

Foundations of Math 12


Review - Statistics (Part one)

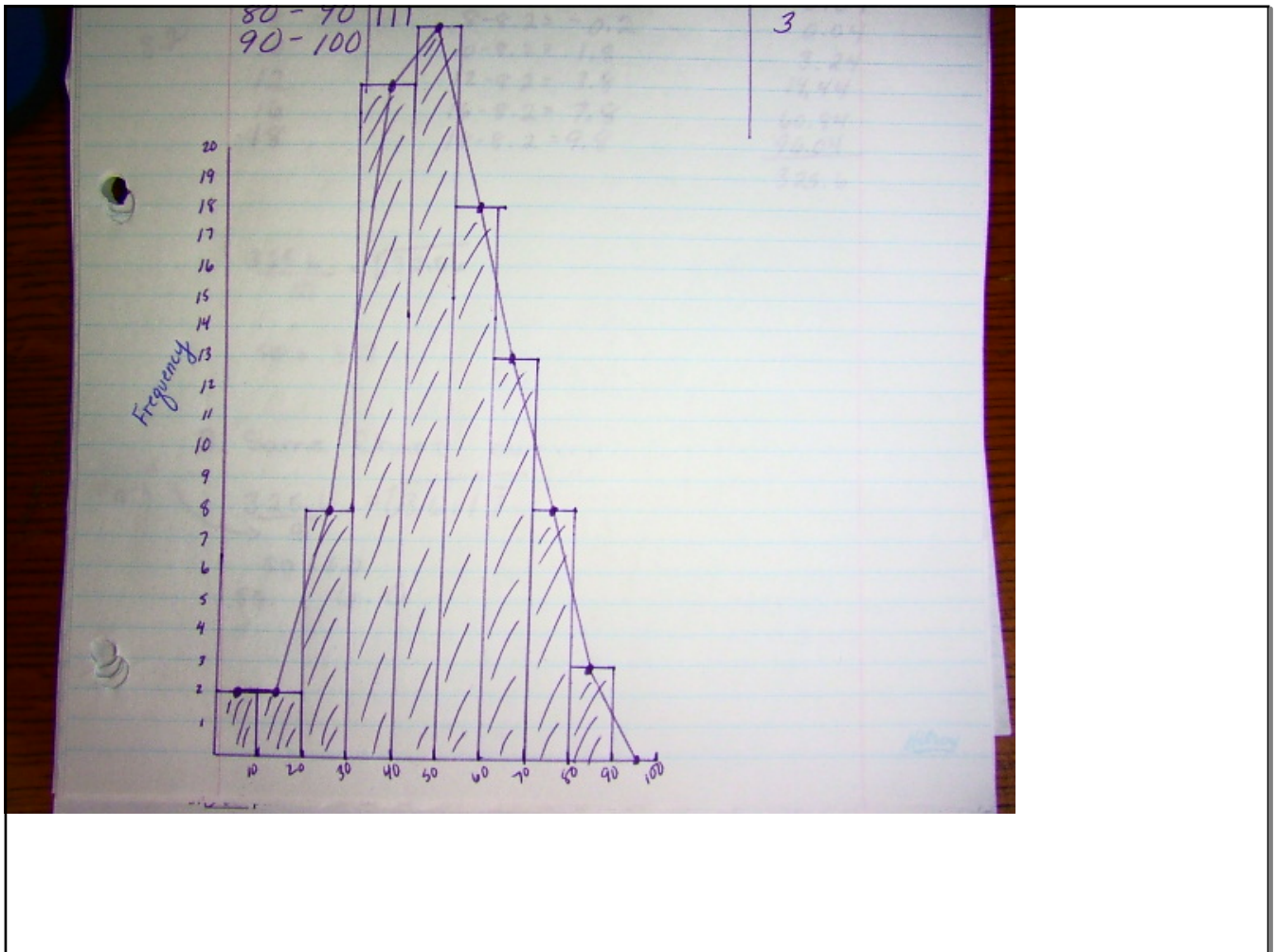


1. a) Sample, only 20 were chosen out of 105 students.

