

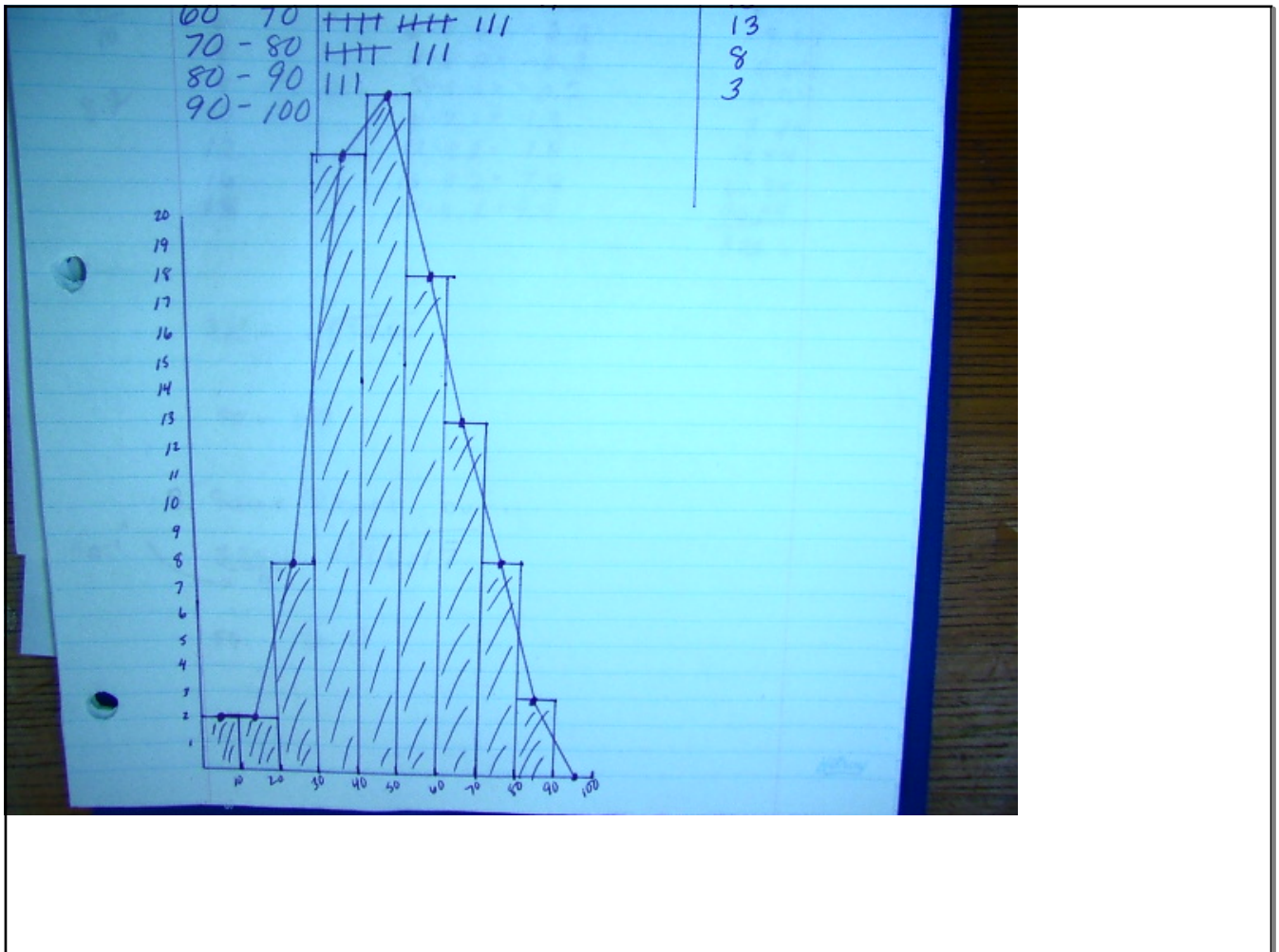
Foundations of Math 12

