

## FST NOTES 1-5

TOPIC: Cumulative Distributions

### GOAL

Introduce cumulative distributions and percentiles.

#### SPUR Objectives

- D Describe relations between measures of center and spread.
- J Calculate and draw line graphs of cumulative frequencies and cumulative relative frequencies from tables of frequencies.

#### Vocabulary

*precipitation* cumulative data info gathered over a period of time, add all together  
 cumulative distribution  
 A function whose values are cumulative frequencies  
 percentile, pth percentile

#### Warm-Up

Suppose you have the 3<sup>rd</sup> highest score in a class of 25 on a test. In what percentile of the class are you in?

\* % OF VALUES IN A DATA SET THAT ARE BELOW A GIVEN VALUE.  
 $\frac{22}{25} = 88\% \rightarrow 88^{\text{th}}$  Percentile

\* % OF VALUES IN A DATA SET THAT ARE LESS THAN OR EQUAL TO THAT VALUE.  
 $\frac{23}{25} = 92\% \rightarrow 92^{\text{nd}}$  Percentile

#### Additional Examples

1. The table at the right shows the average monthly precipitation in Kansas City, Kansas.

- a. Fill in the Cumulative Precipitation column.
- b. Draw a bar graph of the cumulative precipitation by month.
- c. When has one-fourth the yearly precipitation fallen?  $.25(35.51) = 8.8775$  MAY
- d. When has half the yearly precipitation fallen?  $.5(35.51) = 17.755$  JULY

	Monthly Precipitation (inches)	Cumulative Precipitation (inches)
Jan	1.13	1.13
Feb	1.02	2.15
Mar	2.38	4.53
Apr	3.27	7.8
May	4.55	12.35
Jun	4.73	17.08
Jul	3.61	20.69
Aug	3.62	24.31
Sep	4.17	28.48
Oct	3.28	31.76
Nov	2.30	34.06
Dec	1.45	35.51

During the week preceding the start of each semester, every returning student must register for classes at Maple College. The table below shows how many of the 1350 students registered during each week-day.

- Complete the table to show how many students registered during each day.
- Draw a line graph showing the cumulative number of students registered.
- When had half the students registered?
- When had 75% of the students registered?

Summary of Registrations for Returning Students		
Day	Total number of students registered during the day	Total number of students registered for class
Sunday	155	155
Monday	470	625
Tuesday	289	914
Wednesday	136	1050
Thursday	118	1168
Friday	97	1265
Saturday	85	1350

$.5(1350) = 675$  TUESDAY  
 $.75(1350) = 1012.5$  WEDNESDAY