For a set of observations with a mean of $\mu = 40$ and a standard deviation of $\sigma = 7$, find the z-score for each of the following raw scores:

$$X = 45 \quad X = 30 \quad X = 41$$

For a set of observations with a mean of $\mu = 80$ and a standard deviation of $\sigma = 10$, find the raw score for each of the following z-scores:

$$z = 0.80 \quad z = -1.80 \quad z = -0.40$$

A set of observations with a mean of $\mu = 56$ and a standard deviation of $\sigma = 20$ is transformed into a *standardized distribution* with a mean of $\mu = 50$ and standard deviation of $\sigma = 10$. Find the new, standardized score for each of the following values from the original set of observations:

1. $X = 46$

2. $X = 76$

3. $X = 40$

A set of observations has a standard deviation of $\sigma = 10$, and a score of $X = 65$ corresponds to a $z = 1.50$. What is the *mean* μ of the set of observations?