking Finite Math and \( S = \) the math students taking Elementary Statistics.

Find the following numbers:

A. \( n(F \cup S) = \frac{365}{45 + 25 + 295 = 365} \)

B. \( n(F \cap S') = \frac{45}{70 - 25} \)

C. The number of students who are taking statistics and not taking Finite Math = \( \frac{295}{n(S \cap F')} \) or \( n(S \cap F') = \frac{295}{n(S \cap F')} \)

D. The number of math students who are not taking Statistics or Finite Math = \( \frac{635}{1000 - 365} \) or \( n(S' \cap F') = \frac{n(S' \cap F')}{} \) or \( = 635 \)
Show your work.

**Q1:** Complete the truth table in A. Then use the truth table to answer the question B.

\[
\begin{array}{c|c|c|c|c}
 p & q & p \lor q & \neg p & \neg p \rightarrow (p \lor q) \\
 T & T & T & F & T \\
 T & F & T & F & T \\
 F & T & T & T & T \\
 F & F & F & T & F \\
\end{array}
\]

**B.** Circle one: \( p \land \neg p \) is a:

- a. Contingency
- b. Tautology
- c. Contradiction

**Q2:** Use the following sets to answer A – C. The set \( U \) is the Universe for this set of questions.

\[ U = \{2, 3, 5, 7, 11, 13\} \quad R = \{3, 7\} \quad T = \{7, 11, 13\} \]

A. List the elements of each of these sets

1. \( R \cap T = \{\} \)
2. \( T' = \{2, 5\} \)

B. Circle all true statements:

- \( R \cap T \)
- \( 11 \in R \)
- \( R \cup U = U \)
- \( \emptyset \in R \)

C. List all subsets of the set \( R \)

\[ \{3, 7\}, \{3\}, \{7\}, \emptyset \text{ or } \{\} \]

**Q3:** This semester 1000 students are taking Math courses. 90 students are taking Finite Math, 370 are taking Elementary Statistics and of these, 55 are taking both Finite Math and Statistics.

Let \( F \) = the math students taking Finite Math and \( S \) = the math students taking Elementary Statistics.

Find the following numbers:

A. \( n(F \cup S) = 405 \)

\[ 35 + 55 + 315 = 405 \quad \text{or} \quad 90 + 370 - 55 = 405 \]

B. \( n(F \cap S') = 35 \)

C. The number of students who are taking statistics and not taking Finite Math = \( 315 \)

D. The number of math students who are not taking Statistics or Finite Math = \( 595 \)

\[ \frac{n(S \cup F)'}{1000 - 405} \]
Show your work.

Q1: Complete the truth table in A. Then use the truth table to answer the question B.

A. | p | q | p ∨ q | ¬p | ¬p → (p ∨ q) |
---|---|---|------|----|-------------|
T  | T |  |  |    |             |
T  | F |  |    |    |             |
F  | T |  |    |    |             |
F  | F |  |    |    |             |

B. Circle one: p ∨ ¬p is a:
   a. Contingency
   b. Tautology
   c. Contradiction

Q2: Use the following sets to answer A – C. The set U is the Universe for this set of questions.

\[ U = \{2, 3, 5, 7, 11, 13\} \quad R = \{3, 7\} \quad T = \{7, 11, 13\} \]

A. List the elements of each of these sets
   1. \( R \cup T \)
   2. \( R' \)

B. Circle all true statements:
   \( R \subset T \quad 11 \notin R \quad R \cap U = R \quad \emptyset \in T \)

C. List all subsets of the set \( R \)

Q3: This semester 1000 students are taking Math courses. 70 students are taking Finite Math, 320 are taking Elementary Statistics and of these, 25 are taking both Finite Math and Statistics.

Let \( F = \) the math students taking Finite Math and \( S = \) the math students taking Elementary Statistics.

Find the following numbers:

A. \( n(F \cup S) = \) ________

B. \( n(F \cap S') = \) ________

C. The number of students who are taking statistics and not taking Finite Math = ________

D. The number of math students who are not taking Statistics or Finite Math = ________
Math 1390 - Quiz #1B: 7.1 & 7.2  
Spring 2010  
Score: _____

Row _____ Name_____________________________  10

Show your work.

Q1: Complete the truth table in A. Then use the truth table to answer the question B.

A. \[ \begin{array}{c|c|c|c|c} p & q & p \lor q & \neg p & \neg p \rightarrow (p \lor q) \\ \hline T & T & T \hline T & F & \hline F & T & T \hline F & F & \hline \end{array} \]

B. Circle one: \( p \land \neg p \) is a:
   a. Contingency
   b. Tautology
   c. Contradiction

Q2: Use the following sets to answer A – C. The set \( U \) is the Universe for this set of questions.

\[ U = \{2, 3, 5, 7, 11, 13\} \quad R = \{3, 7\} \quad T = \{7, 11, 13\} \]

A. List the elements of each of these sets
   1. \( R \cap T \)
   2. \( T' \)

B. Circle all true statements:
   \( R \not\subset T \quad 11 \in R \quad R \cup U = U \quad \emptyset \in R \)

C. List all subsets of the set \( R \)

Q3: This semester 1000 students are taking Math courses. 90 students are taking Finite Math, 370 are taking Elementary Statistics and of these, 55 are taking both Finite Math and Statistics.

Let \( F = \) the math students taking Finite Math and \( S = \) the math students taking Elementary Statistics.

Find the following numbers:

A. \( n(F \cup S) = \) ______

B. \( n(F \cap S') = \) ______

C. The number of students who are taking statistics and not taking Finite Math = ______

D. The number of math students who are not taking Statistics or Finite Math = ________