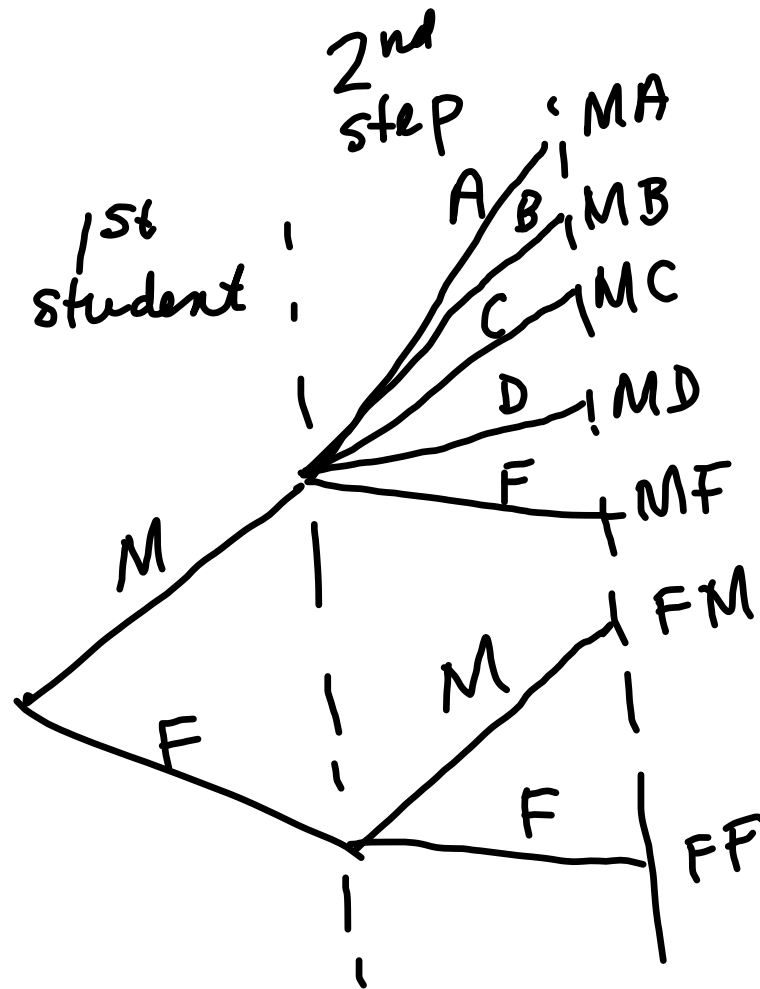


① Worksheet - chp 4



$$S = \{MA, MB, MC, MD, MF, FM, FF\}$$

$$\textcircled{2} S = \{\underline{a}, b, c, d, \underline{e}, f, g, h, \underline{i}\}$$

$$a) P(a, b, c, d) = \frac{4}{9} \approx .44$$

$$b) P(\underline{a}, b, c, d, \underline{e} \mid \text{vowel}) = \frac{2}{3}$$

$\textcircled{3}$ total 300
 160 females 40 BR, 88 BO
 78 males BR, 22 NB

	BR	BO	NB	Total
Male	78	40	22	140
Female	40	88	32	160
total	118	128	54	300

$$a) P(F) = \frac{160}{300} \approx .5333$$

4.109 pg 174

	Graduated	DNGrad	total
Male	126	55	181
Female	138	32	165
Total	259	87	346

If one player is selected at random find

$$\begin{aligned}
 \text{a) } P(\text{fem OR did not Grad}) &= P(F) + P(DNG) - P(F \cap DNG) \\
 &= \frac{165}{346} + \frac{87}{346} - P(F) \cdot P(DNG|F) \\
 &= \frac{165}{346} + \frac{87}{346} - \frac{165}{346} \cdot \frac{32}{165} \\
 &= \frac{165}{346} + \frac{87}{346} - \frac{32}{346} \\
 &= \frac{220}{346} \\
 &\approx .6358
 \end{aligned}$$

