

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:

$$\begin{array}{lll} X = 45 & X = 51 & X = 41 \\ X = 30 & X = 25 & X = 38 \end{array}$$

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:

$$\begin{array}{lll} z = 0.80 & z = 1.20 & z = 2.00 \\ z = -0.40 & z = -0.60 & z = -1.80 \end{array}$$

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. $X = 40$
4. $X = 80$

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?