

EQ:

Recall:

❖ Formula for Standardizing Data:

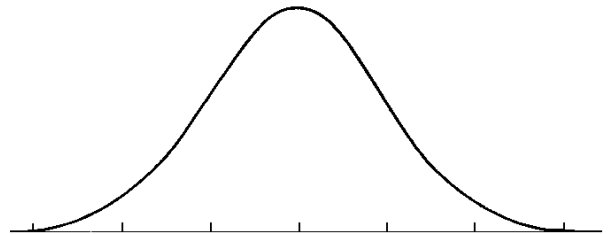
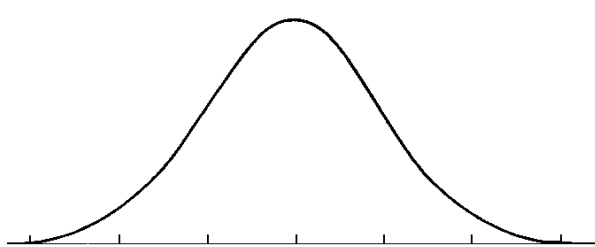
$z =$ or $z =$

❖ Purpose of Standardizing Data:

Compare data from _____ populations

Examples.

1. Suppose that the scores for a standardized test are normally distributed with $\mu = 100$ and $\sigma = 10$. Sketch both a normal distribution and a standard normal distribution for this data. Use this data to answer the following.



Find the corresponding z-scores for each raw score:

| | | | | | | | |
|-----------|--|--|--|--|--|--|--|
| raw score | | | | | | | |
| z-score | | | | | | | |

Find the percentage of test scores:

a) between 100 and 120

b) between 90 and 120

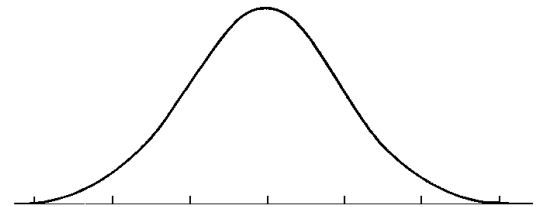
c) above 93

d) between 105 and 113

e) below 70

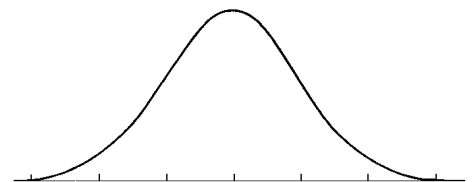
For examples #2 - 6, answer the question and sketch a **SND** for each.

2. The mean number of hours an American worker spends on the computer is 3.1 hours per workday. Assume the standard deviation is 0.5 hour. Find the percentage of workers who spend less than 3.5 hours on the computer. Assume the variable is normally distributed.

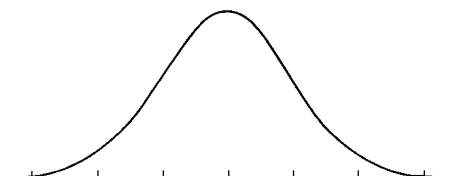


3. Each month an American household generates an average of 28 pounds of newspaper for garbage or recycling. Assume the standard deviation of its generating is 2 pounds. If a household is selected at random, find the probability it generates each of the following. Assume the variable is normally distributed.

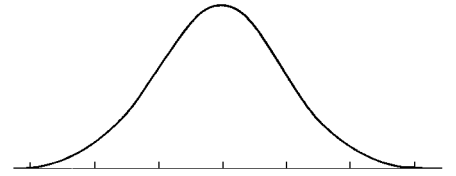
a. between 27 and 31 pounds per month



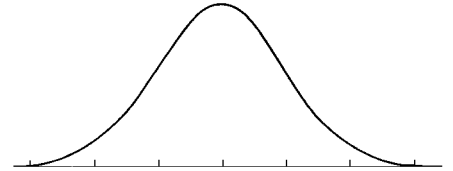
b. more than 30.2 pound per month



4. The American Automobile Association (AAA) reports that the average time it takes to respond to an emergency call is 25 minutes. Assume the variable is approximately normally distributed and the standard deviation is 4.5 minutes. If 80 calls are randomly selected, approximately how many will be responded to in less than 15 minutes?



5. For a medical study, a researcher wished to select people in the middle 60% of the population based on blood pressure. If the mean systolic blood pressure is 120 and the standard deviation is 8, find the upper and lower readings that would qualify people to participate in the study. Assume the blood pressure measurements are normally distributed.



6. To qualify for a police academy, candidates must score in the top 10% on a general abilities test. The test has a mean of 200 and a standard deviation of 20. Find the lowest possible score a candidate must have to qualify. Assume the test scores are normally distributed.