$$b) P(\text{Grad or Male})$$

$$= P(\text{Grad}) + P(M) - \underline{P(\text{Grad} \& M)}$$

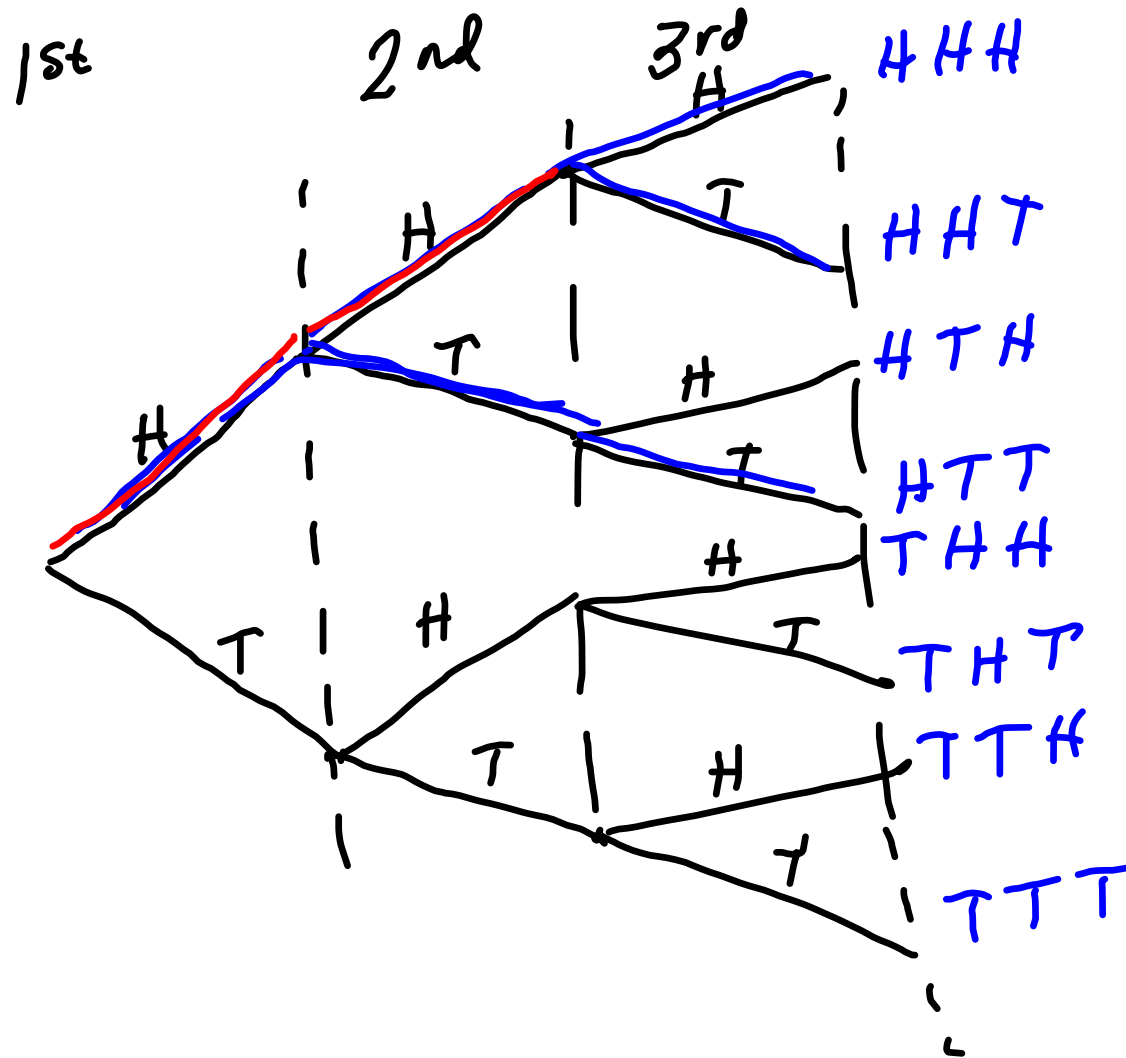
$$= \frac{259}{346} + \frac{181}{346} - \frac{126}{346}$$

$$= \frac{314}{346}$$

$$\approx .9075$$

$$P(H H H) = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$$

Suppose
to help
you



4.59 160 physicians
 75 female 20 pediatricians
 25 pediatricians

	MD	Ped	total
Male	80	5	85
Female	55	20	75
	135	25	160

Are $P(F)$ and $P(Ped)$ independent?
 mutually excl.
 No

$$P(F) = \frac{75}{160} \approx .4688$$

$$P(F | Ped) = \frac{20}{25} \approx .8000$$

Not independent

Chapt 5

5.1 Random Variable - (outcome of rand experim)
is a variable that's value is
determined by a random experiment

Discrete Random Variable -
can count it

(ex) # cars
of children
color of car

Continuous Random Variable
can assumes all value in an
interval

(ex) height
time on exams
price

5.2 Probability Distribution of Discrete Random Variable

EX # of vehicles owned by all 2000 families in a small town.
(population)

