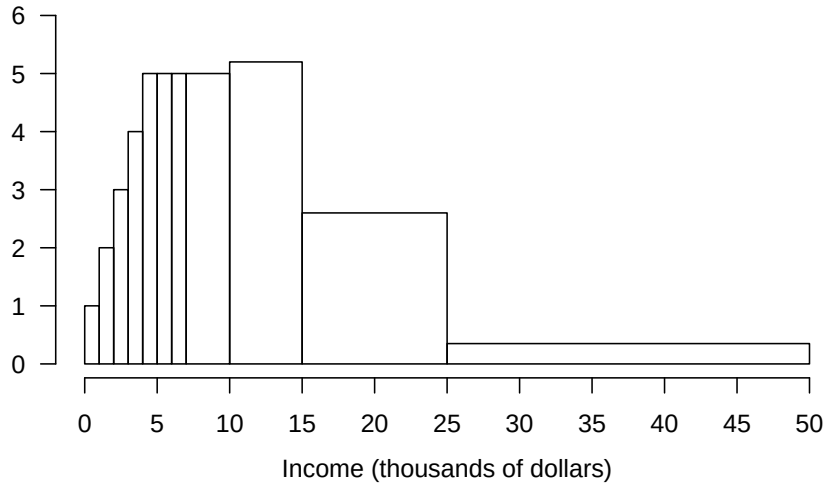
Stat 2 - Homework 2

Name: _____ **SID:** _____ **GSI:** _____

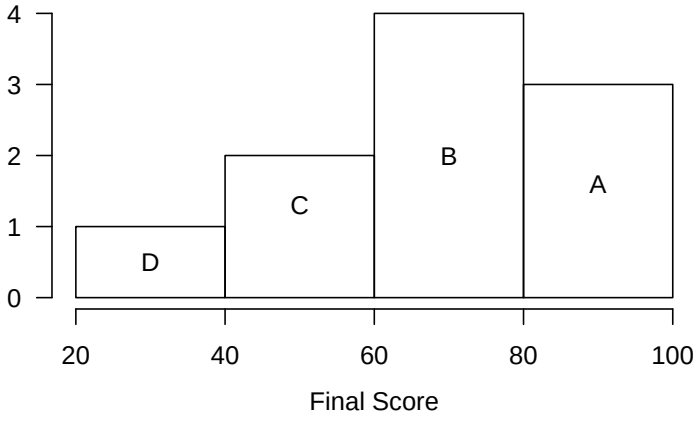
1) True or False

a. A histogram allows you to visualize how values are distributed.
b. Bars in a histogram can be rearranged.
c. The area of the bars in a histogram represent the frequency of values in a class interval.
d. Class intervals must be of equal width in a histogram.
e. The height of the bars in a histogram must be equal to the frequency of the corresponding class intervals.
f. The total area of the rectangles in a histogram must be equal to 100%.

2) The following histogram shows the distribution of families by income in the U.S. in 1973. Were there more families earning between $10,000 and $11,000 or between $15,000 and $16,000? Or were the numbers about the same? Make your best guess.

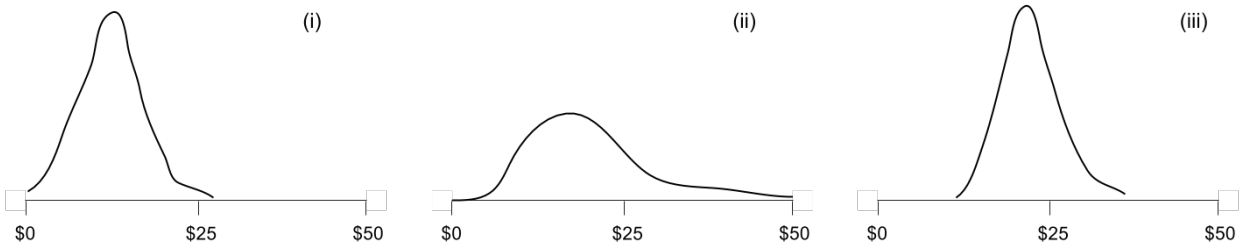


3) The histogram below shows the distribution of final scores in a certain class.



a. Which block represents the people who scored between 60 and 80?
b. Ten percent scored between 20 and 40. About what percentage scored between 40 and 60?
c. About what percentage scored over 60?

