TODAY'S ASSIGNMENT:

14.5 #6,8,10-12,14 and

14.3 #21-27, 30

14.3 use probability notation to show what you are solving for, then write the calculator command, and solve with calculator (similar to warm up)

$P(\text{at most } 4) = \text{binomcdf}(10, \frac{1}{5}, 4) \approx$ .967 or 96.7%

14.5 solve with calculator, okay to write only the answer as long as it is labeled properly

mean = 34.75
median = 36
etc…

NOTES 14.5

Measures of Central Tendency:

- arithmetic mean (average) $\overline{X}$
- median (middle value) **Med**
- mode (most common value)

Skills 14.5 # 6,8,10-12,14

5–10 Mean and Median A data set is given.

Use calculator to solve, label answers.

(a) Find the median of the data.

(b) Find the average of the data. How many data points are greater than the average?

6. 130 510 116 132 140 132 121

Enter data into a list using a calculator such as TI84. See helpful hint sheet to get started. (You may check out a calculator from Mrs. Rosenow.)

Calculator hints regarding data input:

to clear each list → if you are editing a list, just arrow up and highlight L_1, then push clear and <enter>

to clear ALL lists at once → 2nd Mem (above the + sign), then ClrAllLists

get started by entering data into a list →
push STAT button, then choose option 1:Edit
(push 2nd QUIT to close window when finished)

to sort each list →push STAT button, then choose option 2:Sort A (L_1) and fill in the appropriate name of the data list. **Note:** look above the number 1 key and choose L_1. Push <enter> and the calculator will say "Done." push STAT button, then choose option 1:Edit to view the list in order.

OOPS, a list got deleted completely!!
to rename/reset all lists → push STAT button, then choose option 5:SetUpEditor, then push <enter>

to calculate mean, median, STANDARD DEVIATION, etc→
push STAT ▸ CALC to calculate statistics for your data by choosing option 1: 1-Var Stats L_1.

Important: be sure to fill in the appropriate list name, otherwise L_1 will be chosen by default each time. Use down arrow to view ***ALL*** data in both screens.

NOTE: if using frequency table, enter 1: 1-Var Stats L_1, L_2

Enter data into a list. See helpful hint sheet to get started.

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option 1: 1-Var Stats

$\bar{x}$ = mean (average)
Σx = sum of all data values
Σx^2 = sum of the squared data values
Sx = sample standard deviation
σx = population standard deviation
n = total number of data values
min X = smallest data value
Q_1 = first quartile
Med= median of overall data set (2nd Quartile)
Q_3 = third quartile
max X = largest data value

check EVEN answers for 14.3 #21-27,30

Use probability notation to show what you are solving for, then write the calculator command, and solve with calculator.

3.317×10^{-10} 3.403×10^{-10}
.0000128 .20972 .28347 .3439
.44165 .85197 .99963

check EVEN answers for 14.5 #6,8,10-12,14

0 1 1 1 2 4 4 8 8 8 8
16 17 17.16 19.75 20 20 85.5
86.25 107.38 110 132 183

hints 14.5 #11, #12

use 2 lists: enter X into L_1
enter Freq into L_2
go to STAT ▶ CALC
1: 1-Var Stats
List: L_1
Frequency: L_2
(older calculators use notation with a comma: 1-Var Stats L_1, L_2)

