

**You will not receive full credit if you do not clearly show work as demonstrated in class. Show all work in the space provided on this exam. Circle your answers.**

1. A sample of ten fruit flies is randomly selected from the population of fruit flies in a particular orchard. These fruit flies are then weighed. The weights of the ten fruit flies (in milligrams) are:

62, 85, 17, 37, 74, 64, 34, 16, 34, 57

- a. Calculate the sample mean for this data. (5 points)

$$\bar{X} = \frac{\Sigma X}{n} = \frac{62 + 85 + 17 + 37 + 74 + 64 + 34 + 16 + 34 + 57}{10} = \frac{480}{10} = 48$$

- b. Calculate the median for this data. (5 points)

$$16 \quad 17 \quad 34 \quad 34 \quad 37 \quad 57 \quad 62 \quad 64 \quad 74 \quad 85 \quad MD = \frac{37 + 57}{2} = \frac{94}{2} = 47$$

- c. Find the mode for this data. (If there is no mode then write *no mode*.) (4 points)

Since 34 has a higher frequency than any other value the mode is 34.

- d. Calculate the midrange for this data. (4 points)

$$MR = \frac{\text{highest} + \text{lowest}}{2} = \frac{85 + 16}{2} = \frac{101}{2} = 50.5$$

- e. Calculate the sample variance for this data. (8 points)

$$\Sigma X = 480 \text{ (from part a)}$$

$$\Sigma X^2 = 16^2 + 17^2 + 34^2 + 34^2 + 37^2 + 57^2 + 62^2 + 64^2 + 74^2 + 85^2 = 28,116$$

$$s^2 = \frac{n(\Sigma X^2) - (\Sigma X)^2}{n(n-1)} = \frac{10(28,116) - (480)^2}{10(10-1)} = \frac{281,160 - 230,400}{10(9)} = \frac{50,760}{90} = 564$$

1. Continued from the previous page. (Data: 62, 85, 17, 37, 74, 64, 34, 16, 34, 57)

f. Calculate the sample standard deviation for this data. (2 points)

$$s = \sqrt{s^2} = \sqrt{564} \approx 23.7$$

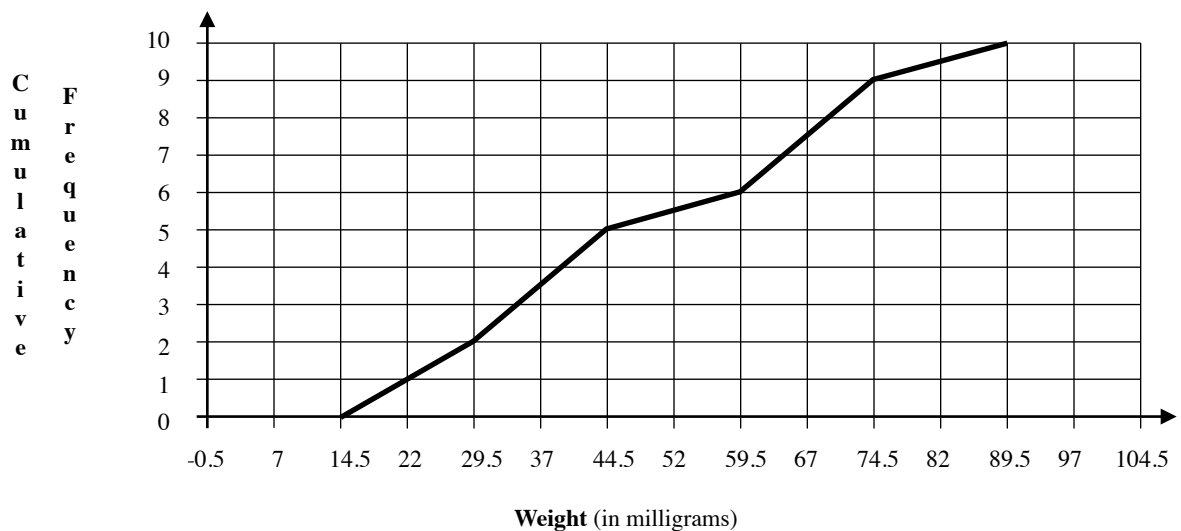
g. Calculate the range for this data. (4 points)

$$R = \text{highest} - \text{lowest} = 85 - 16 = 69$$

h. Complete the frequency table below. (28 points)

