MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

MATHEMATICAL REASONING [APPENDIX - 4]

Solved Problems

1. If $p: 7 > 5, q: 10 < 12$, then $p \wedge q$

A. True

B. False

C. Can not be determined

D. None

Answer: A

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2. If $p: 5 > 7, q: 10 < 12$, then $p \vee q$

A. True

B. False

C. Can not be determined

D. None

Answer: A

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3. If $p: x^2 - 16 = 0, q: (x + 4)(x - 4) = 0,$ then $p \leftrightarrow q$

A. True

B. False

C. Can not be determined

D. None

Answer: A

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4. If $p: 3+5=10, q=3\times 5=15,$ then $p \leftrightarrow q$

A. True

B. False

C. Can not be determined

D. None

Answer: B

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5. The converse of the statement "If $x \in A \cup B$ then $x \in A$ or $x \in B$" is

A. If $x \in B$, then $x \in A$

B. If $B = A$, then A = B

C. If $A \subset C$, then $A \subset B$ and $B \subset C$

D. If $x \in A$ or $x \in B$, then $x \in A \cup B$

Answer: D

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Exercise

1. If sentence can be judged to be true or false, but not both then it is called

A. an open sentence

B. a statement

C. a tautology

D. a contradiction

Answer: B

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2. The truthfulness or falsity of a statement is called its

A. negation

B. converse

C. inverse

D. truth value

Answer: D

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3. The combination of one or more simple statements with connective is called

A. a conjuction

B. a disjunction

C. an open sentence

D. a compound statement

Answer: D

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4. Denial of a statement is called its

A. negation

B. convere

C. inverse

D. truth value

Answer: A

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5. The statement which uses the connective $\vee$ (OR) is called a

A. negation

B. disjunction

C. conjunction

D. tautology

Answer: B

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6. The statement which uses the connective $\wedge$ (AND) is called a

A. conjunction

B. disjunction

C. implication

D. negation

Answer: A

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7. The statement of the form " if..... then....." is called

A. Disjunction

B. Conjuction

C. Implication

D. Negation

Answer: C

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8. "Earth is a planet", the negation of this statement is

A. The earth is round

B. The earth is not round

C. The earth revolves round the sun

D. The earth is not a planet

Answer: D

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9. The negation of the statement "If I become a teacher, then I will open a school" is

A. Neither I will become a teacher not I will open a school

B. I will not become a teacher or I will open a school

C. I will become a teacher and I will not open a school

D. Either I will not become a teacher or I will not open a school

Answer: C

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10. The conjunction of the statements, "5 is an odd number", "5 is positive" is

A. 5 is an odd number and 5 is positive

B. 5 is an odd number or 5 is positive

C. 5 is an odd number and 5 is not positive

D. 5 is not an odd number and 5 is positive

Answer: A

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11. The conjunction of the statement,"2 is even", "Its square is even", is

A. 2 is even and its square is even

B. 2 is even or its square is even

C. 2 is even but its square is not even

D. 2 is not even and is its square is not even

Answer: A

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12. The disjunction of the statement, "It is raining", The sun is shining", is

A. It is raining and the sun is shining

B. It is raining or the sun is shining

C. It is raining and the sun is not shining

D. It is not raining or the sun is not shining

Answer: B

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13. The disjunction of the statement, "Hyderabad is in India", 2+2 = 4" is

A. Hyderabad is in India and 2+2=4

B. Hyderabad is in India or 2+2 = 4

C. Hyderabad is in India but not 2+2=4

D. Hyderabad is not in India or 2+2=4

Answer: B

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14. The disjunction of the statement, "1+2 = 3", "3+4 = 6", is

A. 1+2 = 3 and 3+4 = 6

B. 1 + 2 = 3 or 3 + 4 = 6

C. 1 + 2 = 3 but not 3 + 4 = 6

D. Neither 1 + 2 = 3 nor 3 + 4 = 6

Answer: B

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15. The disjunction of 3+5 = 8, 7-4 = 3 is

