

Review Practice for Unit 4

#1. a) 118.6

b) $\sqrt{384.6} \doteq 19.6112$

c) 384.6

d) 50% of 150 = 75

$$P(x=75) = P\left(z = \frac{75 - 118.6}{19.61}\right)$$

$$= P(z = -2.22)$$

$$\doteq 0.0132$$

$$= 1.32\%$$

so, a student who just passed is in the 2nd percentile.

e) 1.32% of 347 = 4.58 students failed.

f) $P\left(z \leq \frac{x - 118.6}{19.61}\right) = 0.91$

$$\frac{x - 118.6}{19.61} = 1.32 \text{ from the table}$$

$$x = 144.49$$

g) $P(105 \leq x \leq 145) = P(x \leq 145) - P(x \leq 105)$

$$= P\left(z \leq \frac{145 - 118.6}{19.61}\right) - P\left(z \leq \frac{105 - 118.6}{19.61}\right)$$

$$= P(z \leq 1.35) - P(z \leq -0.69)$$

$$= 0.9115 - 0.2451$$

$$= 0.6664$$

$$= 66.64\%$$

$$\#2. \quad a) \quad P\left(z = \frac{x - 10.1}{1.1}\right) = 0.95 \quad \left| \quad P\left(z = \frac{x - 10.1}{1.1}\right) = 0.05\right.$$

$$\frac{x - 10.1}{1.1} = 1.61 \quad \left| \quad \frac{x - 10.1}{1.1} = -1.68\right.$$

$$x = 11.871 \quad \checkmark \quad \left| \quad x = 8.252 \quad \checkmark\right.$$

\therefore She should have sizes between 8.5 and 12.0

$$b) \quad P(x = 12.5) = P\left(z = \frac{12.5 - 10.1}{1.1}\right)$$

$$= P(z = 2.18)$$

$$= 0.9812$$

$$= 98.12\%$$

c) Similarly to part b

d) see a)

so, 99th percentile,

$$e) \quad P\left(z \leq \frac{x - 10.1}{1.1}\right) = 0.03$$

$$\frac{x - 10.1}{1.1} = -1.9$$

$$x = 7.968$$

$$f) \quad P(7 \leq x \leq 10.5) = P(x \leq 10.5) - P(x \leq 7)$$

$$=$$

$$\#3. \quad a) \quad \text{For Men: } P\left(z = \frac{x - 78}{33.46}\right) = 0.93$$

$$\frac{x - 78}{33.46} = 1.48$$

$$x = 127.52$$

For Women:

$$P\left(z = \frac{x - 82.90}{35.85}\right) = 0.93$$

$$\frac{x - 82.90}{35.85} = 1.48$$

$$x = 135.96$$

$$\begin{aligned}
 \text{b) } P_{\text{Man}}(X=86) &= P\left(z = \frac{86-78}{33.46}\right), & P_{\text{Woman}}(X=88) &= P\left(z = \frac{88-82.9}{35.85}\right) \\
 &= P(z=0.24) & &= P(z \leq 0.14) \\
 &= 0.5984 & &= 0.5557 \\
 &= 59.84\% & &= 55.57\%
 \end{aligned}$$

so, the man since it falls on 60th percentile.

$$\text{c) i. } P(18 \leq x \leq 65) = P(x \leq 65) - P(x \leq 18)$$

ii. Similar to i.

$$\begin{aligned}
 \text{iii. } P(X < 10) &= P\left(z < \frac{10-78}{33.46}\right) \\
 &= P(z < -2.03) \\
 &\doteq 0.0212 \\
 &\doteq 2.12\%
 \end{aligned}$$