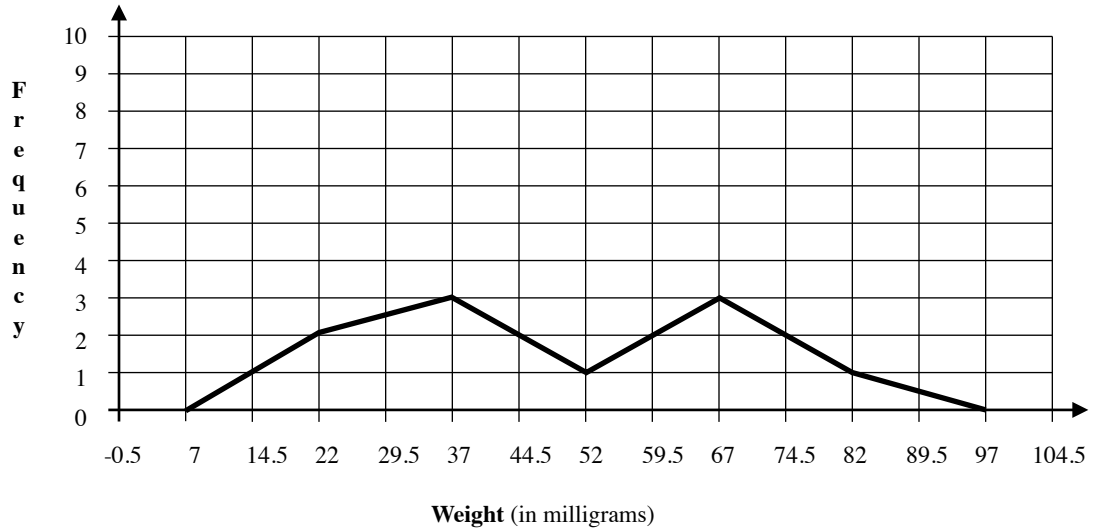
<u>Class Limits</u>	<u>Class Boundaries</u>	<u>Class Midpoint</u>	<u>Tally</u>	<u>Frequency</u>	<u>Cumulative Frequency</u>
0-14	-0.5 - 14.5	7		0	0
15-29	14.5 - 29.5	22		2	2
30-44	29.5 - 44.5	37		3	5
45-59	44.5 - 59.5	52		1	6
60-74	59.5 - 74.5	67		3	9
75-89	74.5 - 89.5	82		1	10
90-104	89.5 - 104.5	97		0	10

i. Finish labeling the units on the horizontal axis, and plot the ogive for this data. (12 points)

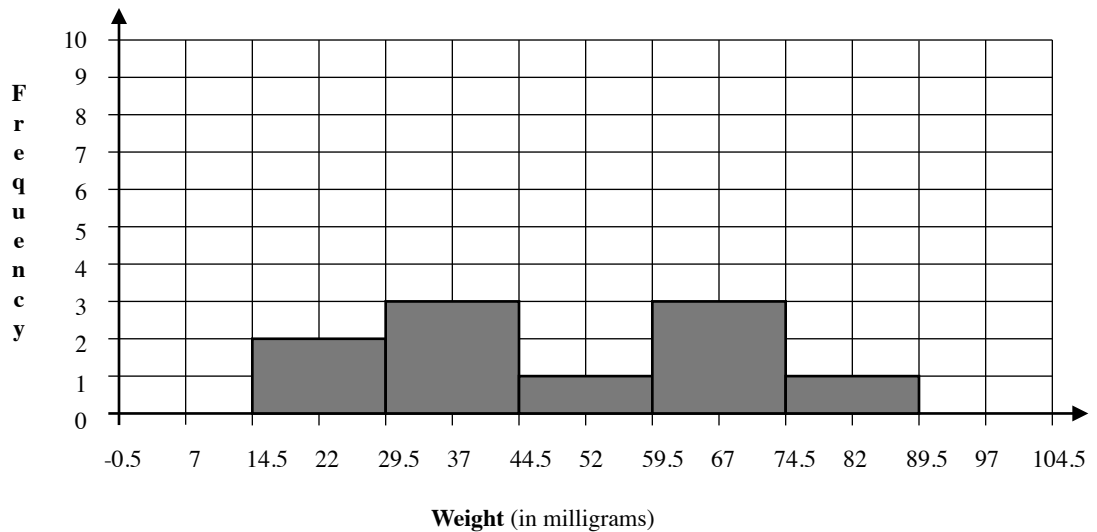


1. Continued from the previous page. (Data: 62, 85, 17, 37, 74, 64, 34, 16, 34, 57)

j. Finish labeling the units on the horizontal axis, and plot the frequency polygon for this data. (14 points)



k. Finish labeling the units on the horizontal axis, and plot the histogram for this data. (10 points)



l. Calculate the coefficient of variation for this sample. (4 points)

$$CVar = \frac{s}{\bar{X}} \cdot 100\% = \frac{23.7}{48} \cdot 100\% \approx 49.5\%$$