A. 3+5 = 8 and 7-4=3

B. 3 + 5 = 8 or 7 - 4 = 3

C. If 3 + 5 = 8 then 7 - 4 = 3

D. 3 + 5 = 8 only If 7 - 4 = 3

Answer: B

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16. The conjunction of 6+3=9, 8-3 = 5 is

A. 6+3 = 9 and 8 - 3 = 5

B. 6 + 3 = 9 or 8 - 3 = 5

C. If 6 + 3 = 9 then 8 - 3 = 5

D. 6 + 3 = 9 onlt if 8 - 3 = 5

Answer: A

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17. The implication of $x+3 = 8, 2x + 5 = 10$ is

A. $x + 3 = 8$ and $2x + 5 = 10$

B. $x + 3 = 8$ or $2x + 5 = 10$

C. If $x + 3 = 8$ then $2x + 5 = 10$

D. $x + 3 = 8$ only if $2x + 5 = 10$

Answer: C

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18. "5 + 7 = 10 and 4 + 3 = 7". Write the statement using the appropriate connective

A. $5 + 7 = 10 \vee 4 + 3 = 7$

B. $5 + 7 = 10 \wedge 4 + 3 = 7$

C. $5 + 7 = 10 \Rightarrow 4 + 3 = 7$

D. $5 + 7 = 10 \Leftrightarrow 4 + 3 = 7$

Answer: B

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19. "7 is odd Or 7 is prime". Write the statement using the appropriate connective

A. 7 is odd $\vee$ 7 is prime

B. 7 is odd $\wedge$ 7 is prime

C. 7 is odd $\Rightarrow$ 7 is prime

D. 7 is odd $\Leftrightarrow$ 7 is prime

Answer: A

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20. "If x + 2 = 0 then x = -2". Write the statement using the appropriate connective

A. $x + 2 = 0 \vee x = -2$

B. $x + 2 = 0 \wedge x = -2$

C. $x + 2 = 0 \Rightarrow x = -2$

D. $x + 2 = 0 \Leftrightarrow x = -2$

Answer: C

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21. "x + 2 = 0 iff x = -2 ". Write the statement using the appropriate connective

A. $x + 2 = 0 \vee x = -2$

B. $x + 2 = 0 \wedge x = -2$

C. $x + 2 = 0 \Rightarrow x = -2$

D. $x + 2 = 0 \Leftrightarrow x = -2$

Answer: D

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22. $(7 \neq 10)$. Write the statement using the appropriate connective

A. $\sim(7 = 10)$

B. $\sim(7 \neq 10)$

C. $\sim(-7 = 10)$

D. $(-7 \neq 10)$

Answer: A

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23. The symbolic form of" not p" is

A. $\sim p$

B. $\sim(\sim p)$

C. p

D. $p \sim p$

Answer: A

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24. The symbolic form of "p or q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: A

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25. The symbolic form of "p and q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: B

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26. The symbolic form of "p only if q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C

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27. The symbolic form of "p iff q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: D

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28. The symbolic form of "p and not q" is

A. $p \wedge (\sim q)$

B. $p \vee (\sim q)$

C. $(\sim p) \wedge q$

D. $(\sim p) \vee q$

Answer: A

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29. The symbolic form of" (not p) or q" is

A. $(\sim p) \wedge q$

B. $(\sim p) \vee q$

C. $p \wedge (\sim q)$

D. $p \vee (\sim q)$

Answer: B

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30. The symbolic form of " (either p) or (not p)" is

A. $p \vee (\sim p)$

B. $p \wedge (\sim p)$

C. $p \Rightarrow (\sim p)$

D. $p \Leftrightarrow (\sim p)$

Answer: A

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31. The symbolic form of "p or not q" is

A. $p \vee (\sim q)$

B. $p \wedge (\sim q)$

C. $p \Rightarrow q$

D. $p \Rightarrow \sim q$

Answer: A

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32. The symbolic form of "(not p) and (not q)" is

A. $(\sim p) \vee (\sim q)$

B. $(\sim p) \wedge (\sim q)$

C. $\sim p \Rightarrow \sim q$

D. $\sim p \Leftrightarrow \sim q$

Answer: B

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33. The symbol for connective of the following : p and not p

