Pick up 3 different colored pencils + 1 piece of graph paper.

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
cumulative data
cumulative distribution
percentile, *p*th percentile

Warm-Up
Suppose you have the 3rd highest score in a class of 25 on a test. In what percentile of the class are you in?

1
2
3

The percentage of values in a data set that are **below** a given value.

$22/25 = 88\%$ 88th percentile

The percentage of values in a data set that are **less than or equal** to that value.

$23/25 = 92\%$ 92nd percentile

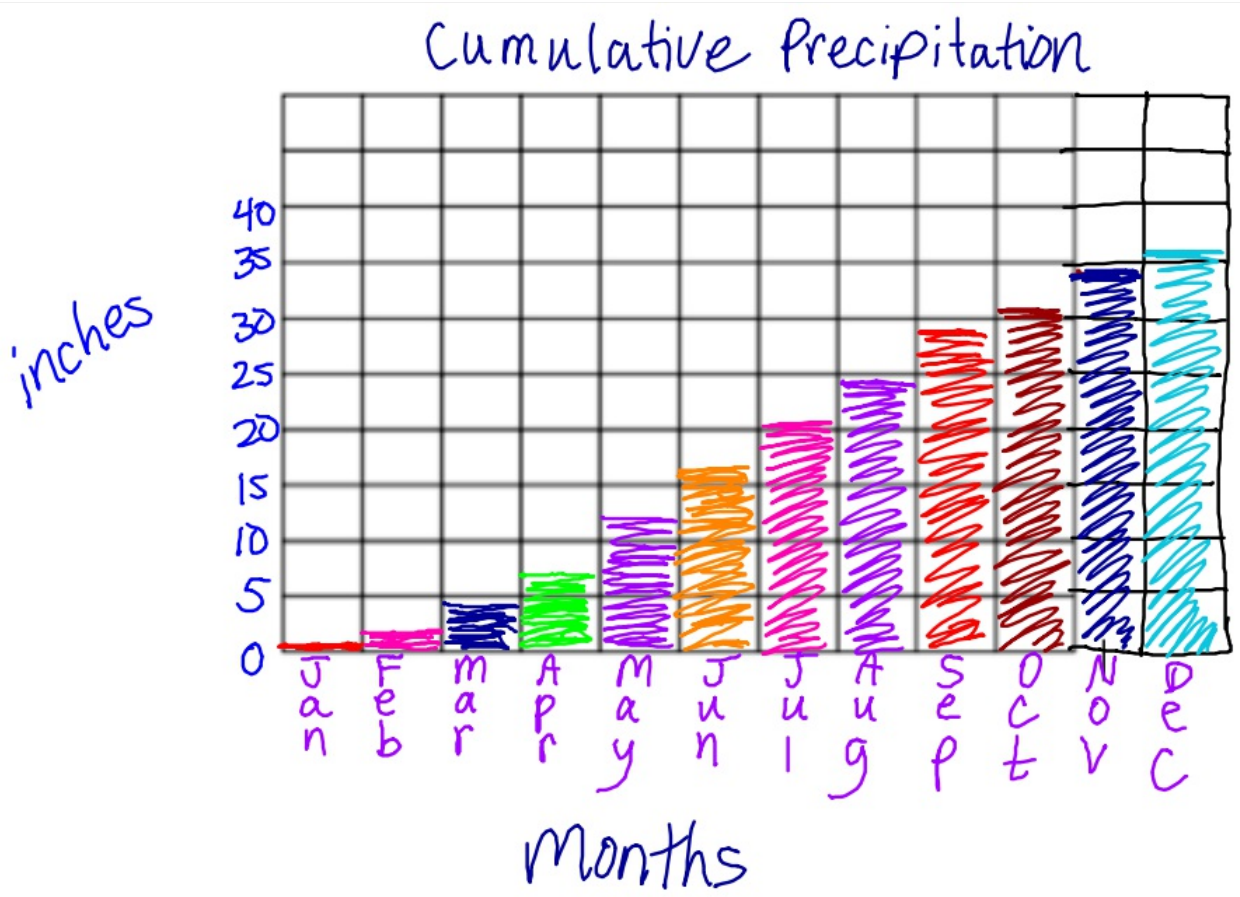
Additional Examples

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? May
   d. When has half the yearly precipitation fallen? July

$\frac{1}{4}(35.51)$
8.88

$\frac{1}{2}(35.51)$
17.76

	Monthly Precipitation (inches)	Cumulative Precipitation (inches)
Jan	1.13	1.13
Feb	1.02	2.15
Mar	2.38	4.53
Apr	3.27	7.80
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


Cumulative Precipitation
inches
40
35
30
25
20
15
10
5
0
Jan
Feb
mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months

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.

a. Complete the table to show how many students registered during each day.

b. Draw a line graph showing the cumulative number of students registered.

c. When had half the students registered? Tuesday

d. When had 75% of the students registered? Wednesday

1350 / 2 / 675

.75(1350) 1012.50

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