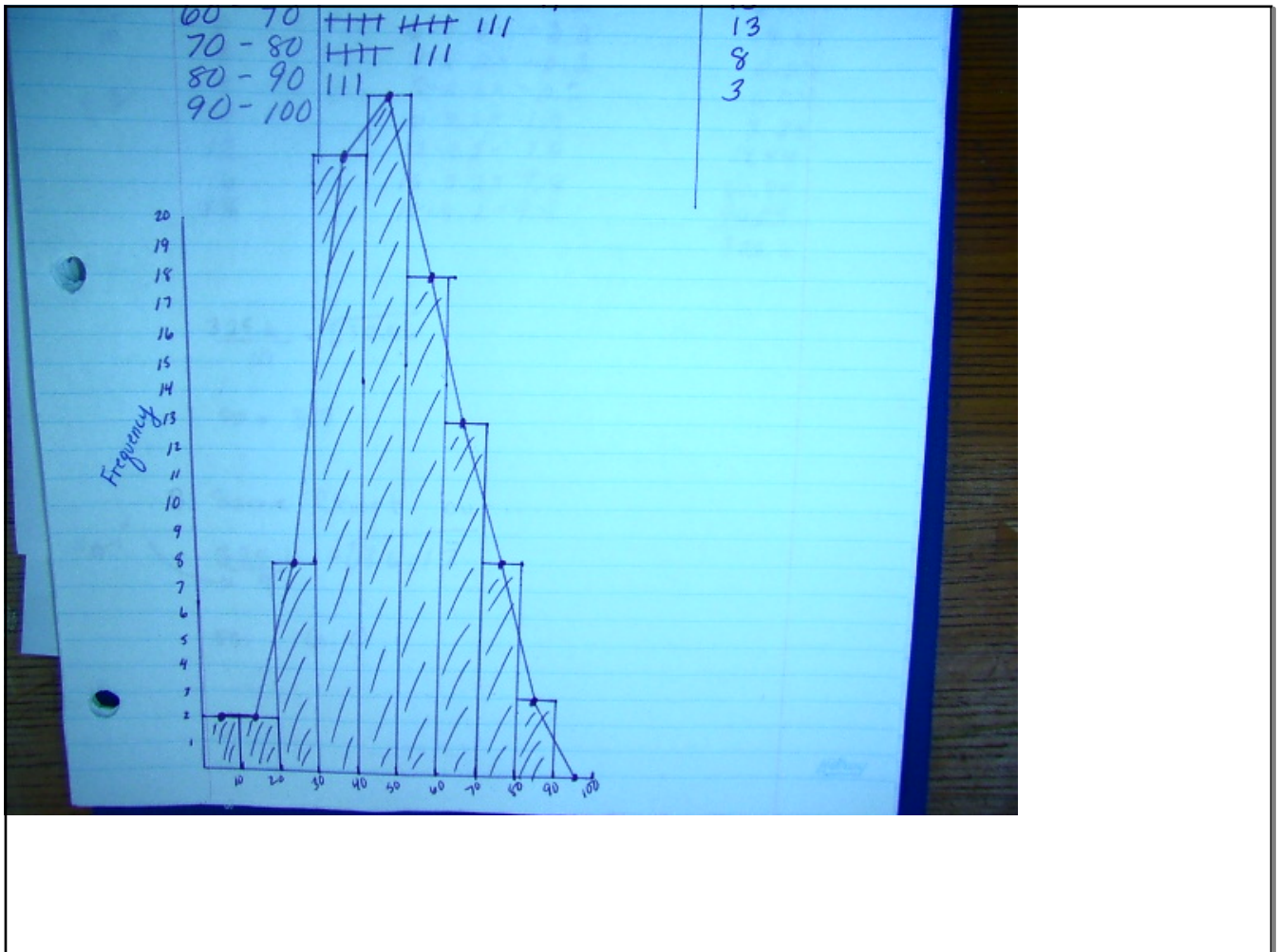
1. a) Sample, only 20 were chosen out of 105 students.