A. $p \vee (\sim p)$

B. $p \vee q$

C. $p \Leftrightarrow p$

D. $p \wedge (\sim p)$

Answer: D

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34. p : x is odd , q: x^2 is odd, the symbolic form of "x is even or x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \vee (\sim q)$

Answer: C

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35. p : x is odd , q: x^2 is odd. The symbolic form of" x is odd or x^{20} is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \vee (\sim q)$

Answer: A

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36. p : x is odd : q: x^2 is odd. The symbolic form of "x is odd and x^2 is even", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \wedge (\sim q)$

Answer: D

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37. p : x is odd , q is x^2 is odd. The symbolic form of " x is odd and x^2 is not odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \wedge (-q)$

Answer: D

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38. p : x is odd , q: x^2 is odd. The symbolic form of "If x is odd then x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C

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39. p : x is odd , q: x^2 is odd. The symbolic form of "If x is not odd then x^2 is odd", is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $(\sim p) \Rightarrow q$

D. $(\sim q) \Rightarrow p$

Answer: C

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40. p : x is odd, q: x^2 is odd. The symbolic form of "x is odd iff x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: D

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41. p : x is odd, q: x^2 is odd. The symbolic form of "x is even iff x^2 is even", is

A. $p \Leftrightarrow q$

B. $p \Leftrightarrow (\sim q)$

C. $(\sim p) \Leftrightarrow q$

D. $(\sim p) \Leftrightarrow (\sim q)$

Answer: D

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42. p : x is even, $q: x^2$ is even. The symbolic form of "x is even or x^2 is even", is

A. $p \Leftrightarrow q$

B. $p \wedge q$

C. $p \vee q$

D. $p \Rightarrow q$

Answer: C

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43. p : x is even , $q: x^2$ is even. The symbolic form of "x is not even and x^2 is even", is

A. $p \vee q$

B. $(\sim p) \vee q$

C. $p \wedge q$

D. $(\sim p) \wedge q$

Answer: D

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44. The truth value of "4+3 = 7 or $5 \times 4 = 21$ ", is

A. T

B. F

C. T or F

D. T and F

Answer: A

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45. The truth value of "4+2 = 3 or 2 + 3 = 4" is

A. T

B. F

C. T or F

D. T and F

Answer: B

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46. The truth value of "20 + 10 = 2 and $20 \times 10 = 200$ ", is

A. T

B. F

C. T or F

D. T and F

Answer: B

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47. The truth value of "10 + 2 = 12 and $10 \times 2 = 20$" is

A. T

B. F

C. T or F

D. T and F

Answer: A

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48. The truth value of "10 + 15 = 20 and 15 - 10 = 25" is

A. T

B. F

C. T or F

D. T and F

Answer: B

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49. The truth value "if 3 + 2 = 5 then $1 \times 0 = 0$ " is

A. T

B. F

C. T or F

D. T and F

Answer: A

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50. The truth value of "if $3 \times 6 = 20$ then 2 + 7 = 9" is

A. T

B. F

C. T or F

D. T and F

Answer: A

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51. The truth value of "if $5 \times 7 = 30$ then $2 + 1 = 4$" is

A. T

B. F

C. T or F

D. T and F

Answer: A

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52. The truth value of "if $6 \times 7 = 42$ then 6 + 2 = 4" is

A. T

B. F

C. T or F

D. T and F

Answer: B

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53. The truth value of $p \wedge q$ is T if

A. The truth value of p is T if

B. The truth value of q is T

C. The truth value of p and q is T

D. The truth value of atleast of p and q is T

Answer: C

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54. The truth value of $p \vee q$ is F if

A. The truth value of both p and q is F

B. Truth value of p is T, Truth value of q is F

C. Truth value of p is F, Truth value of q is T

D. The truth value of both p and q is T

Answer: A

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55. The truth value of $p \leftrightarrow$ q is F if

A. If the truth value of p is T then the truth value of q is T

B. If the truth value of p is F then the truth value of p is F

C. The truth value of both p and q is T or F

D. The truth values of p and q are opposite

Answer: C

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56. Which of the following is true ?

