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

$\frac{94}{819}$ = male given NM = 11%

(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.

$\frac{94}{1198}$ = nursing major given male = 7.8%

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. Indepentant - one not influenced by other

(b) Running a red light and getting a traffic ticket. dependant - chance of getting ticketed in creases

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? $P(E) = \frac{28}{80} \cdot \frac{27}{79} = 12\%$ P(both)

(b) What is the probability that neither own cats? $P(E) = \frac{52}{80} \cdot \frac{51}{79} = 42\%$ P(neith)

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

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

c) P(E) = opposite of neither

$= 1 - .42 = .58 = 58\%$

d) $P(E) = P(YN \text{ or } NY) = P(YN) + P(NY)$

$= \left(\frac{28}{80} \cdot \frac{52}{79}\right) + \left(\frac{52}{80} \cdot \frac{28}{79}\right)$

$= 46\%$

Equitable Equations: *Factorials and counting*

Problem 1

A child's backpack contains three stuffed animals, five books, and six toys. Their parents will only let them bring one of each kind of item to the car with them. How many different combinations are possible?

Problem 2

A passcode consists of two digits, two letters, and another digit. How many codes are possible if the first digit can't be a zero and the two letters can't be the same?

Problem 3

A certain Spotify playlist only has 11 songs in it. How many different ways can the songs be ordered?

1) $3 \cdot 5 \cdot 6 = 90$ possible combination of toys

2) $9 \cdot 9 \cdot 26 \cdot 25 \cdot 9 = 473{,}850$ possible passwords

3) $11! = 39{,}916{,}800$ possible orders