2. 49 53 55 61 62 67 74 77 77 77 <hr style="width: 10%; margin-left: 0;"/> 81 84 85 86 86 92 93 95 98 100	mean = $\frac{1552}{20}$ = 77.6 median = $\frac{77+81}{2}$ = 79 mode = 77 Range = $\frac{100-49}{51}$ Midrange = $\frac{100+49}{2}$ = $\frac{149}{2}$ = 74.5
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2.

		Frequency
0 - 10		2
10 - 20		2
20 - 30		8
- 30 - 40		22
40 - 50		24
- 50 - 60		18
60 - 70		13
70 - 80		8
80 - 90		3
90 - 100		





3. a) Standard Deviation.

Data	Deviation	Squared Dev.
0	$0 - 8.2 = -8.2$	67.24
1	$1 - 8.2 = -7.2$	51.84
3	$3 - 8.2 = -5.2$	27.04
6	$6 - 8.2 = -2.2$	4.84
8	$8 - 8.2 = -0.2$	0.04
8	$8 - 8.2 = -0.2$	0.04
10	$10 - 8.2 = 1.8$	3.24
12	$12 - 8.2 = 3.8$	14.44
16	$16 - 8.2 = 7.8$	60.84
18	$18 - 8.2 = 9.8$	96.04
		<u>325.6</u>

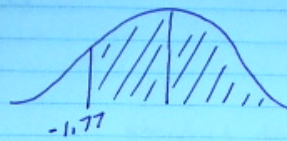
$\frac{82}{10}$
 8.2

$\frac{325.6}{10} = \sqrt{32.56}$
 $SD = 5.7$

B. Same Chart but...

"n-1" $\frac{325.6}{9} = \sqrt{36.17}$
 $SD = 6.0$

4. a) > 150



$$Z = \frac{x - \mu}{\sigma}$$

$$= \frac{150 - 172}{12.4}$$

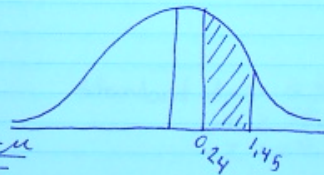
$$= -1.77$$

$$0.4616 + 0.5$$

$$= 0.9616$$

$$96.16\%$$

b) $175 \leq z \leq 190$



$$Z = \frac{x - \mu}{\sigma}$$

$$= \frac{175 - 172}{12.4}$$

$$= \frac{3}{12.4}$$

$$= 0.24$$

$$Z = \frac{x - \mu}{\sigma}$$

$$= \frac{190 - 172}{12.4}$$

$$= \frac{18}{12.4}$$

$$= 1.45$$

$$0.4265 - 0.0948$$

$$= 0.3317$$

$$33.17\%$$

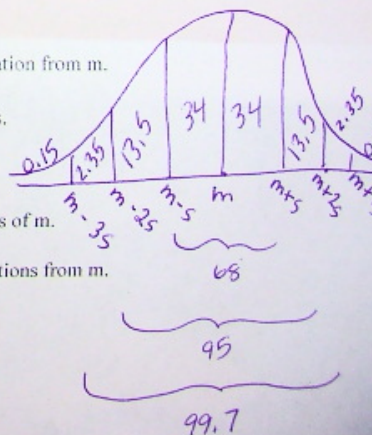
b) What would the standard deviation be if it is a sample?

4. A forest products company claims that the amount of usable lumber in its harvested trees averages 172 cubic feet and has a standard deviation of 12.4 cubic feet. Assume that these amounts have approximately a normal distribution.

- a. What proportion of trees contains more than 150 cubic feet?
- b. What proportion of trees contain between 175 and 190 cubic feet?

