

a.  $X = 45$

$$Z = \frac{45 - 90}{15} = -45/15 = -3$$

Interpretation: 3 standard deviations below the mean.

b.  $X = 65$

$$Z = \frac{65 - 90}{15} = -25/15 = -1.6$$

Interpretation: 1.6 standard deviations below the mean.

c.  $X = 85$

$$Z = \frac{85 - 90}{15} = -5/15 = -0.3$$

Interpretation: 0.3 standard deviations below the mean.

d.  $X = 92$

$$Z = \frac{92 - 90}{15} = 2/15 = 0.1$$

Interpretation: 0.1 standard deviations above the mean.

e.  $X = 105$

$$Z = \frac{105 - 90}{15} = 1$$

Interpretation: 1 standard deviations above the mean. (Perfect)

f.  $X = 115$

$$Z = \frac{115 - 90}{15} = 25/15 = 1.8$$

Interpretation: 1.8 standard deviations above the mean.

- a.  $Z=110$   
 $1.10 \times 20 = 22$   
 $110 + 22 = 132$   $X=132$
- b.  $Z=-.70$   
 $-0.70 \times 20 = -14$   
 $110 - (-14) = 110 + 14 = 124$   $X=124$
- c.  $Z=2.38$   
 $2.35 \times 20 = 47$   
 $110 + 47 = 157$   $X=157$
- d.  $Z=0$   
 $0 \times 20 = 0$   
 $110 + 0 = 110$   $X=110$
- e.  $Z=1.65$   
 $1.65 \times 20 = 33$   
 $110 + 33 = 143$   $X=143$
- f.  $Z=-.45$   
 $-0.45 \times 20 = -9$   
 $110 - (-9) = 110 + 9 = 119$   $X=119$