A. $4 + 3 = 10 \Leftrightarrow 4 \times 3 = 12$

B. $4 \times 7 = 28 \Leftrightarrow 4 + 7 = 1$

C. $5 \times 8 = 40 \Leftrightarrow 8 - 2 = 5$

D. $6 - 3 = 3 \Leftrightarrow 6 \times 3 = 18$

Answer: D

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57. Which of the following is true ?

A. $2 + 4 = 5$ or $4 + 2 = 3$

B. $3 + 5 = 8$ and $3 \times 2 = 6$

C. $x^2 = 4 \Rightarrow x = 2$

D. $3 \times 7 = 10 \Leftrightarrow 1 \times 2 = 3$

Answer: B

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58. Which of the following is true ?

A. $3+5=8 \wedge 1+2=3$

B. $3 \times 5=8 \wedge 2 \times 3=6$

C. $2+4=5 \wedge 4+2=3$

D. $3+5=8 \wedge 1 \times 0=10$

Answer: A

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59. Which of the following is true ?

A. $3 + 7 = 10 \Leftrightarrow 1 + 2 = 3$

B. $3 + 7 = 10 \Leftrightarrow 1 + 2 = 2$

C. $3 \times 7 = 10 \Leftrightarrow 1 \times 3 = 3$

D. $3 + 7 = 8 \Leftrightarrow 1 \times 2 = 2$

Answer: A

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60. A = {1,2,3,4,5}. Which of the following is true ?

A. $\exists x \in A \ni x + 3 = 10$

B. $\forall x \in A, x + 3 < 10$

C. $\exists x \in A \ni x + 3 > 10$

D. $\forall x \in A, x + 3 \leq 7$

Answer: B

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61. Biconditional statements are given below.true statement among them is

A. $5x - 10 = 0 \Leftrightarrow x = 3$

B. $x^2 - 16 = 0 \Leftrightarrow (x + 4)(x - 4) = 0$

C. $x^2 = 1 \Leftrightarrow x = 1$

D. $x^2 + 9 = 0 \Leftrightarrow x = 3$

Answer: B

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62. Which of the following statement is false ?

A. $x^2 - 9 = (x + 3)(x - 3), x \in R$

B. $x^2 + 1 = 0 \Rightarrow x \in R$

C. $x + 3 = 5 \Rightarrow x \in \{2\}$

D. $x^2 + 1 = 0 \Rightarrow x \not\in R$

Answer: B

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63. $p \Rightarrow q$ is false is

A. p is true and q true

B. p is true and q is false

C. p is false and q is true

D. p is false and q is false

Answer: B

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64. If p is false, q is true then which of the following is false ?

A. $\sim(p \Rightarrow q)$

B. $\sim p$

C. $\sim p \Rightarrow q$

D. $\sim q$

Answer: D

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65. If $p: 10 > 8$, $q: 10 > 12$, then $p \wedge q$

A. True

B. False

C. Cannot be determined

D. none

Answer: B

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66. If $p: 7 > 4$, $q: 7 < 9$, then $p \vee q$

A. True

B. False

C. Cannot be determined

D. none

Answer: A

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67. If $p: 3+5=8, q: 2 \times 3=8$ then, $p \leftrightarrow q$

A. True

B. False

C. Cannot be determined

D. none

Answer: B

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68. The converse of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

D. $\sim q \Rightarrow \sim p$

Answer: B

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69. The inverse of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

D. $\sim q \Rightarrow \sim p$

Answer: C

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70. The contrapositive of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

D. $\sim q \Rightarrow \sim p$

Answer: D

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71. The converse of "If two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not congruent then they are not similar

D. none

Answer: A

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72. The inverse of "if two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not similar then thay are not congruent

D. None

Answer: B

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73. The contrapositive of "if two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not similar then thay are not congruent