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	$\text{mean} = \frac{1552}{20}$ $= 77.6$ $\text{median} = \frac{77+81}{2}$ $= 79$ $\text{mode} = 77$ $\text{Range} = \frac{100 - 49}{51}$ $\text{Midrange} = \frac{100 + 49}{2}$ $= \frac{149}{2} = 74.5$
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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>

$\frac{8.2}{10}$
 8.2

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

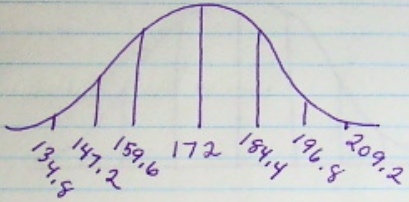
SD = 5.7

B. Same Chart but...


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

SD = 6.0
SD. 6.0

4.



4. a) > 150



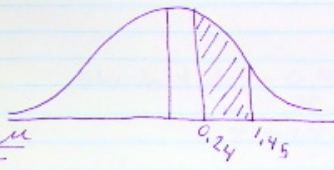
$$Z = \frac{x - \mu}{\sigma}$$

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

$$= -1.77$$

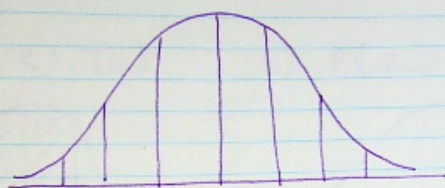
0.4616 + 0.5
0.9616
96.16 %

b) $175 \leq z \leq 190$



$Z = \frac{x - \mu}{\sigma}$	$Z = \frac{x - \mu}{\sigma}$	
$= \frac{175 - 172}{12.4}$	$= \frac{190 - 172}{12.4}$	$0.4265 - 0.0948$
$= \frac{3}{12.4}$	$= \frac{18}{12.4}$	0.3317
$= 0.24$	$= 1.45$	33.17%

5.



See Sheet ☺

Typo
on
this
question 6
a)

