Worksheet Exercise 2.6.D.
Demonstrating the Laws of Logic

Name
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. | $\sim(\sim p)$ | $=p$ | Double Negation |
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| 2a. | $\sim(p \& q)$ | $=\sim p \vee \sim q$ | De Morgan's Laws |
| 2b. | $\sim(p \vee q)$ | $=\sim p \& \sim q$ | De Morgan's Laws |
| 3. | $p \supset q$ | $=\sim q \supset \sim p$ | Contraposition |
| 4. | $p \supset q$ | $=\sim p \vee q$ | Conditional Relation |
| 5. | $p \equiv q$ | $=(p \supset q) \&(q \supset p)$ | Bicondition |
| 6. | $(p \& q) \supset r$ | $=p \supset(q \supset r)$ | Exportation |
| 7a. | $p \& p$ | $=p$ | Duplication |
| 7b. | $p \vee p$ | $=p$ | Duplication |
| 8a. | $p \& q$ | $=q \& p$ | Commutation |
| 8b. | $p \vee q$ | $=q \vee p$ | Commutation |
| 9a. | $p \&(q \& r)$ | $=(p \& q) \& r$ | Association |
| 9b. | $p \vee(q \vee r)$ | $=(p \vee q) \vee r$ | Association |
| 10a. | $p \&(q \vee r)$ | $=(p \& q) \vee(p \& r)$ | Distribution |
| 10b. | $p \vee(q \& r)$ | $=(p \vee q) \&(p \vee r)$ | Distribution |


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