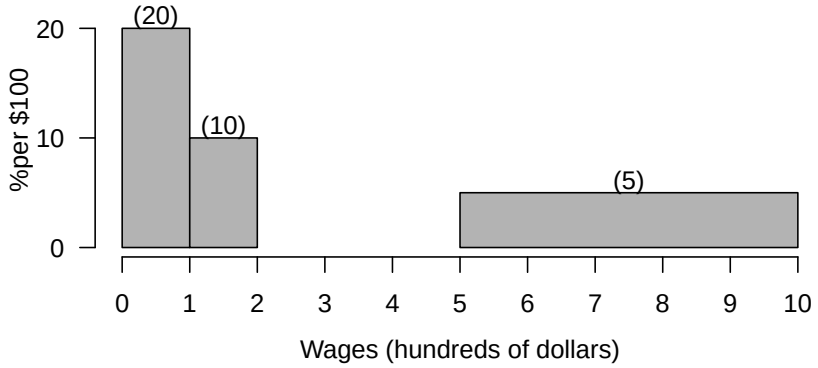
4) An investigator collects data on hourly wage rates for three groups of people. Those in group B earn about twice as much as those in group A. Those in group C earn about $10 an hour more than those in group A. Which histogram belongs to which group? (The histograms don't show wages above $50 an hour)



5) The table below gives the distribution of educational level for persons age 25 and over in the U.S. in 1960, 1970, and 1991. The class intervals include the left endpoint, but not the right; for example, from the second line of the table, in 1960 about 14% of the people had completed 5-8 years of schooling, 8 not included. Draw a histogram for the 1991 data. You can interpret "16 or more" as 16-17 years of schooling; not many people completed more than 16 years of school, especially in 1960 and 1970. Why does your histogram have spikes at 8, 12, and 16 years of schooling?

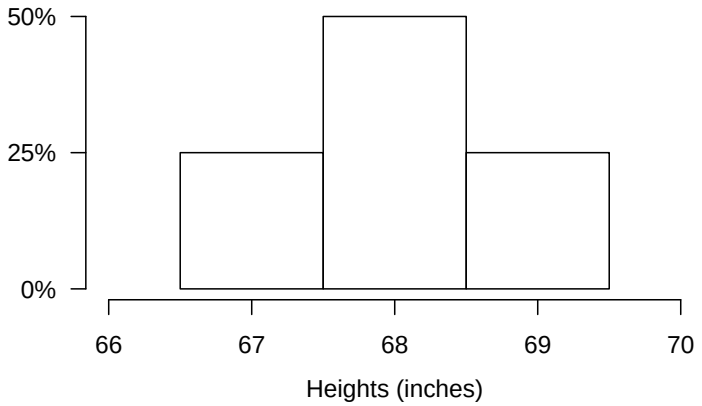
	education	yr_1960	yr_1970	yr_1991
1	0-5	8	6	2
2	5-8	14	10	4
3	8-9	18	13	4
4	9-12	19	19	11
5	12-13	25	31	39
6	13-16	9	11	18
7	16 or more	8	11	21

6) A histogram of monthly wages for part-time employees is shown below (densities are marked in parentheses). Nobody earned more than $1,000 a month. The block over the class interval from $200 to $500 is missing. How tall must it be?



7) In one hypothetical study, 100 people had their heights measured to the nearest eighth of an inch. A histogram for the results is shown below. Two of the following lists have this histogram. Which ones, and why?

a. 30 people, 67 inches tall; 40 people, 68 inches tall; 30 people, 69 inches tall.
b. 10 people, $66\frac{3}{4}$ inches tall; 15 people, $67\frac{1}{4}$ inches tall; 50 people, 68 inches tall; 25 people, 69 inches tall.
c. 25 people, 67 inches tall; 50 people, 68 inches tall; 25 people, 69 inches tall.



8) The figure below shows the distribution of American families by income. Ranges include the left endpoint but not the right. For example, 3.7% of the families had incomes in the range \$0-\$4,999, 5.8% had incomes in the range \$5,000-\$9,999, and so forth. True or False, and explain:

a. Although American families are not spread evenly over the whole income range, the families that earn between \$10,000 and \$35,000 are spread fairly evenly over that range.
b. The families that earn between \$35,000 and \$75,000 are spread fairly evenly over that range.
c. The graph is a histogram.