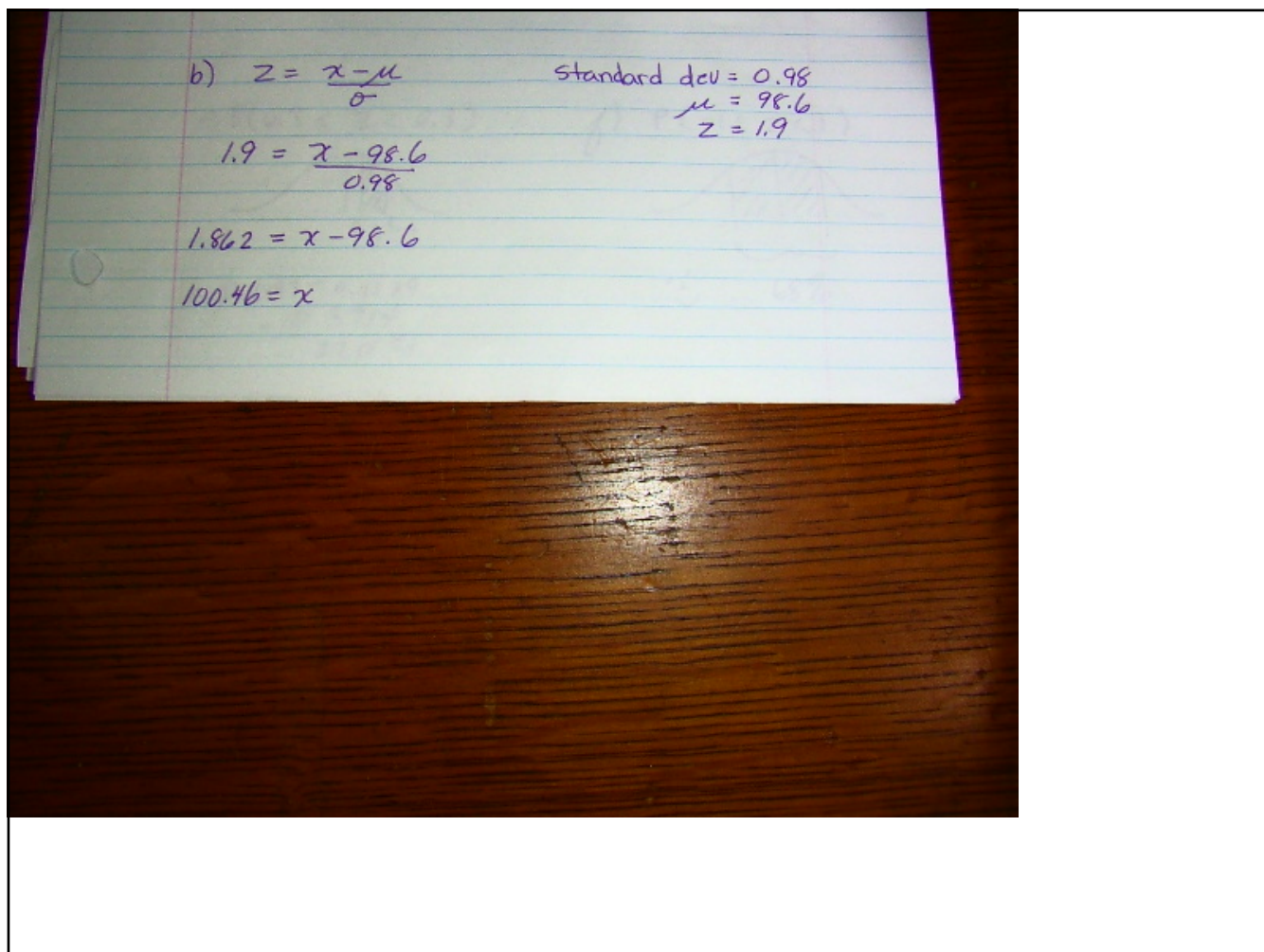
$$Z = \frac{x - \mu}{\sigma}$$

$$\begin{aligned} \text{standard dev.} &= 4 \\ \mu &= 7 \\ Z &= 1.2 \end{aligned}$$

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

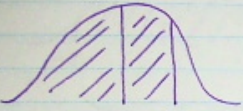
$$4.8 = x - 7$$

$$11.8 = x$$



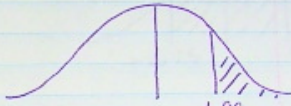
7.