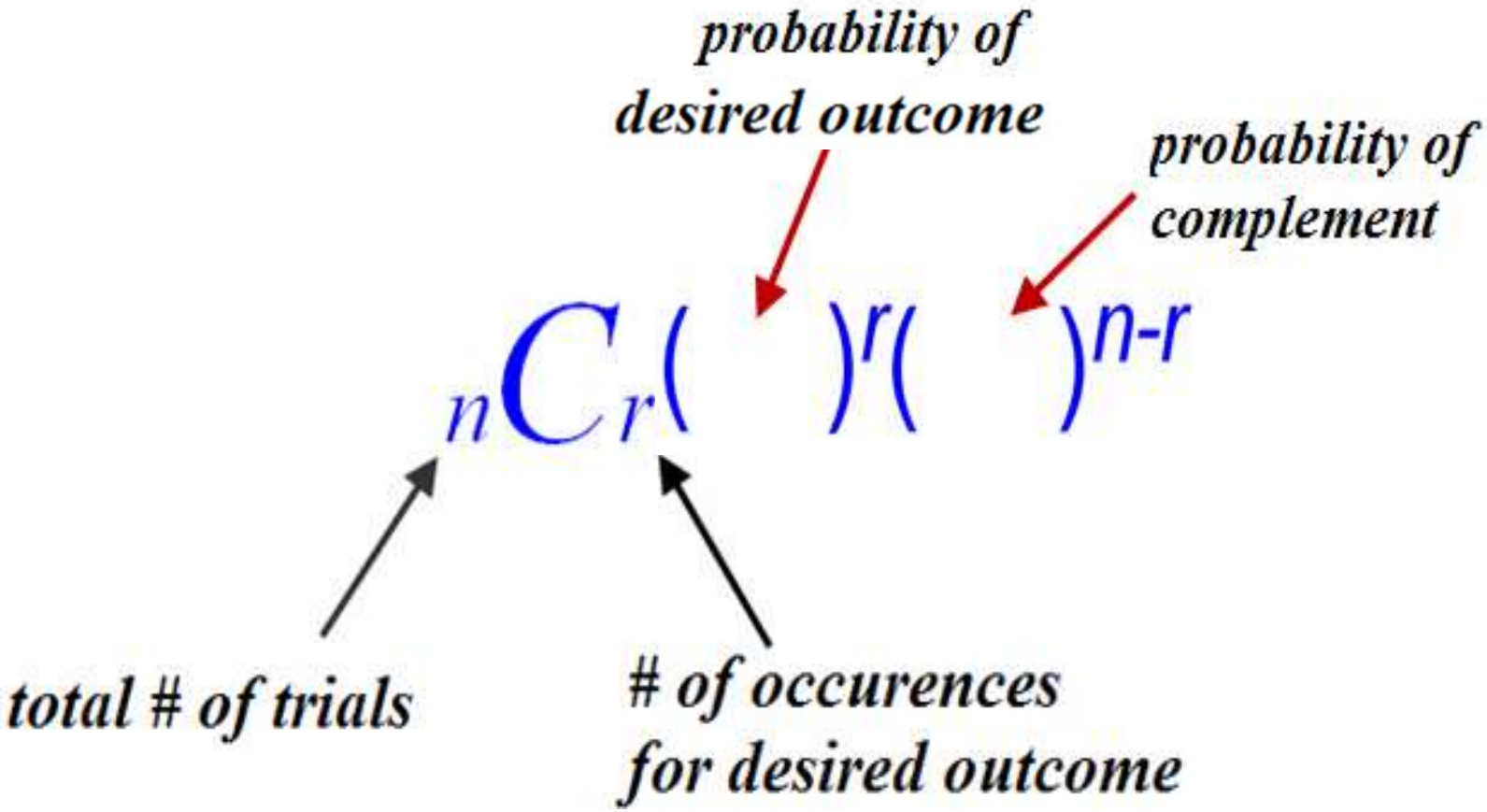
14.5 #14 complete this frequency table

x	freq
17	
18	
19	
20	
21	

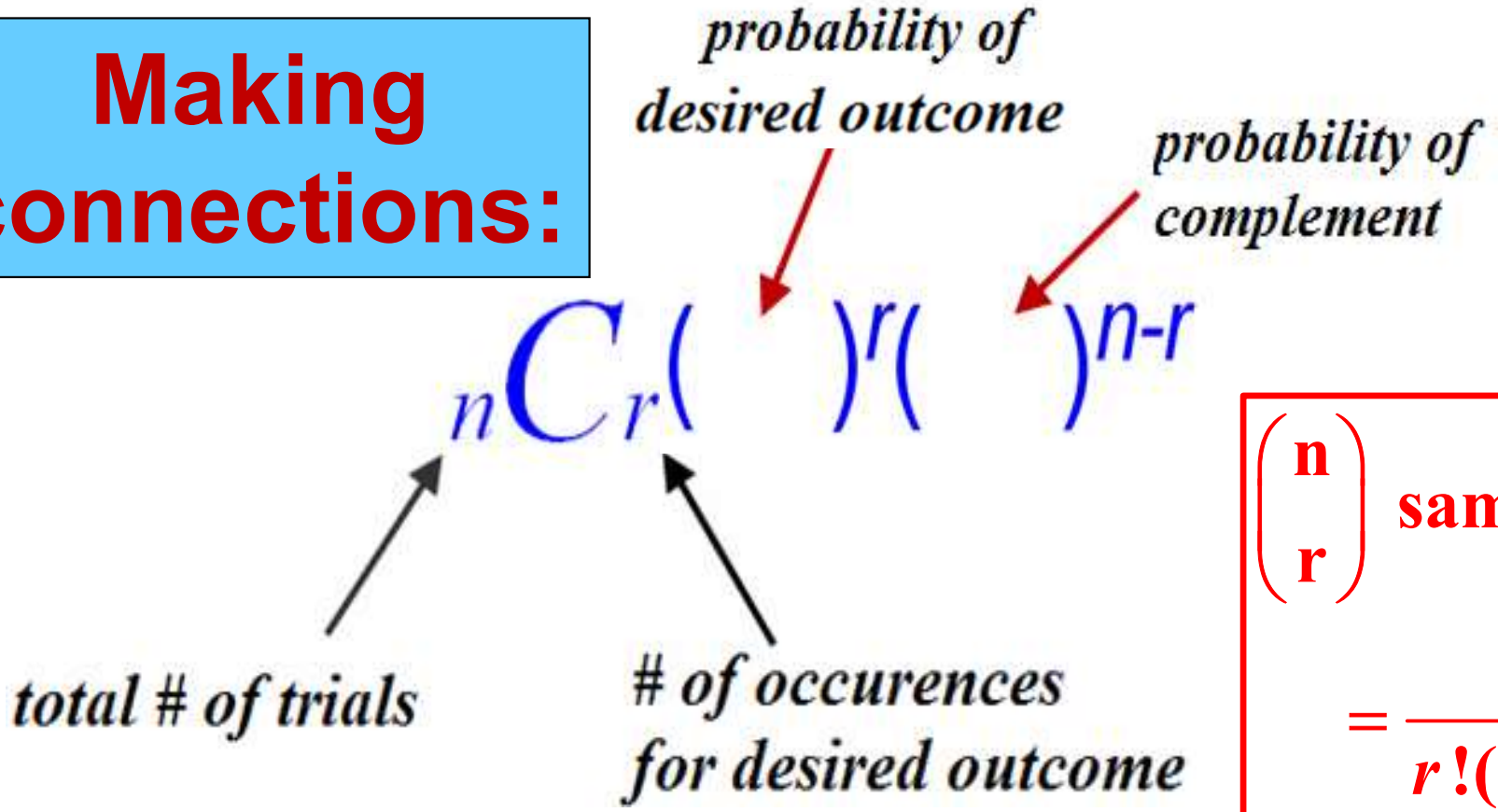
notation will depend on your model + operating system!

(6) a) median = 132
b.) mean. $\bar{x}$ = 183
c) 1 data point above 183

Previous notes 14.3



Making connections:



or $\binom{n}{r}(\quad)^r(\quad)^{n-r}$

$\binom{n}{r}$ same as $_nC_r$

$$= \frac{n!}{r!(n-r)!}$$

used for expanding binomials in 12.6

14.3 Notes: Useful Calculator Commands

binom**p**df = binomial **probability** distribution function

binom**c**df = binomial **cumulative** distribution function

On today's handout:

go to **distr** by pushing 2nd **VARS**

push the up arrow ▲ to find **binompdf** and **binomcdf**

OR → enter **A** for binompdf

→ enter **B** for binomcdf

Notes on given handout:

binompdf(# trials, probability of desired event, # of occurrences)

n r

p finds *ONE* value

KEEP THIS PAPER IN A SAFE PLACE FOR FUTURE REFERENCE!!!!!!!

