[redacted]

1.2 1.a)

Beam	Stem	Cylinder
9	05	8
8 8 5 3 3	06	1 6
9 8 8 7 7 6 4 3 2 0 0	07	0 1 2 4 8 8
7 2 1	08	1 3 3 5 9
7 7 0	09	2 7 8
7	10	
8 6 3	11	2
	12	6
	13	
	14	1

Stem: tens and ones
Leaf: tenths

b. The display appears to be reasonably symmetric around the value of 7.

c. Yes, 14.1 from the cylinder side appears to be an outlier.

d. $= 3/20 = .15 = 15\%$

1.b) Both seem to be symmetric around the value of 7. The data for the cylinder has an outlier of 14.1. The Beam has a spike of values around 11, while the cylinder side flows more naturally in a Bell curve.

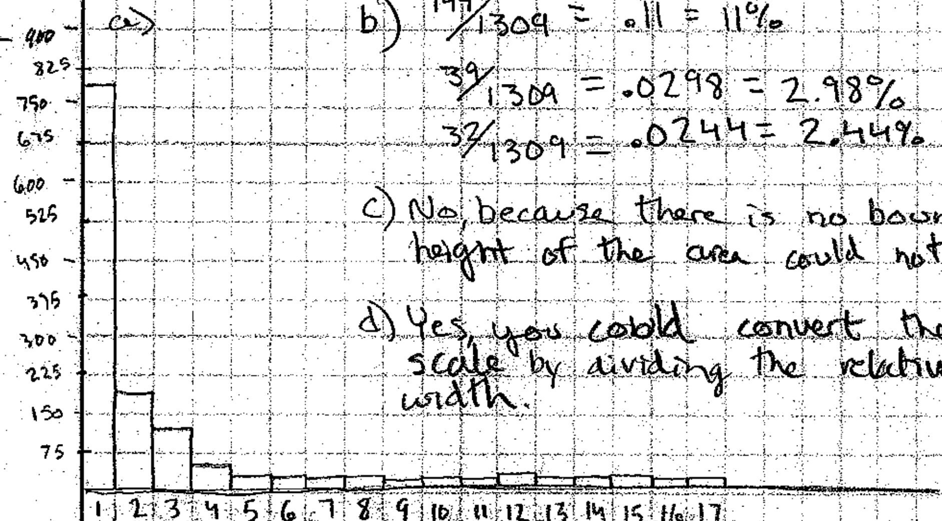
1.6

6	0 3 4 6 6 7 8 9 9
7	0 0 1 2 2 2 4 4
8	0 0 1 1 1 1 1 2 2 3 4 4 5 5 5 7 8 9 9
9	0 3 5 8

6	0 3 4
6	6 6 7 8 9 9
7	0 0 1 2 2 2 4 4
7	
8	0 0 1 1 1 1 1 2 2 3 4 4
8	5 5 5 7 8 9 9
9	0 3
9	5 8

There is an absence of scores in the [75, 79] range also, the scores form more of a bell curve in the second display

1.8 a)



b) $144/1309 = .11 = 11\%$

$39/1309 = .0298 = 2.98\%$

$32/1309 = .0244 = 2.44\%$

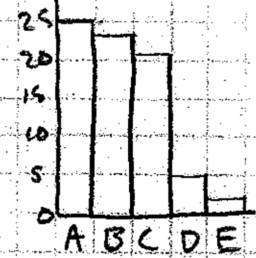
c) No, because there is no boundary on "≥15", so the height of the area could not be determined

d) Yes, you could convert the scale into a density scale by dividing the relative frequency by the class width.

