T2 G1 21 Jan 2022

21 January 2022 11:05

. Let p and q be the propositions

p : I bought a lottery ticket this week.
q : I won the million dollar jackpot.

Express each of these propositions as an English sentence.

a) $\neg p$ **b)** $p \vee q$ **c)** $p \rightarrow q$

(a) I did not buy a lottery ticket this week.

(b) I bought a lottery ticket this week or won the million dollar jackpot.

(c) If I bought a lottery ticket this week then I won the million dollar jackpot.

and

$\neg p \wedge \neg q$:-

3) Let P: We should be honest., Q: We should be dedicated., R: We should be overconfident. Then 'We should be honest or dedicated but not overconfident.' is best represented by?

$P \vee Q \wedge \neg R$

a) ~P V ~Q V R

b) P ∧ ~Q ∧ R

c) P V Q ∧ R

d) P V Q ∧ ~R

18) If the statement 'None but the brave wins the race' is false which of the following statements can be claimed to be true?

Select the correct code:

(A) All brave persons win the race.

(B) Some persons who win the race are not brave.

(C) Some persons who win the race are brave.

(D) No person who wins the race is brave.

19) p∧q is True when

a) p is true, q is false b) p is false, q is true c) p is true, q is true d) p is false, q is false

$p \wedge q$ is True

T T

Truth Table for given Compound proposition :-

$2^2 = 4$

$\neg p \wedge q$

p	q	¬p	¬p∧q
T	T	F	F
T	F	F	F
F	T	T	T
F	F	T	F

(2)

$(p \vee \neg q) \rightarrow q$

p	q	¬q	p∨¬q	(p∨¬q)→q
T	T	F	T	T
T	F	T	T	F
F	T	F	F	T
F	F	T	T	F

$\neg p \rightarrow (q \rightarrow r)$

$2^3 = 8$

p	q	r	¬p	q→r	¬p→(q→r)
T	T	T	F	T	T
T	T	F	F	F	T
T	F	T	F	T	T
4					

4	T	T	F	F	F	T	
	T	F	T	F	T	T	
	T	F	F	F	T	T	
	F	T	T	T	T	T	
4	F	T	F	T	F	F	
	F	F	T	T	T	F	
	F	F	F	T	T	T	

$(p \vee \neg t) \wedge (p \vee \neg s)$

p, t, s

$2^3 = 8$

p	t	s	¬t	¬s	(p ∨ ¬t)	p ∨ ¬s	(p ∨ ¬t) ∧ (p ∨ ¬s)
T	T	T	F	F	T	T	T
T	T	F	F	T	T	T	T
T	F	T	T	F	T	T	T
T	F	F	T	T	T	T	T
F	T	T	F	F	F	F	F
F	T	F	F	T	F	T	F
F	F	T	T	F	T	F	F
F	F	F	T	T	T	T	T

16) Give the number of rows in the truth table for the compound statement.
(p ∨ q) ∧ (~r ∨ s) ∨ ~t

5

A) 25 B) 10 C) 8 D) 32

$2^5 = 32$