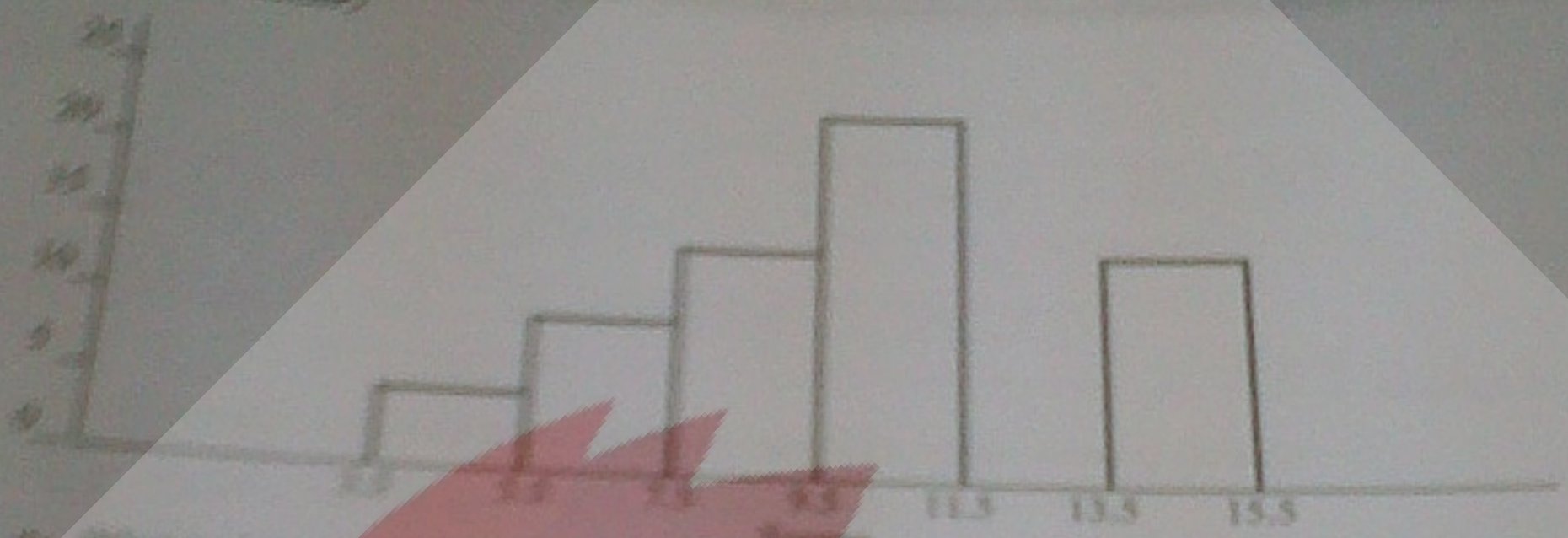
d. What is the value of the mode for the growth of variety I plants? (3 points)

The mode is 49 centimeters

e. If you want to determine whether the growth of Variety I plants is/is not more variable than that of variety II plants, which measure of variation will you use? Justify your answer without calculation. (3 points)

We can use the standard deviation as a measure of variation because both variables have the same unit (centimeters).

Q2. The following graph summarizes the scores (class boundaries) obtained by a sample of students on a questionnaire designed to measure managerial ability. Use it to answer:



a. What is the modal sample score? (2 points)

The modal sample score is

$n = 5 + 10 + 15 + 25 + 15 = 70$ students.

b. What percentage of students scored higher than 11.5? (2 points)

c. What is the median class boundary - lowest class boundary.

$13.5 - 11.5 = 2$ pts.

d. In which class does the median lie? (2 points)

Class boundaries	Frequency (students)	CF	Mid Point
3.5 - 5.5	5	5	4.5
5.5 - 7.5	10	15	6.5
7.5 - 9.5	15	30	8.5
9.5 - 11.5	25	55	10.5
11.5 - 13.5	15	70	12.5
13.5 - 15.5	15	70	14.5

Total $n = 70$

$\frac{n}{2} = \frac{70+1}{2} = \frac{71}{2} = 35.5$ pts.

The Median class is the 4th one (9.5 - 11.5)

a- Calculate the mean. (4 points)

b- Construct an interval that captures at least 89% of the scores. (5 points)

IV. **For each of the following indicate the type of variable (Qualitative or Quantitative), scale of measurement (Nominal, Ordinal, Interval or Ratio) and type of sample selected (Random, Systematic, Cluster or Stratified). (12 points)**

	Variable type	Scale of measurement	Sample type
1- Humanities students at NDU were divided into 3 groups (Journalism, TV/Media and psychology), then 7 students were randomly selected from each of the groups and asked about their cumulative GPA.	Quantitative Discrete/Ratio	Ratio Interval	Stratified
2- Every 5th client coming to the insurance company is asked about the age of his dependants	Quantitative Discrete/Ratio	Ratio	Systematic
3- 30 nursery workers were randomly selected and asked if they prefer to take care of infants, toddlers or preschoolers.	Qualitative	Nominal	Random
4- All secretaries from 3 randomly selected faculties at NDU were interviewed and asked whether or not their salaries were adjusted this year.	Qualitative	Nominal	Cluster

V- ***For each of the following indicate if the type of study is Descriptive or inferential (8 points)***

a- *55% of NDU students attended the opening mass of the academic year 2009-2010* Descriptive

b- *20 out of 135 students who took STA 206 during the summer semester of 2009, got an A on the course.* Descriptive

c- *In the year 2018 Lebanon will have the best basketball team among all Arab countries.* Inferential

d- *The risk of Alzheimer's is reduced in adults who drink one cup of red wine daily.* Inferential

The dean of a college wishes to know the approximate percentage of students who graduate in 2.5 years or less. He knows that the average number of years to earn the degree is 3.5 with a standard deviation of 0.5 years. Assume a normal distribution in calculating the approximate percentage (5 points).