5. Assume the variable X is normally distributed with mean m and standard deviation s . Fill in the blanks to make the statements true:

1. 68 percent of the data for X lies within one standard deviation of m .
2. 95 percent of the data for X lies between m and $m+2s$.
3. 32 percent of the data for X lies further than one standard deviation from m .
4. 97.5 percent of the data for X is less than m and greater than $m+s$.
5. 13.5 percent of the data for X lies between $m-2s$ and $m-s$.
6. 99.7 percent of the data for X lies within three standard deviations of m .
7. 5 percent of the data for X lies further than two standard deviations from m .
8. 0.15 percent of the data for X lies above $m+3s$.
9. 16 percent of the data for X lies below $m-s$.



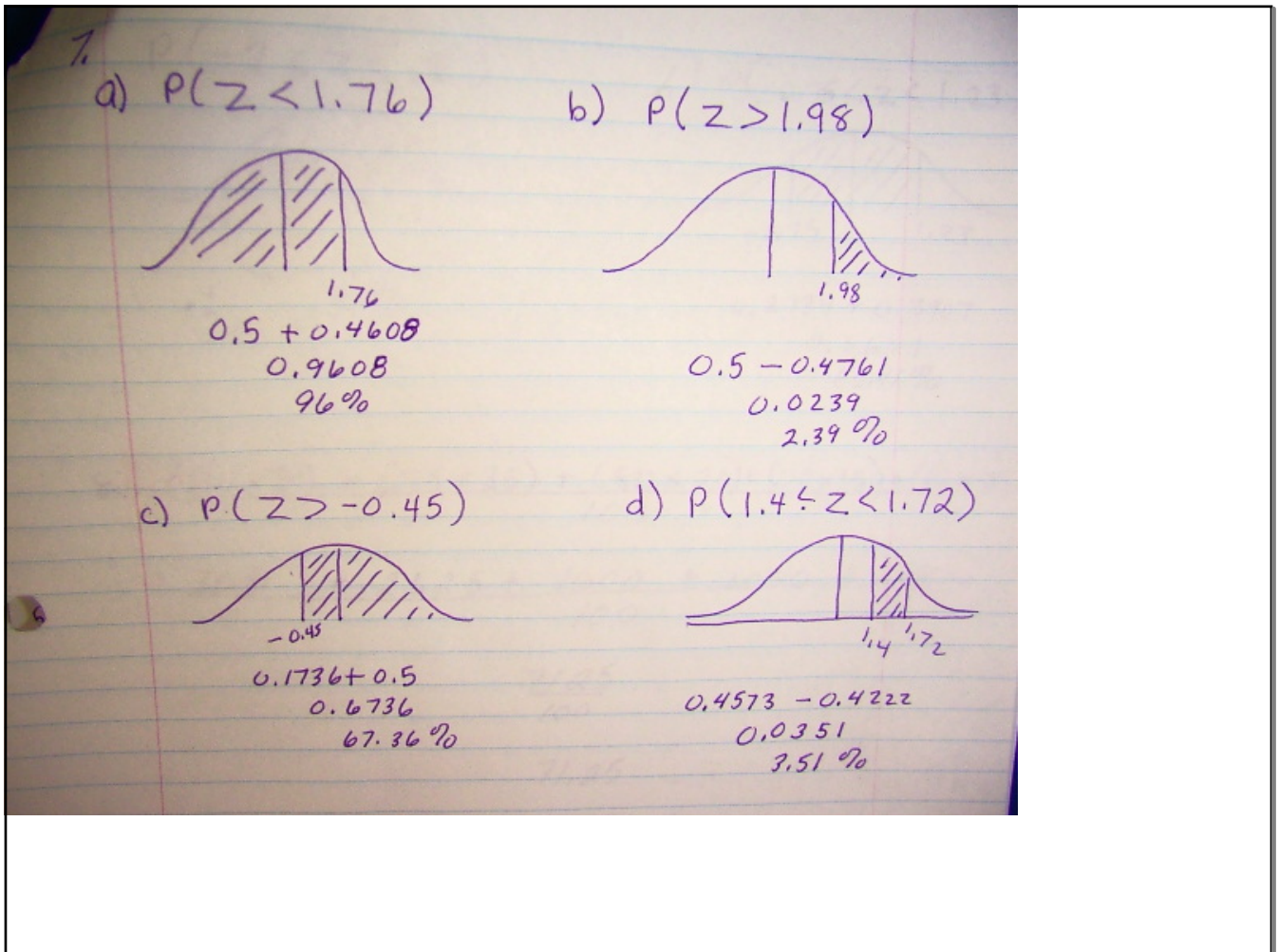
typo on this question 6

a) $Z = \frac{x - \mu}{\sigma}$ standard dev. = 4
 $\mu = 7$
 $Z = 1.2$

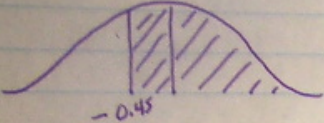
$$1.2 = \frac{x - 7}{4}$$
$$4.8 = x - 7$$
$$11.8 = x$$

b) $Z = \frac{x - \mu}{\sigma}$ standard dev = 0.98
 $\mu = 98.6$
 $Z = 1.9$