A=25 B=23 D=5 C=2 C=21

[redacted]

1-10



$69/76 = .9079 = 90.79\%$

1-20

a) $f(x) = \frac{1}{5-(-5)} = 1/10 = .1$

$\int_{-5}^{0} .1\,dx = .1x\Big|_{-5}^{0} = 0-(.1)(-5) = .5$

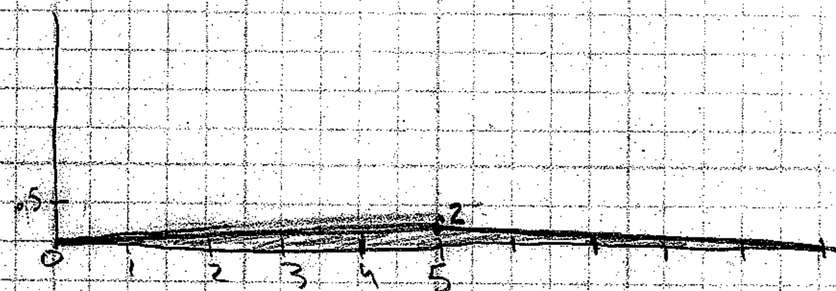
b) $\int_{-2}^{2} .1\,dx = .1x\Big|_{-2}^{2}$ $(2)(.1)-(-2)(.1) = .4$

$\int_{-2}^{3} .1\,dx = .1x\Big|_{-2}^{3} = (3)(.1)-(-2)(.1) = .5$

c) $\int_{K}^{K+4} .1\,dx = .1(K+4) - K(.1) = .1K + .4 - .1K = .4$

1-22

a)



$(5)(.2)(.5) + (5)(.2)(.5) = 1$

b) $\int_{0}^{3} .04x\,dx = \frac{.04x^2}{2}\Big|_{0}^{3} = .18$

$\int_{7}^{10} .4-.04x\,dx = .4x - \frac{.04x^2}{2}\Big|_{7}^{10} = (4-2)-(2.8-.98) = .18$

$\int_{4}^{5} .04x\,dx + \int_{5}^{10} .4-.04x\,dx = (.5-.32)+(4-2)-(2-.5) = .68$

or $1-\int_{0}^{4} .04x\,dx$ easier

$\int_{4}^{5} .04x\,dx + \int_{5}^{7} .4-.04x\,dx = (.5-.32)+(2.8-.98)-(2-.5) = .5$

c) $.9 = \int_{0}^{c} .04x\,dx + \int_{5}^{c} .4-.04x\,dx \Rightarrow .9 = \frac{.04c^2}{2} + \left(.4c - \frac{.04c^2}{2}\right) - \left(.4(5) - \frac{.04(5^2)}{2}\right)$

$2-.5$

$.9 = .4c - 1.5$

$\boxed{c = 6\text{ min}}$

$\int_{c}^{10} (.4-.04x)\,dx = .9$

$.4(10-c) - .04\frac{100-c^2}{2} = .9$

[redacted]

1-24 a) $f(x) = \lambda e^{-\lambda x} \quad x \geq 0 \qquad \int_a^b \lambda e^{-\lambda x} = -e^{-\lambda x}\Big|_a^b$

$-e^{-.05(20)} - (-e^0) = .632$

$-e^{-.05(20)} - (-e^0) = .632$

$-e^{-.05(60)} - (-e^{-.05(25)}) = 0 - (-.2865) = .287$

$-e^{-.05(25)} - (-e^{-.05(10)}) = .32$

b) $.05 \geq \int_0^1 \lambda e^{-\lambda x} \rightarrow .05 \geq -e^{-.05} - (-e^0) = .049$ Yes, it qualifies
$.05 \geq .049$

1-26 a) (ii) because it is the only one that has a proportional sum of 1.

b) $(.4+.1+.1) = .6$; $(.4+.1) = .5$; $(.1+.1+.1+.3) = .6$

1-28 $p(1) = c \quad p(2) = 2c \quad p(3) = 3c \quad p(4) = 4c \quad p(5) = 5c$
$c+2c+3c+4c+5c = 1 \quad 15c = 1 \quad c = 1/15 = .067$

$p(1) + p(2) + p(3) = .4$

$p(2) + p(3) + p(4) = .6$

1-30 a) .9842, .9842
b) 1 − .9332 = .0668, 1 − .0228 = .9772
c) .1093, .9978 .9978 − .1093 = .8885
d) 0 ; 1 − 0 = 1

