TOPIC: FREQUENCY DISTRIBUTIONS

Intro to Frequency Distributions

◆ **Frequency Distribution:** A table showing frequency vs. chosen _____ of numbers or labels ("**classes**").

EXAMPLE

The data below lists the amount of time (in minutes) students spent studying for their exam each week. Construct a frequency distribution using 6 evenly-spaced classes, and calculate their relative frequencies.

Time spent studying (mins) for exam									
20	30	35	40	40	45	50	55	65	75

Frequency Distribution

Time spent studying (mins) for exam	Frequency (f)	Relative freq. $\left(\frac{f}{n} \times 100\%\right)$
20 – 29		
30 – 39		
40 – 49		
50 – 59		
60 – 69		
70 – 79		

Lower class limit: _____ # in each class

Upper class limit: _____ # in each class

Class Midpoint: _____ # in each class

$\left(\frac{lower + upper}{2}\right) =$

Class width:

Difference btwn 2 _____ lower OR upper class limits (**NOT** upper – lower)

◆ A ***Relative* Freq. Distribution** shows those frequencies as _____ of TOTAL # of measurements, n.

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PRACTICE

Use the frequency distribution below to find the class width and class midpoints.

Travel Time to Work (mins)	Frequency (f)
5 – 15	156
16 – 26	343
27 – 37	249
38 – 48	172
49 – 59	98
60 – 70	56
71 – 81	40

PRACTICE

The following data set shows the number of overtime hours that 12 employees worked in a month. Construct a frequency distribution, using a lower class limit of 3 and a class width of 4.

Overtime Hours Worked											
3	8	5	12	14	7	9	15	6	10	13	4

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EXAMPLE

At a café one day, you count how many customers are served each hour over 14 hours. Construct a frequency distribution table using a lower class limit of 15 and a class width of 5. Calculate the relative frequencies of each. What percentage of the day is the café serving **30 or more** customers per hour?

Customers Served per Hour													
15	24	30	21	27	35	32	31	38	41	26	33	36	40

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How to Create Frequency Distributions

◆ You may have to create frequency distributions given *only* the # of classes (usually 5-20), but *not* the class limits.

EXAMPLE The data below lists the amount of time (in minutes) students spent studying for their exam each week. Construct a frequency distribution with 8 classes.

Time spent studying for exam (mins)																		
5	15	20	24	35	35	40	45	50	50	52	55	60	63	65	72	80	85	95	115

Time spent studying (mins) for exam	Frequency (f)

HOW TO: Create Freq. Distributions

1) Calculate class width: $\frac{max - min}{\#\ of\ classes}$, round up to nearest whole # OR convenient #

2) Find lower class limits:

1st Lower: # ≤ data minimum

Next Lowers: Prev. Lower + class width

3) Find upper class limits:

1st Upper: 2nd Lower – 1

4) Find f for each class, tally each data value in its appropriate class

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EXAMPLE

The data below shows the sales (in dollars) for 15 sales representatives at a company. Construct a frequency distribution using 5 classes.

Sales (in $)														
1223	1136	819	1089	1011	997	973	1025	1017	1118	988	843	1196	1081	942

HOW TO: Create Freq. Distributions

1) Calculate class width: $\frac{max - min}{\#\ of\ classes}$, round up to nearest whole # OR convenient #

2) Find lower class limits:

1st Lower: # ≤ data minimum

Next Lowers: Prev. Lower + class width

3) Find upper class limits:

1st Upper: 2nd Lower – 1

4) Find f for each class, tally each data value in its appropriate class

PRACTICE

An economist is analyzing the monthly unemployment rates (as a %) across different cities. The lowest was 16%, and the highest was 71%. Without constructing a table, find the class width if this data is divided into 7 classes. Then write the lower and upper class limits for each class.