D. none

Answer: C

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74. The converse of "if in a triangle ABC, AB = AC then $\angle B = \angle C$" is

A. If in a triangle ABC, $\angle B = \angle C$ then AB = AC

B. If in a triangle ABC, $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then

$AB \neq AC$

D. If in a triangle ABC, $\angle B \neq \angle C$, then

$AB = AC$

Answer: A

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75. The inverse of "if in a triangle ABC, AB = AC then $\angle B = \angle C$" is

A. If in a triangle ABC, $\angle B = \angle C$ then AB = AC

B. If in a triangle ABC, $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then $AB \neq AC$

D. If in a triangle ABC, $\angle B \neq \angle C$, then $AB = AC$

Answer: B

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76. The contrapositive of "if in a triangle ABC, AB = AC then $\angle B = \angle C$" is

A. If in a triangle ABC, $\angle B = \angle C$ then AB = AC

B. If in a triangle ABC, $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then $AB \neq AC$

D. If in a triangle ABC, $\angle B \neq \angle C$, then

$$AB = AC$$

Answer: C

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77. The converse of "if in a triangle ABC, $AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC, $\angle C > \angle B$ then

$$AB > AC$$

B. If in a triangle ABC, $AB > AC$, then

$\angle C > \angle B$

C. If in a triange ABC, $\angle C > \angle B$, then

$AB > AC$

D. If in a triangle ABC, $\angle C > \angle B$, then

$AB > AC$

Answer: A

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78. The inverse of "if in a triangle ABC, $AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC, $\angle C > \angle B$ then $AB > AC$

B. If in a triangle ABC, $AB < AC$, then $\angle C < \angle B$

C. If in a triange ABC, $\angle C > \angle B$, then $AB > AC$

D. If in a triangle ABC, $\angle C > \angle B$, then

$AB > AC$

Answer: B

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79. The contrapositive of "if in a triangle ABC, $AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC, $\angle C > \angle B$ then

$AB > AC$

B. If in a triangle ABC, $AB < AC$, then

$\angle C < \angle B$

C. If in a triange ABC, $\angle C < \angle B$, then

$AB < AC$

D. If in a triangle ABC, $\angle C < \angle B$, then

$AB > AC$

Answer: C

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80. The converse of "if a triangle is equilateral then it is isosceles" is

A. If a triangle is isosceles then it is equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is equilateral

Answer: A

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81. The inverse of "if a triangle is equilateral then it is isosceles" is

A. If a triangle is isosceles then it is equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is equilateral

Answer: B

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82. The contrapositive of "if a triangle is equilateral then it is isosceles" is

A. If a triangle is isosceles then it is equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is equilateral

Answer: C

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83. The converse of "if a polygon is a square then it is a rectangular" is

A. If a polygon is a rectangle then it is a square

B. If a polygon is not a square then it is not a rectangle

C. If a polygon is not a rectangle then it is not a square

D. If a polygon is not a rectangle then it is a square

Answer: A

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84. The inverse of "if a polygon is a square then it is rectangle" is

A. If a polygon is a rectangle then it is a square

B. If a polygon is not a square then it is not a rectangle

C. If a polygon is not a rectangle then it is not a square

D. If a polygon is not a rectangle then it is a square

Answer: B

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85. The contrapositive of "if a polygon is a square then it is a rectangle" is

A. If a polygon is a rectangle then it is a square

B. If a polygon is not a square then it is not a rectangle

C. If a polygon is not a rectangle then it is not a square

D. If a polygon is not a rectangle then it is a square

Answer: C

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86. The converse of the statement "If $x \in A \cup B$ then $x \in A$ or $x \in B$" is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: A

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87. The inverse of "if $x \in A \cup B$ then $x \in A$ or $x \in B$", is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: B

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88. The contrapositive of "if $x \in A \cup B$ then $x \in A$ or $x \in B$", is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ or $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: C

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89. The converse of "if $x \in A \cap B$ then $x \in A$ and $x \in B$", is

A. if $x \in A$ and $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: A

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90. The inverse of ct^2 "if $x \in A \cap B$ then $x \in A$ and $x \in B$", is

