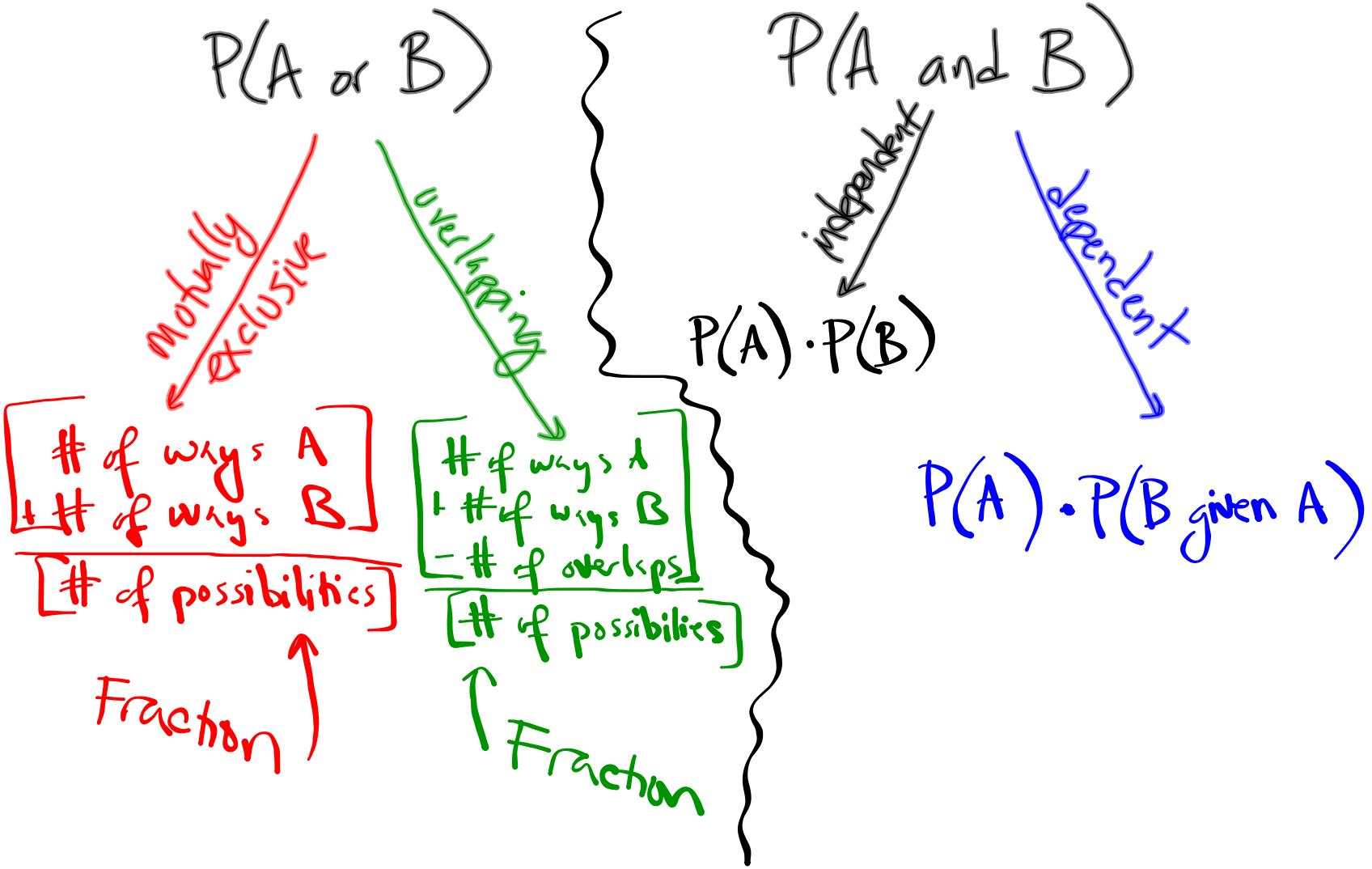
Announcements:

Chapter 13 Test: Tues, 6/12

Final Exam: Fri, 6/15


P(A or B)
mutually exclusive
overlapping
# of ways A
+ # of ways B
# of possibilities
Fraction
# of ways A
+ # of ways B
- # of overlaps
# of possibilities
Fraction
P(A and B)
independent
dependent
P(A) · P(B)
P(A) · P(B given A)

