

Name: _____

Review before Test

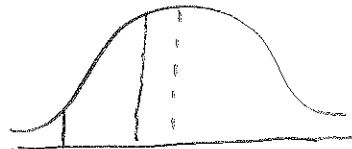
Assume the distribution is Normal. Records from the last 1231 students to take the SAT were reviewed. Of those 1231 students, 821 scored at least a 300 on their SAT Verbal section. 697 students scored a 470 or more.

1) Find the standard deviation.

$$\frac{470-300}{-.17 - -.43} = \frac{170}{.26} \quad \sigma = 653.85$$

$$300 \uparrow \quad \frac{821}{1231} = .6669$$

$$470 \uparrow \quad \frac{697}{1231} = .5662$$



$$300 + .43(653.85)$$

$$470 + .17(653.85)$$

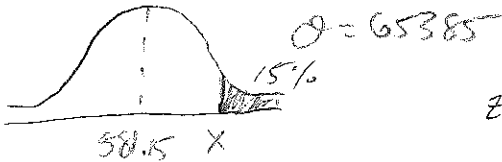
$$z = -.43 \quad z = -.17$$

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

$$-.43 = \frac{300 - \mu}{653.85}$$

$$\mu = 581.15$$

3) Find the score required to be in the top 15%.



$$z = 1.04$$

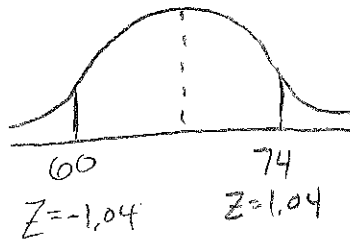
$$1.04 = \frac{x - 581.15}{653.85}$$

$$x = 1261.154$$

Assume the distribution is Normal. Based on heights collecting from the classes at the beginning of the year, we know that only 15% of students are 74 inches or taller. We also know that 85% of the students are at least 60 inches.

4) Find the standard deviation

$$\frac{74-60}{1.04 - -1.04} = \frac{14}{2.08} = 6.73 \text{ in}$$



$$z = -1.04 \quad z = 1.04$$

5) Find the mean.

$$-1.04 = \frac{60 - \mu}{6.73}$$

$$60 + 1.04(6.73)$$

$$\mu = 67 \text{ in}$$

$$1.04 = \frac{74 - \mu}{6.73}$$

$$74 - 1.04(6.73)$$

6) A student with a height of 71 inches would be in what percentile?



$$\sigma = 6.73$$

$$z = \frac{71 - 67}{6.73}$$

$$z = .59$$

$$.7224$$

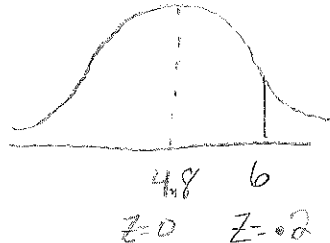
Assume the distribution is Normal. 2,986 people are surveyed about the number of internet connected devices they have in their home. 1,257 people said they have at least 6 internet connected devices in their homes. We are told the mean number of internet connected devices in a home is 4.8.

7) Find the standard deviation

$$6 \uparrow \frac{1257}{2986} = .4209$$

$$\frac{6-4.8}{.2} = \frac{1.2}{.2} = 6$$

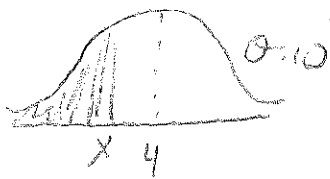
$$\sigma = 6$$



8) Find the mean

$$4.8$$

9) Find the number of devices a person needs to own to be in the 30th percentile (Leave as decimal, do not round)



30th percentile, z = -0.52

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

$$-0.52 = \frac{x - 4}{6} \quad -3.12 = x - 4.8$$

$$x = 1.68$$

10) Someone who owns 8 devices would be in what percentile?

$$z = \frac{8 - 4.8}{6}$$



$$z = .53$$

$$.7019$$