A. if $x \in A$ or $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ or $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: B

Watch Video Solution

91. The contrapositive of "if $x \in A \cap B$ then $x \in A$ and $x \in B$", is

A. if $x \in A$ or $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: C

Watch Video Solution

92. The converse of "if $x^2 = 1$ then x = 1" is

A. If x = 1 then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: A

Watch Video Solution

93. The inverse of "if $x^2 = 1$ then $x = 1$" is

A. If x = 1 then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: B

Watch Video Solution

94. The contrapositive of "if $x^2 = 1$ then $x = 1$ " is

A. If x = 1 then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: C

Watch Video Solution

95. The converse of "if x has courage then x will win", is

A. If x will win then x has courage

B. If x has no courage then x will not win

C. If x will not win then x has no courage

D. If x will not win then x has courage

Answer: A

 Watch Video Solution

96. The inverse of "if x has courage then x will win", is

A. If x will win then x has courage

B. If x has no courage then x will not win

C. If x will not win then x has no courage

D. If x will not win then x has courage

Answer: B

Watch Video Solution

97. The contrapositive of "if x has courage then x will win", is

A. If x will win then x has courage

B. If x has no courage then x will not win

C. If x will not win then x has no courage

D. If x will not win then x has courage

Answer: C

 Watch Video Solution

98. The converse of "if x is healthy then x is wealthy", is

A. If x is wealthy then x healthy

B. If x is not wealthy then x is not healthy

C. If x is not healthy then x is not wealthy

D. If x is not healthy then x is wealthy

Answer: A

 Watch Video Solution

99. The inverse of "if x is healthy then x is wealthy", is

A. If x is wealthy then x healthy

B. If x is not wealthy then x is not healthy

C. If x is not healthy then x is not wealthy

D. If x is not healthy then x is wealthy

Answer: C

 Watch Video Solution

100. The contrapositive of "if x is healthy then x is wealthy", is

A. If x is wealthy then x healthy

B. If x is not wealthy then x is not healthy

C. If x is not healthy then x is not wealthy

D. If x is not healthy then x is wealthy

Answer: B

 Watch Video Solution

101. The converse of "if x is old then x is clever", is

A. If x is clever then x is old

B. If x is not old then x is not clever

C. If x is not clever then x is not old

D. If x is not clever then x is old

Answer: A

 Watch Video Solution

102. The inverse of "if x is old then x is clever", is

A. If x is clever then x is old

B. If x is not old then x is not clever

C. If x is not clever then x is not old

D. If x is not clever then x is old

Answer: B

 Watch Video Solution

103. The contrapositive of "if x is old then x is clever", is

A. If x is clever then x is old

B. If x is not old then x is not clever

C. If x is not clever then x is not old

D. If x is not clever then x is old

Answer: C

 Watch Video Solution

104. p : he is hard working , q : he will win. The symbolic form of" he is hard working but not going to win", is

A. $p \wedge q$

B. $p \wedge (\sim q)$

C. $p \vee (\sim q)$

D. $(\sim p) \wedge q$

Answer: B

Watch Video Solution

105. p : he is hard working, q : he will win. The symbolic form of" if he is hard working then he will win", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C

Watch Video Solution

106. p : he is hard working, q : he will win. The symbolic form of" if he will not win then he is not working" is

A. $p \Rightarrow q$

B. $(\sim p) \Rightarrow (\sim q)$

C. $(\sim q) \Rightarrow (\sim p)$

D. $(\sim q) \Rightarrow p$

Answer: C

Watch Video Solution

107. p : She is beautiful, q : she is intelligent. The symbolic form of" she is neither beautiful nor intelligent", is

A. $p \wedge q$

B. $(\sim p) \wedge q$

C. $p \wedge (\sim q)$

D. $(\sim p) \wedge (\sim q)$

Answer: D

Watch Video Solution

108. p : She is beautiful, q : she is intelligent. The symbolic form of" if she is intelligent then she is beautiful, is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $p \Rightarrow \sim q$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: B