Homework Review - 13.4

P(A and B)

A: Choose king

B: Choose pawn

Dependent (no replacement)

$$P(A) \cdot P(B \text{ given } A)$$

$$\frac{\cancel{2}}{\cancel{32}} \quad \frac{1}{\cancel{16}} \cdot \frac{\cancel{16}}{31} = \boxed{\frac{1}{31}}$$

P(A and B)

A: Uses flipper

B: Uses right flipper

P(A) · P(B given A)

70% · 89% = 62.3%

B I O L O G Y

dependent events (no replacement)

P(A and B)

A: Draw an O

B: Draw a B

$P(A) \cdot P(B \text{ given } A)$

$\frac{1}{7} \cdot \frac{1}{6} = \frac{1}{21}$

W I S D O M

dependent to draw 2 @ once

S and D

A: pick S

B: pick D

$P(A) \cdot P(B \text{ given } A)$

$\frac{1}{6} \cdot \frac{1}{5} = \frac{1}{30} \times 2 = \boxed{\frac{1}{15}}$

$_6C_2 = \frac{6!}{4!\,2!} = \frac{6 \cdot 5}{2} = \boxed{15}$

$\boxed{\frac{1}{15}}$

Analyzing Surveys and Samples

List of questions you're asking people ← Survey

The big group of people you want to know about ← Population

The people in the population you actually survey ← Sample

Sample is determined completely randomly ← Random Sample

Sort population into groups, then pick randomly ← Stratified Random Sample

Make a rule- rule determines who you ask ← Systematic Sample

Ask who's easiest ← Convenience Sample

You let people choose ← Self-Selected Sample

Classify a Sample Type:

Your school's administrators want to know if students are satisfied with the choices of activities for activity period. In each grade, every seventh student in alphabetical order is surveyed.

group = stratified

rule = systematic

still random

stratified, systematic, random sample

Biased Samples

you asked the wrong people

Biased samples are not representative of the population

am I getting random people? could I be emphasizing certain groups?

How can you tell?

Biased Questions

the question implies there's a "right" answer

Biased questions encourage or discourage specific responses

the question will have "judgement" words in it

How can you tell?

Tell whether the survey method used is likely to result in a biased sample.

3. A bicycling club wants to gather information about biking conditions throughout a city. A survey for bicycle riders is posted on the club's website.

biased – excludes bikers not in the club

In Exercises 5 and 6, tell whether the question is potentially biased. *Explain* your answer.

5. Don't you think that the lunch menu should include grilled chicken rather than pizza because grilled chicken is healthier for you? Biased (judgement)

6. Do you think that the city's excess revenue should be spent on road repairs or building a new sports stadium? Unbiased

Measures of Central Tendency

Add numbers, divide by the number of numbers — Mean (Average)

the middle value of a list of number (in order) — Median

the most common number — Mode

Find the mean, median, and mode(s) of the data.

1. 6, 1, 3, 8, 5, 11, 1, 5 $= \frac{40}{8} = 5$

2. 60, 81, 52, 75, 59, 81

3. 15, 27, 10, 25, 9, 22, 25

4. 23, 6, 8, 14, 28, 8, 13, 28

~~1~~, ~~1~~, ~~3~~, [5, 5], ~~8~~, ~~8~~, 11

$\frac{5+5}{2} = 5$ (median)

modes: 1 and 5

Measures of Dispersion

difference between largest/smallest

Range

figure out how far each # is from the mean - average that distance

Mean absolute deviation

$(\overline{x} = \text{mean})$ x_1, x_2, x_3, x_4

$$\overline{x} = \frac{x_1 + x_2 + x_3 + x_4}{4}$$

$$\frac{(|x_1 - \overline{x}|) + (|x_2 - \overline{x}|) + (|x_3 - \overline{x}|) + (|x_4 - \overline{x}|)}{4}$$

Find the range and mean absolute deviation of the data. Round to the nearest hundredth, if necessary.

13. 10, 7, 13, 10, 8

7, 8, 10, 10, 13

range: 6

mean: 9.6

$$\frac{2.6 + 1.6 + .4 + .4 + 3.4}{5}$$

mean absolute deviation:

1.68

14. 110, 114, 104, 108, 106

104, 106, 108, 110, 114

range: 10

Homework:

p. 873, 3-11 odd, 15, 16

p. 877, 3-8 all, 11, 13, 20