

Case Study Ch 3 pg. 167 1-6

	Rep	Dem	Indip	total
Male	213	142	0	355
Female	19	58	0	77
	232	200	0	432

pg. 167 1-6 All Answer

$$1. \frac{77}{432} = P(\text{Fem}) = .178 \quad \frac{20}{100} = P(\text{Fem}) = .200$$

2. There is a higher percent of women Senators than women Representatives

$$3. a) P(\text{Male}) = \frac{355}{432} = .822$$

$$b) P(\text{Rep}) = \frac{232}{432} = .537$$

$$c) P(\text{Male Given Rep}) = P(\text{M|R}) = \frac{213}{232} = .918$$

$$d) P(\text{Female AND Dem}) = P(F) \cdot P(D|F)$$

$$\frac{77}{432} \cdot \frac{58}{77} = \frac{58}{432} = .134$$

e) Def of Independence pg. 149

Dependent

$$P(\text{Female and Dem}) \neq P(F) \cdot P(D)$$

$$\neq \frac{77}{432} \cdot \frac{200}{432} =$$

because they are not equal $\rightarrow .134 \neq .083$

Dependent

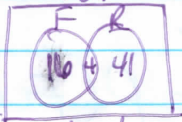
Senate

	Rep	Dem	Ind	total
Male	41	37	2	80
Female	4	16	0	20
total	45	53	2	100

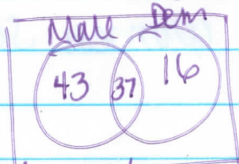
4.a) $P(\text{Male}) = \frac{80}{100} = .8$

b) $P(\text{Dem}') = 1 - P(\text{Dem}) = 1 - \frac{53}{100} = .47$ OR $P(\text{Rep and Ind}) = \frac{47}{100} = .47$

c) $P(\text{Fem OR Rep}) = P(\text{Fem}) + P(\text{Rep}) - P(\text{Fem} \cap \text{Rep})$
 Not Mut Exclusive $\frac{20}{100} + \frac{45}{100} - \frac{4}{100} = \frac{61}{100} = .61$

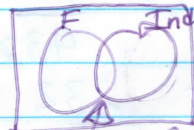


d. $P(\text{Male OR Dem}) = P(\text{Male}) + P(\text{Dem}) - P(\text{Male} \cap \text{Dem})$



$\frac{80}{100} + \frac{53}{100} - \frac{37}{100} = \frac{96}{100} = .96$

e. Mutually Exclusive
Not Mutually Exclusive



can have female Independent Senator

5.

	Rep	Dem	Indep	total
Male	254	179	2	435
Female	23	74	0	97
	277	253	2	532

6.a) $P(\text{Indep}) = \frac{2}{532} = .004$

b. $P(\text{Female and Rep}) = P(\text{Female}) \cdot P(\text{Rep} | \text{Fem})$
 $\frac{97}{532} \cdot \frac{23}{97} = \frac{23}{532} = .043$

c. $P(\text{Male or Dem}) = P(\text{Male}) + P(\text{Dem}) - P(\text{Male} \cap \text{Dem})$
 $\frac{435}{532} + \frac{253}{532} - \frac{179}{532} = \frac{509}{532} = .957$