Watch Video Solution

109. p : she is beautiful, q : she is intelligent. The symbolic form of "if she is not beautiful then she is not intelligent", is

A. $p \Rightarrow (\sim q)$

B. $(\sim p) \Rightarrow q$

C. $(\sim p) \Rightarrow (\sim q)$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: C

Watch Video Solution

110. p : she is beautiful, q : she is happy. The symbolic form of "if she is not happy then she is not beautiful" is

A. $p \Rightarrow (\sim q)$

B. $(\sim p) \Rightarrow q$

C. $(\sim p) \Rightarrow (\sim q)$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: D

Watch Video Solution

111. p : he is hard working , q : he is intelligent.

Then $(\sim q) \Rightarrow (\sim p)$ means

A. If he is hard working then he is not intellgent

B. If he is not hard working then he is intelligent

C. If he is not intelligent then he is not hard working

D. If he is not intelligent then he is hard working

Answer: C

Watch Video Solution

112. p : she is beautiful, q : she is intelligent. Then $(\sim p) \vee (\sim q)$ means

A. She is beautiful but not intelligent

B. She is intelligent but not beautiful

C. She is neigther beautiful noe intelligent

D. She is not beautiful or she is not intelligent

Answer: C

Watch Video Solution

113. p : she is beautiful, q : she is happy. Then $(\sim p) \Rightarrow (\sim q)$ means

A. If she is beautiful she is not happy

B. if she is not beautiful then she is happy

C. If she is not beautiful then she is not happy

D. If she is not happy then she is not beautiful

Answer: C

Watch Video Solution

114. p : she is beautiful , q : she is happy. Then $q \Rightarrow (\sim p)$ means

A. If she is beautiful she is happy

B. if she is beautiful then she is not happy

C. If she is happy then she is not beautiful

D. If she is happy then she is beautiful

Answer: C

 Watch Video Solution

115. The truth table of $\sim(\sim p)$ is

A.

p	$\sim p$	$\sim(\sim p)$
F	F	1
T	T	T

B.

p	$\sim p$	$\sim(\sim p)$
F	F	T
T	T	F

C.

p	$\sim p$	$\sim(\sim p)$
T	F	T
F	T	F

D.

p	$\sim p$	$\sim(\sim p)$
T	F	F
F	T	T

Answer: C

Watch Video Solution

116. The truth table of $p \vee q$ is

A.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: B

Watch Video Solution

117. The truth table of $p \wedge q$ is

A.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \wedge q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: C

Watch Video Solution

118. The truth table of $p \Rightarrow q$ is

A.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \Rightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: A

Watch Video Solution

119. The truth table of $p \Leftrightarrow q$ is

A. 

B.

p	q	$p \Leftrightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \Leftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \Leftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: D

Watch Video Solution

120. The truth table of $(\sim p) \wedge q$ is

A.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	F
F	T	T
F	F	F

B.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$(\sim p) \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

Answer: A

Watch Video Solution

121. The truth table of $p \wedge (\sim q)$ is

A.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	F

B.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$p \wedge (\sim q)$
T	T	T
T	F	F
F	T	F
F	F	F

Answer: B

Watch Video Solution

122. The truth table of $(\sim p) \wedge (\sim q)$ is

A.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	F
F	T	T
F	F	F

B.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$(\sim p) \wedge (\sim q)$
T	T	T
T	F	F
F	T	F
F	F	F

Answer: C

Watch Video Solution

123. The truth table of $\sim p) \vee q$ is

A.

p	q	$(\sim p) \vee q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee q$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$(\sim p) \vee q$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$(\sim p) \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: A

Watch Video Solution

124. The truth table of $p \vee (\sim q)$ is

A.

p	q	$p \vee (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \vee (\sim q)$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$p \vee (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$p \vee (\sim q)$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: B

Watch Video Solution

125. The truth table of $(\sim p) \vee (\sim q)$ is

A.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$(\sim p) \vee (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: C

Watch Video Solution

126. The truth table of $p \Rightarrow \sim q$

A.

