

## Geometry - Sample

Date: \_\_\_\_\_

Start Date: \_\_\_\_\_ End Time: \_\_\_\_\_

INDEX:

Score: \_\_\_\_/25

1-10. Use the given statements to express each statement in English.

p: I laugh

q: A joke is funny

r: I am ticklish

s: I am courteous

1.  $p \Leftrightarrow q$

---

---

2.  $q \vee r \Rightarrow p$

---

---

3.  $q \wedge s \Rightarrow p$

---

---

4.  $\neg q \wedge s \Rightarrow p$

---

---

5.  $\neg p \Leftarrow \neg r$

---

---

6.  $\neg p \wedge q$

---

---

7.  $\neg p \Leftarrow \neg s$

---

---

8.  $\neg q \vee p$

---

---

## Geometry - Sample

---

### INDEX:

9.  $\neg r \vee p$

---

---

10.  $\neg q \Rightarrow \neg p$

---

---

11-14. Create a Venn diagram to represent the given statement.

11.  $\neg p \wedge q \wedge r$

12.  $\neg r \vee p$

13.  $\neg q \Rightarrow \neg p$

14.  $q \vee r \Rightarrow p$

15-21. Complete the truth table for the given statements. Determine if the given statement is a tautology, contradiction or neither.

15.  $p \wedge \neg p$

p	$\neg p$	15

16.  $q \vee \neg q$

q	$\neg q$	16

17.  $p \wedge q \Rightarrow p$

p	q	$p \wedge q$	17

## Geometry - Sample

**INDEX:**

18.  $p \wedge \neg q \wedge r$

p	q	r	¬ q	p ∧ ¬ q	17

19.  $(p \wedge q) \vee r \Rightarrow \neg r$

p	q	r	p ∧ q	(p ∧ q) ∨ r	¬ r	19

20.  $(p \wedge \neg q) \Rightarrow (q \Rightarrow \neg p)$

p	q	¬ p	¬ q	p ∧ ¬ q	q ⇒ ¬ p	19

21.  $p \Leftrightarrow q$

p	q	p ⇒ q	q ⇒ p	20

**22-25. True or False?**

22. A conditional statement and its converse are logically equivalent. \_\_\_\_\_

23. The converse and inverse of a conditional statement are logically equivalent. \_\_\_\_\_

24. The inverse of a conditional statement  $p \Rightarrow q$  is  $q \Rightarrow p$ . \_\_\_\_\_

25. A conditional statement and its contrapositive are logically equivalent. \_\_\_\_\_