# of veh	freg	rel freg
0	30	$\frac{30}{2000} = .015$
1	470	.235
2	850	.425
3	490	.245
4	160	.080
N = 2000		1.000

The relative frequency of a population is the probability it will occur.
sample - the approximate probability

of veh

$P(x)$

0

.015

1

.235

2

.425

3

.245

4

.080

Probability Distribution
Table

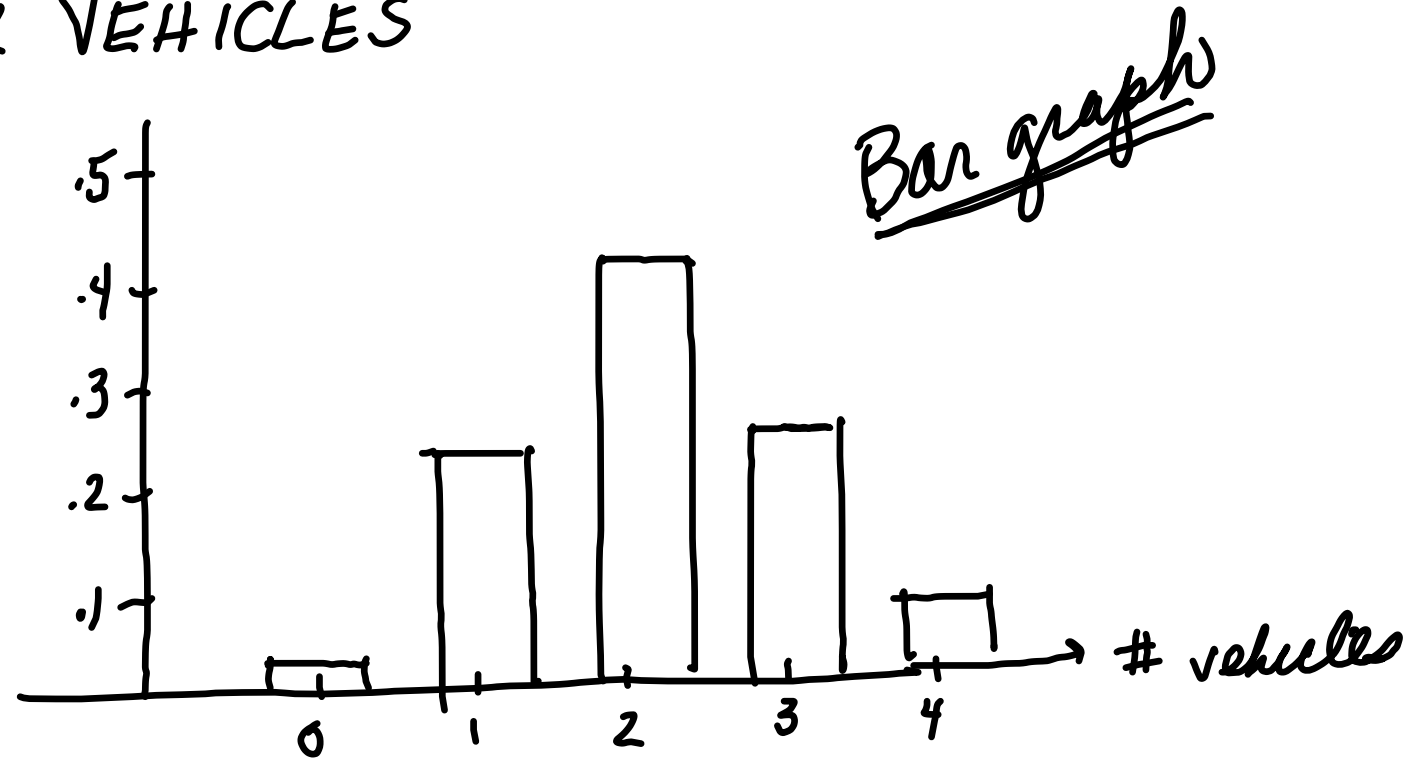
$$\sum P(x) = 1.000$$

* all Prob Dist Table must

① $0 \leq P(x) \leq 1$ for all values of x

② $\sum P(x) = 1$

We use tables, mathematical formula
or a graph
FOR VEHICLES



Q4 5.14

One = 1

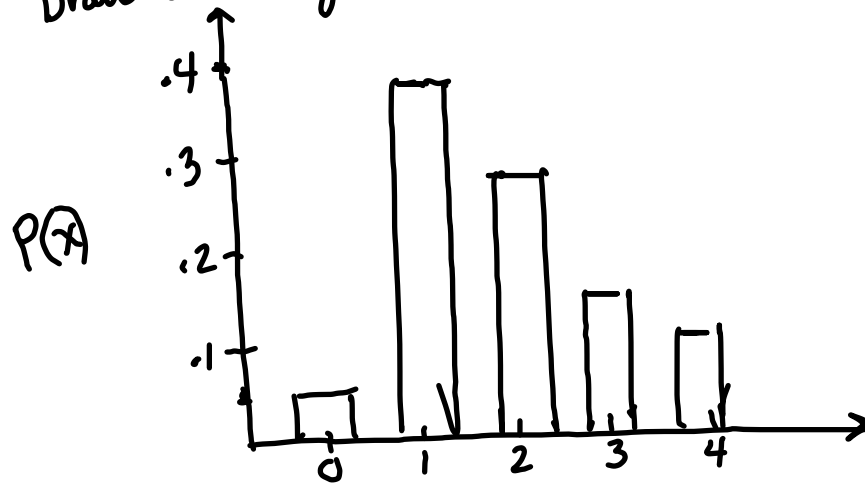
fg

#TVs	0	1	2	3	4
#fam	120	970	730	410	270
$P(x)$					

a) Construct a prob distribution table

#TVs	0	1	2	3	4	