$$1.9 = \frac{x - 98.6}{0.98}$$
$$1.862 = x - 98.6$$
$$100.46 = x$$

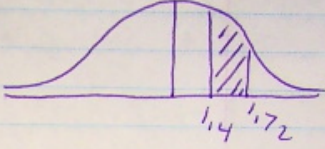


c) $P(Z > -0.45)$



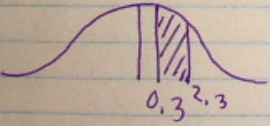
$0.1736 + 0.5$
 0.6736
 67.36%

d) $P(1.44 < Z < 1.72)$



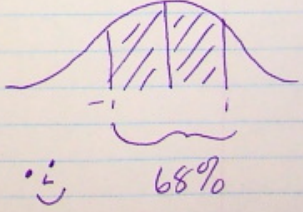
$0.4573 - 0.4222$
 0.0351
 3.51%

e) $P(0.3 < Z < 2.3)$



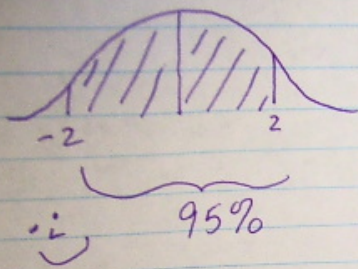
$0.4893 - 0.1179$
 0.3714
 37.14%

f) $P(-1 \leq Z < 1)$



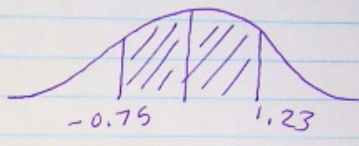
$\hat{=}$ 68%

g. $P(-2 < z < 2)$



∴ 95%

h. $P(-0.75 < z < 1.23)$



0.2734 + 0.3907
0.6641
66.41%

8.
$$\frac{(60 \times 5) + (75 \times 35) + (80 \times 20) + (70 \times 15) + (62 \times 25)}{100}$$

$$\frac{300 + 2625 + 1600 + 1050 + 1550}{100}$$

$$\frac{7125}{100}$$

71.25

$$8. \frac{(60 \times 5) + (75 \times 35) + (80 \times 20) + (70 \times 15) + (62 \times 25)}{100}$$

$$\frac{300 + 2625 + 1600 + 1050 + 1550}{100}$$

$$\frac{7125}{100}$$

$$71.25$$

$$71$$

$$9. \frac{(700 \times 24) + (1215 \times \text{missing value}) + (375 \times 4)}{24 + \text{---} + 4}$$

missing value