a) $P(Z < 1.76)$



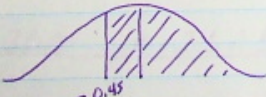
1.76
 $0.5 + 0.4608$
 0.9608
 96%

b) $P(Z > 1.98)$



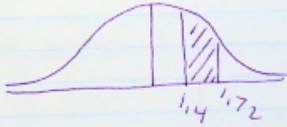
1.98
 $0.5 - 0.4761$
 0.0239
 2.39%

c) $P(Z > -0.45)$

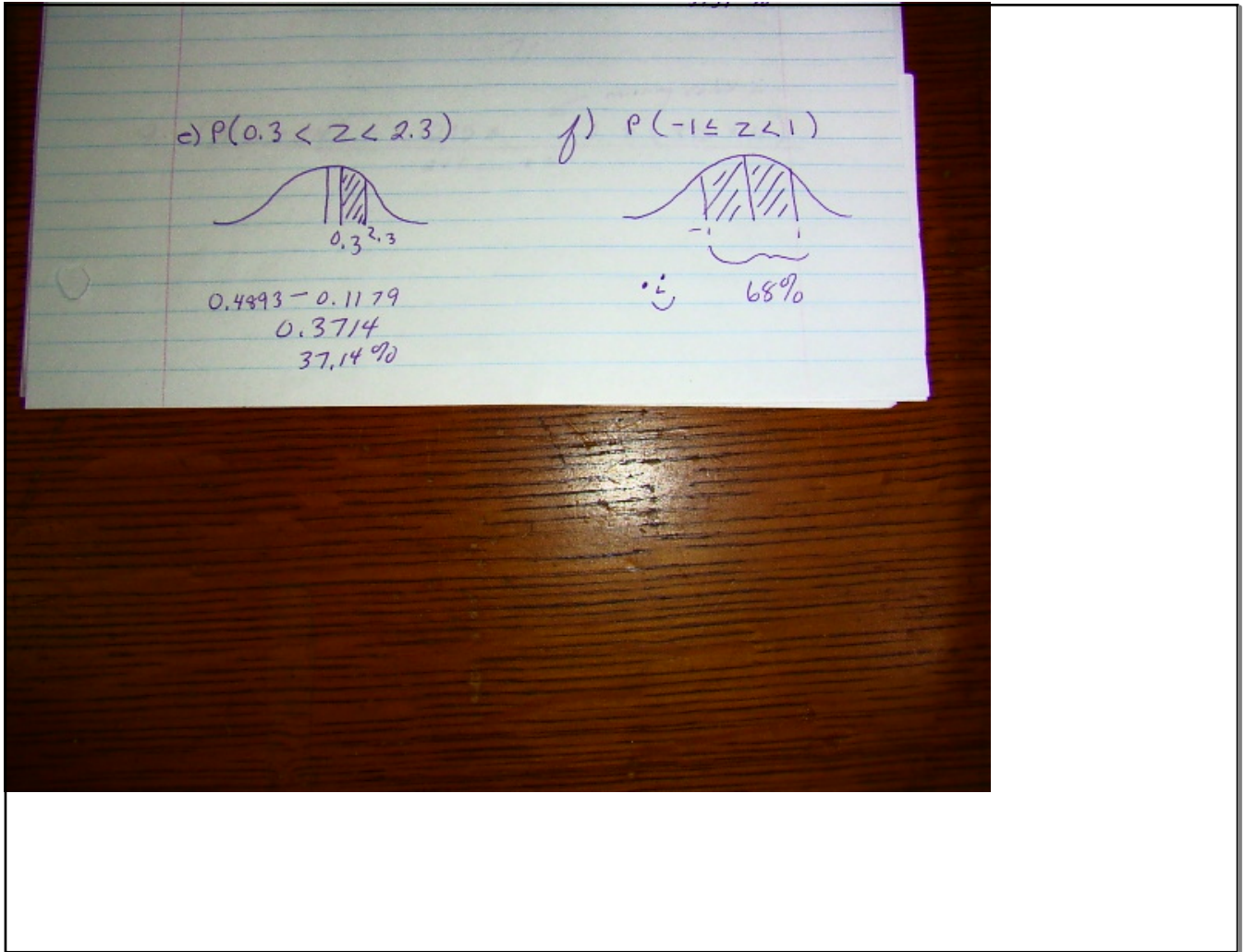


-0.45
 $0.1736 + 0.5$
 0.6736
 67.36%

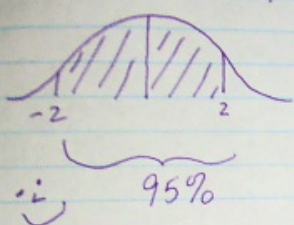
d) $P(1.4 < Z < 1.72)$



1.4 1.72
 $0.4573 - 0.4222$
 0.0351
 3.51%

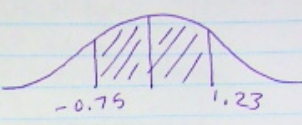


$P(-2 < z < 2)$



$\therefore 95\%$

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



$0.2734 + 0.3907$
 0.6641
 66.41%

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

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

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

$$71.25$$

$$71$$

$$9. \frac{(700 \times 24) + (1215 \times 11) + (375 \times 4)}{24 + 11 + 4}$$

$$\frac{16800 + 13365 + 1500}{39}$$

$$\frac{31665}{39}$$

$$= 811.9$$