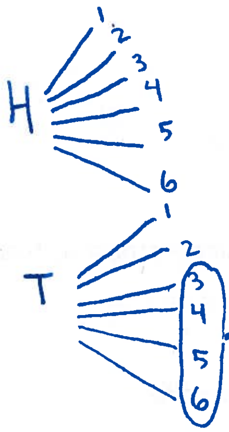
MATH 1550 HW4 Fall 2018

§3.2

#20



roll a tail and pick number greater than 2 $\Rightarrow$ 4 ways to do this

total outcomes = 12

$$P(\text{flip tail and roll } \# > 2) = \frac{4}{12} = \frac{1}{3}$$

#23

$n = 1000$ $\qquad P(\text{dine out} > \text{once a week}) = \frac{180}{1000} = 0.180$

a) $P(2 \text{ dine out} > \text{once a week}) = \frac{180}{1000} \cdot \frac{179}{999} \approx 0.0322$

b) $P(\text{neither dine out} > \text{once a week}) \cancel{= 1 - P(\text{both dine out} > \text{once week})}$ $\cancel{= 1 - 0.0322}$

$= \left(\frac{820}{1000}\right)\left(\frac{819}{999}\right)$

≈ 0.6722

c) $P(\text{at least one of 2 dines out} > \text{once week})$

$= 1 - P(\text{neither dines out} > \text{once a week})$

$= 1 - 0.6722$

$= 0.3278$

d) event in (a) is unusual

§3.3

#13) $n=32$

$P(\text{biology}) = \frac{10}{32}$ $P(\text{male}) = \frac{14}{32}$

~~P(M∩B)~~ $P(\text{male} \mid \text{biology}) = \frac{4}{10}$

Find:

$$P(\text{male OR biology}) \overset{\text{add. Rule}}{=} P(\text{male}) + P(\text{biology}) - \underbrace{P(\text{male AND biology})}_{= P(\text{biology})\,P(\text{male}\mid\text{biology})}$$

multip. Rule

$$= \frac{14}{32} + \frac{10}{32} - \frac{10}{32}\left(\frac{4}{10}\right)$$

$$= \frac{24-4}{32} = \frac{20}{32} \approx 0.625$$

#16) $P(\text{no puncture}) = 0.96$

$P(\text{no smashed edge}) = 0.93$

$P(\text{no smashed edge AND no puncture}) = 0.893$

Find:

$$P(\text{no smashed edge OR no puncture}) \underset{\text{add. rule}}{=} P(\text{no smashed edge}) + P(\text{no puncture}) - P(\text{no smashed edge AND no puncture})$$

$$= 0.93 + 0.96 - 0.893$$

$$= 0.997$$

#21 $n = 1026$

Given chart:

	Freq	Rel Freq (probability)
A	52	$52/1026 \simeq 0.051$
B	241	$241/1026 \approx 0.234$
C	335	$335/1026 \simeq 0.326$
D	272	$272/1026 \simeq 0.265$
F	126	$126/1026 \approx 0.123$
	sum freq = 1026	

a) $P(\text{not } A)$

$= P(B)+P(C)+P(D)+P(F)$

$= 0.234 + 0.326 + 0.265 + 0.123$

$= 0.948$

b) $P(\text{greater than } D) = P(A) + P(B) + P(C)$

$= 0.051 + 0.234 + 0.326$

$= 0.611$

c) $P(D \text{ or } F) = P(D) + P(F) = 0.265 + 0.123 = 0.748$

mut. excl. events

d) $P(A \text{ or } B) = P(A) + P(B) = 0.051 + 0.234$

$= 0.285$