

WS #1

Math 1552

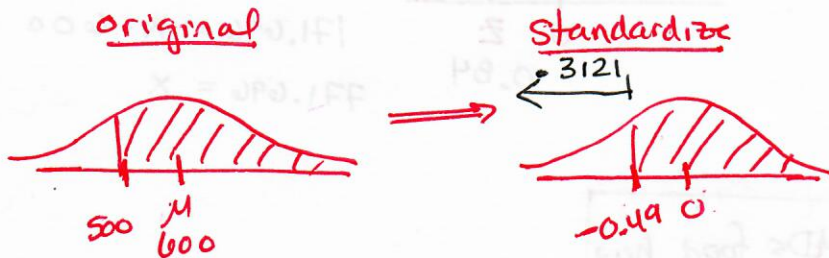
6.2 Normal Probability Distribution WS

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

1. $\bar{x} = 600$, $s = 204.4$, what percent of all McDonald's food would you expect to have:

- More than 500 calories?
- 600 to 900 calories?
- Less than 250 calories?

(a)



$$z = \frac{500 - 600}{204.4}$$

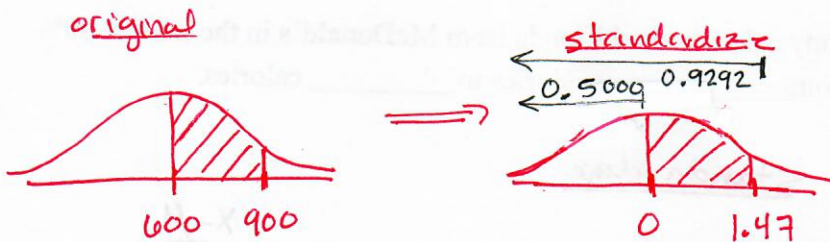
$$z = -0.4892$$

$$z = -0.49$$

$$\begin{aligned} P(X > 500) &= P(Z > -0.49) \\ &= 1 - P(Z \leq -0.49) \\ &= 1 - 0.3121 \\ &= 0.6879 \end{aligned}$$

68.79% of food at McDs has more than 500 calories.

(b)



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

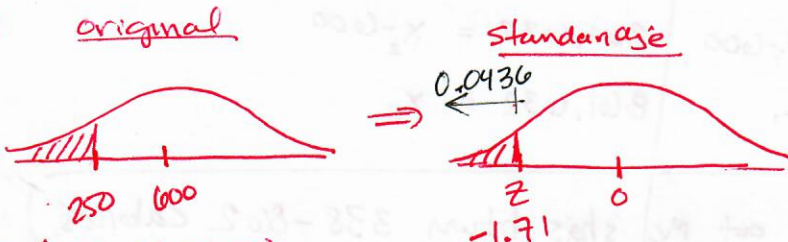
$$z = \frac{900 - 600}{204.4}$$

$$z = 1.47$$

$$\begin{aligned} P(600 \leq X \leq 900) &= P(0 \leq Z \leq 1.47) \\ &= P(Z \leq 1.47) - P(Z \leq 0) \\ &= 0.9292 - 0.5 \\ &= 0.4292 \end{aligned}$$

42.92% of food at McDs has between 600 - 900 calories

(c)



$$z = \frac{250 - 600}{204.4}$$

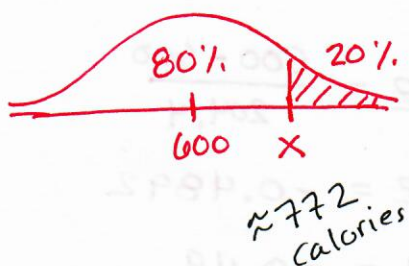
$$z = -1.71$$

$$\begin{aligned} P(X \leq 250) &= P(Z \leq -1.71) \\ &= 0.0436 \end{aligned}$$

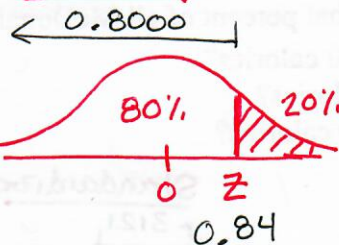
4.36% of the food has less than 250 cal.

2. $\bar{x} = 600$, $s = 204.4$, how many calories would you expect any food from McDonald's above the 80th percentile to have? This answer will be k or more calories.

original



Standardize



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

$$0.84 = \frac{x - 600}{204.4}$$

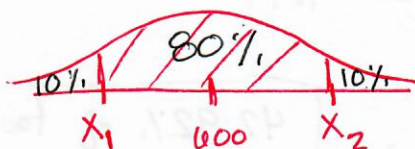
$$171.696 = x - 600$$

$$771.696 = x$$

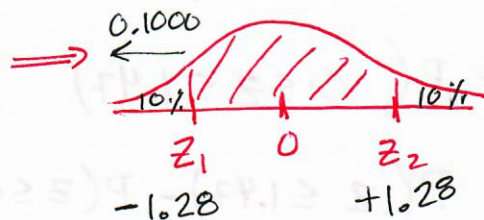
The top 20% of MDs food has more than 772 calories

3. $\bar{x} = 600$, $s = 204.4$, how many calories would foods from McDonald's in the middle 80% have? Your answer will read: From _____ calories to _____ calories.

original



Standardize



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

$$-1.28 = \frac{x_1 - 600}{204.4}$$

$$1.28 = \frac{x_2 - 600}{204.4}$$

$$-261.632 = x_1 - 600$$

$$261.632 = x_2 - 600$$

$$338.368 = x_1$$

$$861.632 = x_2$$

The middle 80% of food at McD's has btwn 338-862 calories,