p	q	$p \Rightarrow \sim q$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$p \Rightarrow \sim q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

D.

p	q	$p \Rightarrow \sim q$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: A

Watch Video Solution

127. The truth table of $(\sim p) \Rightarrow q$ is

A.

p	q	$(\sim p) \Rightarrow q$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \Rightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$(\sim p) \Rightarrow q$
T	T	F
T	F	T
F	T	F
F	F	T

D.

p	q	$(\sim p) \Rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: B

Watch Video Solution

128. The truth table of $(\sim p) \Rightarrow (\sim q)$ is

A.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	T

D.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: C

Watch Video Solution

129. The truth table of $q \Rightarrow (\sim p)$ is

A.

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	T
F	T	F
F	F	T

B.

p	q	$q \Rightarrow \sim p$
T	T	F
T	F	T
F	T	T
F	F	T

C.

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: B

Watch Video Solution

130. The truth table of $(\sim q) \Rightarrow \sim p$ is

A. 

B.

p	q	$(\sim q) \Rightarrow p$
T	T	F
T	F	T
F	T	T
F	F	T

C.

p	q	$(\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim q) \Rightarrow p$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: C

Watch Video Solution

131. The truth table of $(\sim q) \Rightarrow \sim p$ is

A.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	T
F	T	F
F	F	T

B.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	F
T	F	T
F	T	T
F	F	T

C.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: D

Watch Video Solution

132. The truth table of $(\sim p) \wedge q \Rightarrow p$ is

A.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B. 

C.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: A

Watch Video Solution

133. The truth table of $p \vee (\sim q) \Rightarrow p$ is

A.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	F
F	T	F
F	F	T

C.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: B

Watch Video Solution

134. The truth table of $p \vee (\sim q) \Rightarrow p$ is

A.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: C

Watch Video Solution

135. The truth table of $(\sim p) \vee q \Rightarrow p$ is

A.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

C.

D.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: D

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136. $pv(\sim p)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A

Watch Video Solution

137. $p \wedge (\sim p)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B

Watch Video Solution

138. $p \wedge (\sim q) \Rightarrow p$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A

Watch Video Solution

139. $p \Rightarrow p \vee q$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A

Watch Video Solution

140. $(p \Rightarrow q) \wedge (q \Rightarrow r) \Rightarrow (p \Rightarrow r)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A

Watch Video Solution

141. $[(\sim p) \Rightarrow p] \wedge [p \Rightarrow (\sim p)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B

 Watch Video Solution

142. $(\sim q) \wedge p \wedge (p \Rightarrow q)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B

Watch Video Solution

143. $(p \Rightarrow q) \rightarrow [(r \vee p) \Rightarrow (r \vee q)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B

Watch Video Solution

144. $(p \Rightarrow q) \rightarrow [(r \vee p) \Rightarrow (r \vee q)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A

 Watch Video Solution

145. $[p \wedge (\sim q)] \wedge [(\sim p) \vee q]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B

Watch Video Solution

146. $p \Rightarrow p'$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: D

 Watch Video Solution

147. The statement $\sim(p \leftrightarrow \sim q)$ is

A. a tautology

B. a fallacy

C. equivalent to $p \leftrightarrow q$

D. equivalent to $\sim p \leftrightarrow q$

Answer: D

Watch Video Solution

148. Statement - I : $(p \wedge \sim q) \wedge (\sim p \wedge q)$ is a fallacy.

Statement - II : $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$ is a tautology.

A. Statement - I is true, statement-II is false

B. Statement - I is false, Statement - II is true.

C. Statement - I is true, Statement - II is true, Statement - II is a correct explanation for Statement - I

D. Statement-I is true, Statement-II is true, Statement-II is not a correct explanation for statement-I

Answer: C

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149. Which of the following is the universal quantifier ?

A. $\in$

B. $\subset$

C. $\forall$

D. $\exists$

Answer: C

Watch Video Solution

150. Which of the following is the existential quantifier ?

A. $\in$

B. $\subset$

C. $\forall$

D. $\exists$

Answer: D

 Watch Video Solution