Calculator hints:

Go to **DISTR** by pushing 2nd VARS

Push the up arrow ▲ to find binompdf and binomcdf

OR…enter A for binompdf

enter B for binomcdf

→PROBABILITY function finds ***one*** value

binomPdf:

(#trials, prob of desired event, # of occurrences)

n **r**

→CUMULATIVE finds ***several values*** and adds from zero up to maximum value.

binomCdf:

(# trials, prob of desired event, max# of occurrences)

Note: the comma button is above the 7 button.

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check EVEN answers for 14.3 #21-27,30

Use probability notation to show what you are solving for, then write the calculator command, and solve with calculator.

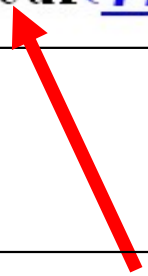
3.317×10^{-10} 3.403×10^{-10}

.0000128 .20972 .28347 .3439

.44165 .85197 .99963

Notes on given handout:

binomcdf(# trials, prob of desired event, maximum # of occurrences)



C is cumulative…it finds *several values* and adds them all together

(NOTE: calculator always adds from zero up to the maximum value that you have specified)

Notes→Terminology to watch for when using various commands:

"exactly" → binompdf

"at most" or "no more than"→ binomcdf

"at least" → 1 – binomcdf

(# trials, prob, occurences – 1)

3–14 ■ Binomial Trials Five independent trials of a binomial experiment with probability of success $p = 0.7$ are performed. Find the probability of each event.

3. Exactly two successes

From yesterday:

$P(2 \text{ successes}) = {}_5C_2 (0.7)^2 (0.3)^3 = 0.13230$ (or) 13.23%

binompdf (5, 0.7, 2)

Now solve it this way instead!

p finds one value

3–14 ■ Binomial Trials Five independent trials of a binomial experiment with probability of success $p = 0.7$ are performed. Find the probability of each event.

11. At most one failure

From yesterday:

$P(0 \text{ failures}) + P(1 \text{ failure}) = {}_5C_0(.3)^0(.7)^5 + {}_5C_1(.3)^1(.7)^4$

failure is the focus

$= .52822$

binomcdf (5, 0.3, 1) max

Now solve it this way instead!

C finds multiple values up to the maximum P(0) + P(1)

3–14 ■ Binomial Trials Five independent trials of a binomial experiment with probability of success $p = 0.7$ are performed. Find the probability of each event.

9. At least four successes

$= {}_5C_4(.7)^4(.3)^1 + {}_5C_5(.7)^5(.3)^0$

$P(4 \text{ successes}) + P(5 \text{ successes})$

$= 0.52822$

or 52.822%

From yesterday:

1 - binomcdf (5, 0.7, 3)

4 - 1 = 3

Now solve it this way instead!

C finds multiple values

Warm-up: put at top of today's assignment

The chances of guessing the correct answer on a multiple choice test is 1/5. If there are 10 questions, find each of the following:

A. P(getting 4 questions correct)

B. P(getting at most 4 questions correct)

C. P(getting at least 4 questions correct)

Check answers (random order) 8.8%, 12.1%, 96.7%

Check your work and answers!

The chances of guessing the correct answer on a multiple choice test is 1/5. If there are 10 questions, find each of the following:

A. P(getting 4 questions correct)

$= \text{binompdf}(10, \frac{1}{5}, 4) \approx 8.8\%$

B. P(getting at most 4 questions correct)

$= \text{binomcdf}(10, \frac{1}{5}, \text{max } 4) \approx 96.7\%$

C. P(getting at least 4 questions correct)

$1 - \text{binomcdf}(10, \frac{1}{5}, 3)$

$1 - .879 = .121 \rightarrow 12.1\%$

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14.5 solve with calculator, okay to write only the answer as long as it is labeled properly

mean = 34.75
median = 36
etc…

HINT FOR 14.5 #11:

Use 2 lists to enter into calculator

11.

Frequency Table

quiz scores	Frequency
16	13
17	5
18	12
19	0
20	2

The 1st column could represent quiz scores

The 2nd column indicates how many students earned each score

Therefore, a score of 16 was earned by 13 students, etc…