$P(x)$	.048	.388	.292	.164	.108	$\sum P(x) = 1$
	$\frac{120}{2500}$	$\frac{970}{2500}$	$\frac{730}{2500}$	$\frac{410}{2500}$	$\frac{270}{2500}$	

Draw a bar graph



b) exact - because it is the whole population

c) let x = # of TV sets owned
select a family randomly

$$P(x=1) = .388$$

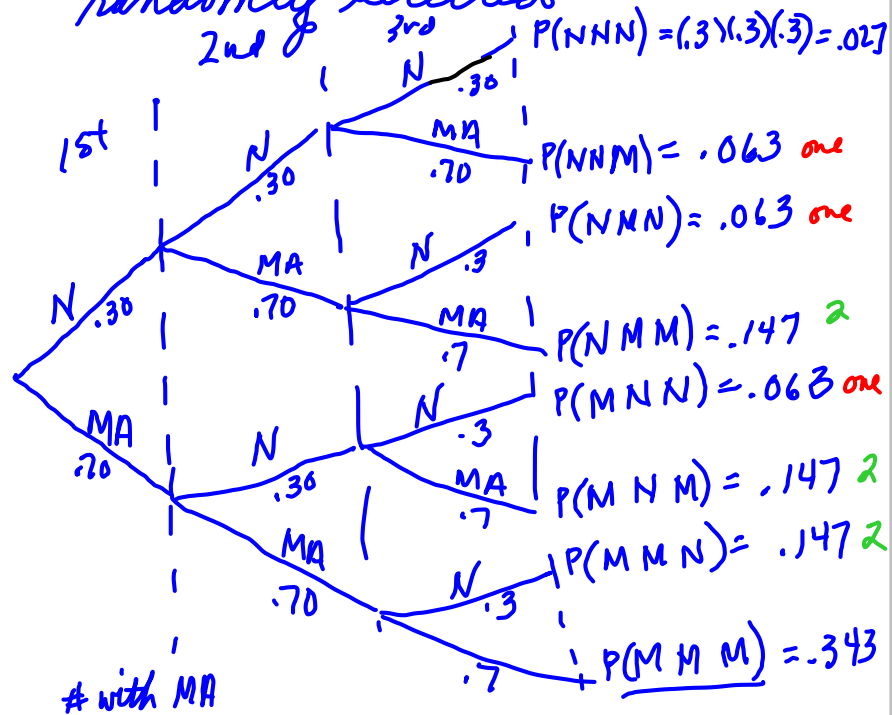
$$P(x > 2) = .164 + .108 \\ = .272$$

$$P(x \leq 1) = .048 + .388 \\ = .436$$

$$P(x=1) + P(2) + P(3)$$

$$P(1 \leq x \leq 3) = .388 + .292 + .164 \\ = .844$$

At SCC 70% of students have math anxiety. Develops a probability distribution if 3 students are randomly selected



# with MA	
x	$P(x)$
0	.027
1	.189
2	.441
3	.343
$\sum P(x) = 1.000$	

Our own
probability
distribution