

MTH 151 Homework #2 Key

- 1a. I did not buy a lottery ticket
- b. If I buy a lottery ticket, I will win the million-dollar jackpot.
- c. I buy a lottery ticket if and only if I won the million-dollar jackpot.
- d. I did not buy a lottery ticket and I did not win the million-dollar jackpot.
- e. I bought a lottery ticket or I won the million-dollar jackpot.
- f. I bought a lottery ticket and I won the million-dollar jackpot.
- g. If I did not buy a lottery ticket, then I did not win the million-dollar jackpot.
- h. I did not buy a lottery ticket or I both bought a lottery ticket and I won the million-dollar prize.

- 2a. $\sim p$
- b. $p \wedge \sim q$
- c. $p \rightarrow q$
- d. $\sim p \rightarrow \sim q$
- e. $q \rightarrow p$
- f. $q \wedge \sim p$
- g. $q \rightarrow p$

- 3a. 2
- b. $2^6 = 64$
- c. 16
- d. 16

4a.

p	$\sim p$
T	F
F	T

b.

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