1-32 a) 1.33 (b) 1.33 (c) 1.17 (d) $.754/2 = .377$ $.5 - .377 = .123$
$\rightarrow z = 1.16$
(e) 2.88 ; −2.88

1-38 a) $\mu = 96 \quad \sigma = 14 \qquad z = \frac{100-96}{14} = .286 = .29 \quad 1 - .6141 = .3859$

b) $\frac{75-96}{14} = -1.5 = .0668 \; 1 - .0668 = .9332$

c) $\frac{50-96}{14} = -3.29 \downarrow .0005 \qquad \frac{75-96}{14} = -1.5 \downarrow .0668 \qquad .0668 - .0005 = \boxed{.0663}$

1-40
a) $\mu = 8.8 \quad \sigma = 2.8 \quad z = \frac{10-8.8}{2.8} = 2.57 \rightsquigarrow .9949 \quad 1 - .9949 = \boxed{.0051}$ .0051
b) $z = \frac{5-8.8}{2.8} = -1.36 \rightsquigarrow \boxed{.0869}$; $.9949 - .0869 = \boxed{.908}$

c) $\frac{20-8.8}{2.8} = 4 \quad \boxed{0}$ .2033

d) $\frac{(8.8+c) - 8.8}{2.8} = 2.33 \qquad \frac{(8.8-c) - 8.8}{2.8} = -2.33$

$\frac{c}{2.8} = 2.33 \quad \boxed{c = 6.524}$

[redacted]

1-52 6 goblets/package .12 have flaws independent

a) $\frac{6!}{1!\,5!} \times .12^1(.88)^5$ $\frac{720}{120} \times .12(.5277) \approx .38$

b) $\frac{\cancel{6!}}{0!\,\cancel{6!}}$ $1 \times .12^0(.88)^6 \rightsquigarrow .464$ $1 - .38 - .464 = \boxed{.156}$

c) 3) $\frac{6!}{3!\,3!} \times (.12)^3(.88)^3 = .0236$

2) $\frac{6!}{2!\,4!} \cdot (.12)^2(.88)^4 \approx .13$ $= .38 + .13 + .0236 = \boxed{.5336}$

1-54 a) .1 are erroneous $n=20$ $x=0,1,2$ $\pi=.1$

$\frac{n!}{x!(n-x)!}\pi^x(1-\pi)^{n-x}$

$\boxed{=.677}$

$\frac{\cancel{20!}}{0!\,\cancel{20!}} \cdot (.1^0)(.9)^{20} = .122$

$\frac{20!}{1!(20-1)!} \cdot .1^1(.9)^{19} = .27$ $\longrightarrow$ $.122 + .27 + .285 = .677$

$\frac{20!}{2!(20-2)!} \cdot (.1)^2(.9)^{18} = .285$

b) $1 - [.122 + .270 + .285 + .190 + .090] = .043$

$\frac{20!}{3!(20-3)!}(.1)^3(.9)^{17} = .19$ $1 - [.122 + .27 + .285 + .19 + .09] = \boxed{.04}$

$\frac{20!}{4!(20-4)!}(.1)^4(.9)^{16} = .09$

c) $x = 11 \ldots 20$ Table 2 $\rightarrow \boxed{0}$

$\frac{20!}{11!(20-11)!}(.1)^{11}(.9)^9 = 6.5E^{-7} \approx 0$

1-56 $\lambda = 20$ a) $x\ [0,10] = .001 + .001 + .003 + .006 \rightarrow \boxed{.011}$

$\frac{e^{-20}20^{10}}{10!} \rightsquigarrow .006$ $\frac{e^{-20}20^9}{9!} \rightsquigarrow .003$ $\frac{e^{-20}20^8}{8!} \rightsquigarrow .001$ $\frac{e^{-20}20^7}{7!} \rightsquigarrow .001$

b) $x: [21,30] \rightsquigarrow \boxed{.428}$ $\frac{e^{-20}20^{21}}{21!} = .085 + \frac{e^{-20}20^{22}}{22!} = .077 + \frac{e^{-20}20^{23}}{23!} = .067 +$

