| Worksheet Exercise 2.6.D.       | Name       |
|---------------------------------|------------|
| Demonstrating the Laws of Logic | Class Date |

**Part D**. These are the laws of logic we discussed above. Give complete truth-tables for these pairs of sentence forms to show that they are equivalent. Be sure to label the columns as "sent 1," "sent 2," or "aux." Use the space on these two pages efficiently.

| 1.   | ~(~p)       | = | р                 | Double Negation      |
|------|-------------|---|-------------------|----------------------|
| 2a.  | ~(p & q)    | = | ~p V ~q           | De Morgan's Laws     |
| 2b.  | ~(p V q)    | = | ~p & ~q           | De Morgan's Laws     |
| 3.   | p⊃q         | = | ~q ⊃ ~p           | Contraposition       |
| 4.   | p⊃q         | = | ~pVq              | Conditional Relation |
| 5.   | p ≡ q       | = | (p ⊃ q) & (q ⊃ p) | Bicondition          |
| 6.   | (p & q) ⊃ r | = | p ⊃ (q ⊃ r)       | Exportation          |
| 7a.  | р&р         | = | р                 | Duplication          |
| 7b.  | рVр         | = | р                 | Duplication          |
| 8a.  | p & q       | = | q & p             | Commutation          |
| 8b.  | рVq         | = | q V p             | Commutation          |
| 9a.  | p & (q & r) | = | (p & q) & r       | Association          |
| 9b.  | p V (q V r) | = | (p V q) V r       | Association          |
| 10a. | p & (q v r) | = | (p & q) V (p & r) | Distribution         |
| 10b. | p V (q & r) | = | (p V q) & (p V r) | Distribution         |