Equitable Equations: *Conditional probability and the multiplication rule*

Problem 1

The following problem is taken from *Elementary Statistics* by Larson & Farber.

Nursing Majors The table shows the number of male and female students enrolled in nursing at the University of Oklahoma Health Sciences Center for a recent semester. *(Source: University of Oklahoma Health Sciences Center Office of Institutional Research)*

	Nursing majors	Non-nursing majors	Total
Males	94	1104	1198
Females	725	1682	2407
Total	819	2786	3605

(a) Find the probability that a randomly selected student is male, given that the student is a nursing major.

(b) Find the probability that a randomly selected student is a nursing major, given that the student is male.

Problem 2

Determine whether the following events are independent or dependent. Briefly explain your answer.

(a) Getting a 6 on the first roll of a standard die and getting a 6 on the second roll.

(b) Running a red light and getting a traffic ticket.

Problem 3

In a sample of 80 adults, 28 own cats. Two respondents are selected at random *without replacement*.

(a) What is the probability that both own cats?

(b) What is the probability that neither own cats?

(c) What is the probability that at least one owns cats?

(d) What is the probability that exactly one owns cats?