$\frac{e^{-20}20^{24}}{24!} = .056 + \frac{e^{-20}20^{25}}{25!} = .045 + \frac{e^{-20}20^{26}}{26!} = .034 + \frac{e^{-20}20^{27}}{27!} = .025 + \frac{e^{-20}20^{28}}{28!} = .018$

$\frac{e^{-20}20^{29}}{29!} = .013 + \frac{e^{-20}20^{30}}{30!} = .008 = .428$

c) $x: [10,20] \rightsquigarrow \boxed{.556}$ $\frac{e^{-20}20^{10}}{10!} = .006 + \frac{e^{-20}20^{11}}{11!} = .011 + \frac{e^{-20}20^{12}}{12!} = .018 + \frac{e^{-20}20^{13}}{13!} = .027 + \frac{e^{-20}20^{14}}{14!} = .039 +$

$\frac{e^{-20}20^{15}}{15!} = .052 + \frac{e^{-20}20^{16}}{16!} = .065 + \frac{e^{-20}20^{17}}{17!} = .076 + \frac{e^{-20}20^{18}}{18!} = .084 + \frac{e^{-20}20^{19}}{19!} = .089 + \frac{e^{-20}20^{20}}{20!} = .089$

$\boxed{=.556}$

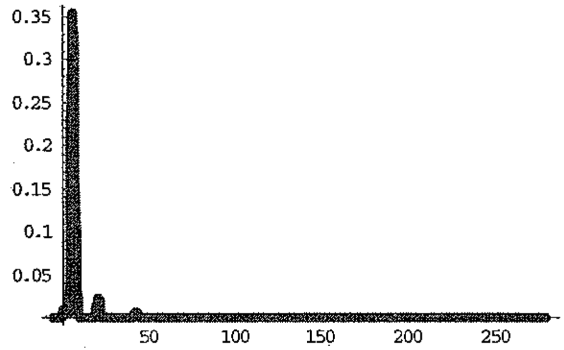
$x: (10,20) = .556 - .089 - .006 \rightsquigarrow \boxed{.461}$

$.556 - \frac{e^{-20}20^{20}}{20!} - \frac{e^{-20}20^{10}}{10!} = .461$

[redacted]

1.8+

smoothdistribution[{{1,784},{2,204}{3,127},{4,50}{5,33},{6,28}{7,19},{8,19}{9,6},{1
0,7}{11,6},{12,7}{13,4},{14,4}{15,5},{16,3}{17,3}},1]



They have similar shape, It looks similar to the positively skewed plot

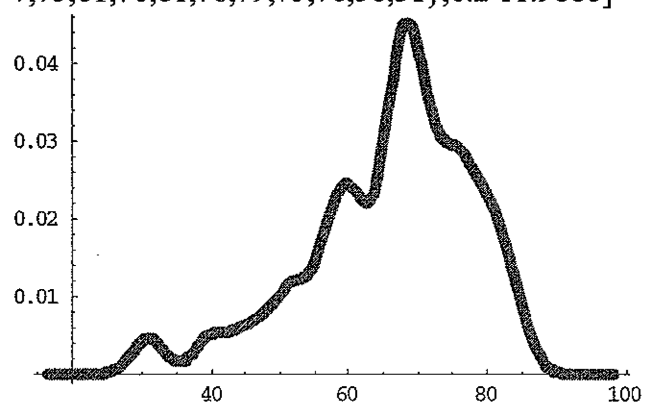
sd[{84,49,61,40,83,67,45,66,70,69,80,58,68,60,67,72,73,70,57,63,70,78,52,67,53,67,75,6
1,70,81,76,79,75,76,58,31}]

11.9888

1.9+

smooth[{84,49,61,40,83,67,45,66,70,69,80,58,68,60,67,72,73,70,57,63,70,78,52,67,53,6
7,75,61,70,81,76,79,75,76,58,31},0.2 11.9888]

7.13b



Yes, the plots faithfully match

smooth[{84,49,61,40,83,67,45,66,70,69,80,58,68,60,67,72,73,70,57,63,70,78,52,67,53,6
7,75,61,70,81,76,79,75,76,58,31},0.5 11.9888]

7.13a