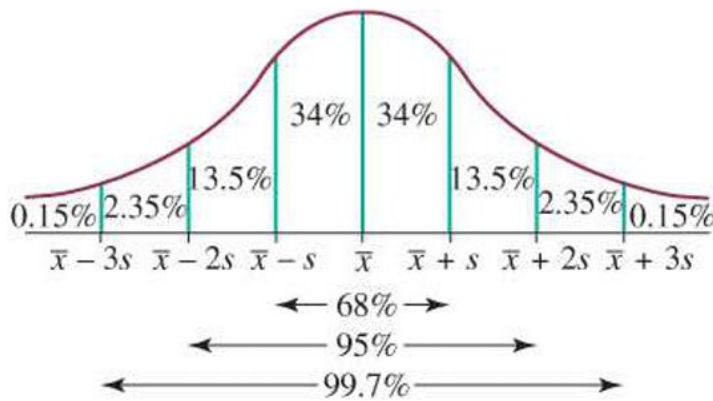# The 68% - 95% - 99.7% Rule - Worksheet

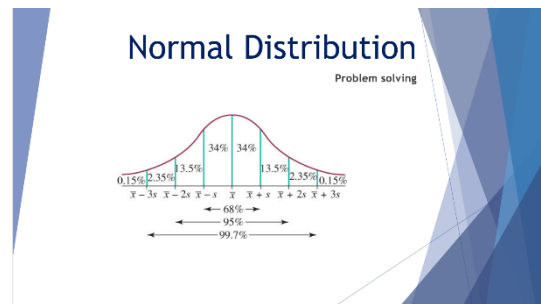**Process**

1. Construct a bell shape sketch
2. Label the central $\bar{x}$
3. Label the $\pm\,1s, \pm 2s\ \&\ \pm\,3s$
4. Identify the boundaries of the question
5. Determine the percentage
6. Calculate the percentage of items, or
7. Calculate the number of items

Key Words

- "Normal distribution"
- "Bell shaped"

Reference

- Juddy Productions: Normal distribution video (Watch video for solutions)
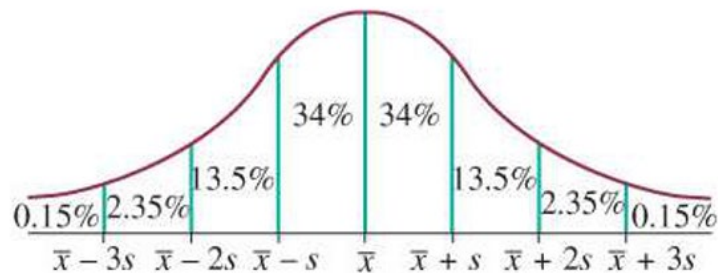

Example 1

The time taken to travel between two regional cities is approximately normally distributed with a mean of 70 minutes and a standard deviation of 2 minutes.

What is the percentage of travel times that are between 66 minutes and 72 minutes?

$\bar{x} =$

$s_x =$

$Percentage\ of\ travel\ time = ?$

<u>**Example 2**</u>
The volume of a cup of soup served by a machine is normally distributed with a mean of 240 mL and a standard deviation of 5 mL.
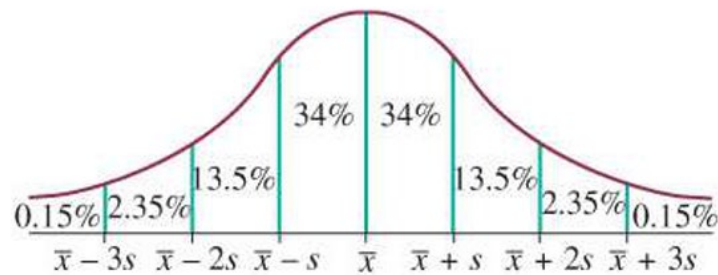A fast-food store used this machine to serve 160 cups of soup.

What number of these cups of soup are expected to contain less than 230 mL?

$\bar{x} =$
$S_x =$
$No. of\ cups = ?$

<u>**Example 3**</u>
The pulse rates of a population of Year 12 students are approximately normally distributed with a mean of 69 beats per minute and a standard deviation of 4 beats per minute.

A sample of 200 students was selected at random from this population.

Calculate the number of these students with a pulse rate of less than 61 beats per minute or greater than 73 beats per minute.

$\bar{x} =$
$S_x =$

$No. of\ people = ?$