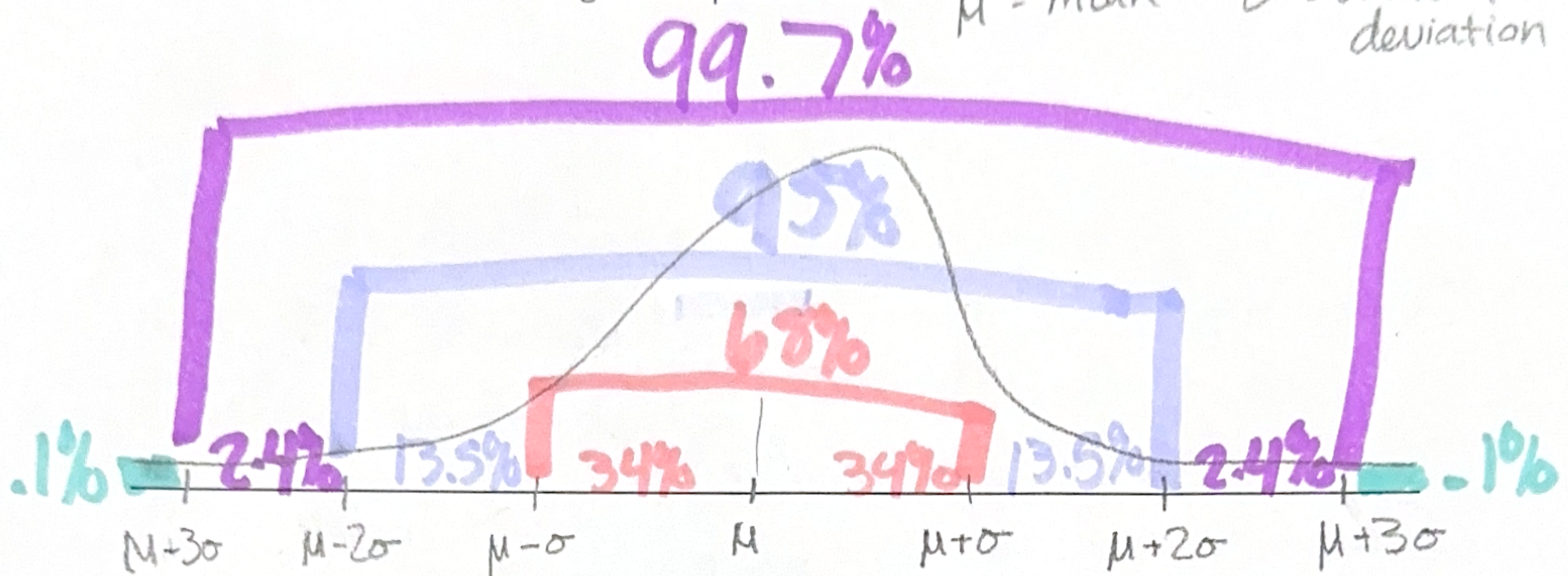


Nov 17 Worksheet

1. Draw and label a bell curve using the empirical rule

μ = mean σ = standard deviation



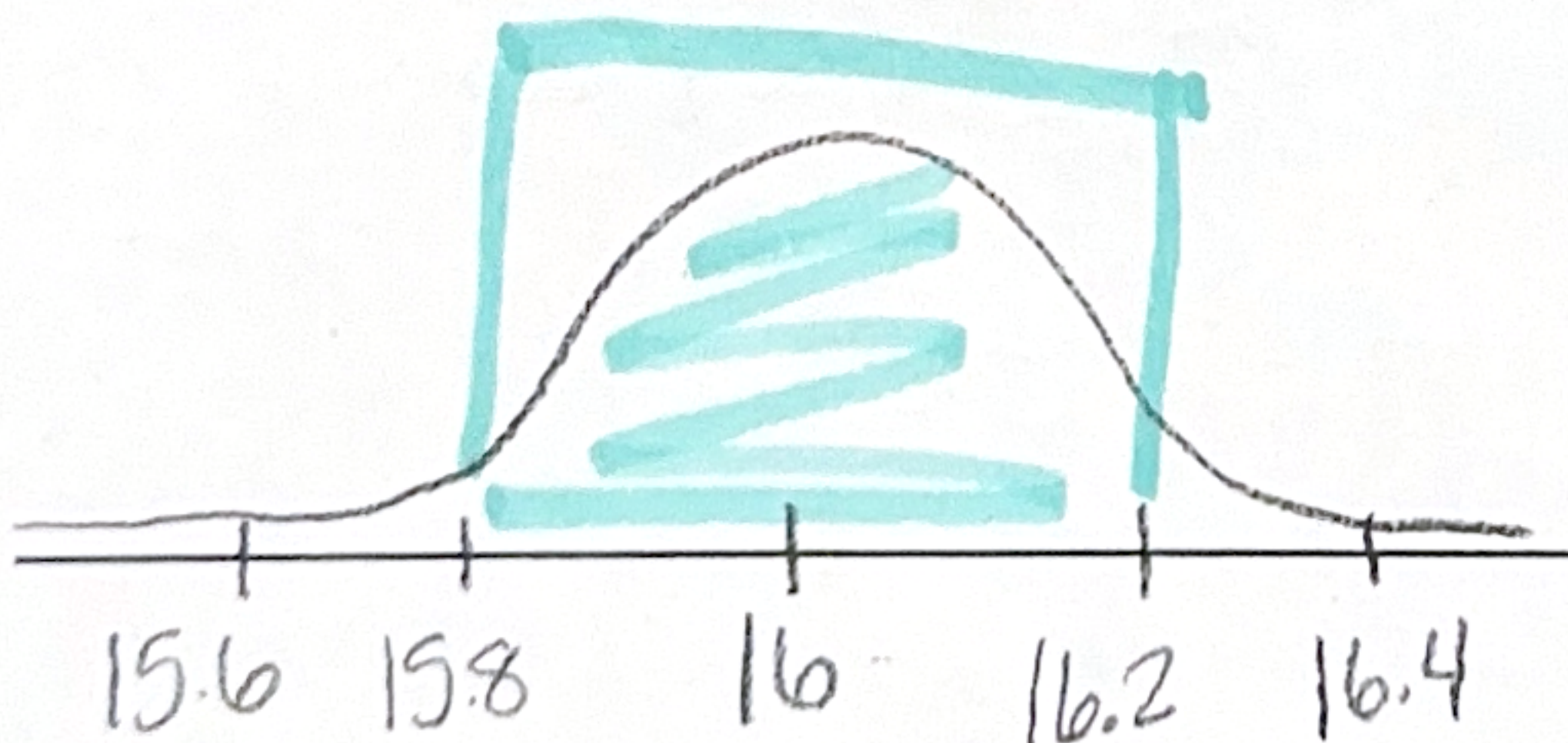
2. The scores on a national exam are normally distributed with a mean (μ) of 500 and a standard deviation (σ) of 100. Approximately what percentage of students scored between 300 and 700?



95% between
300 and 700

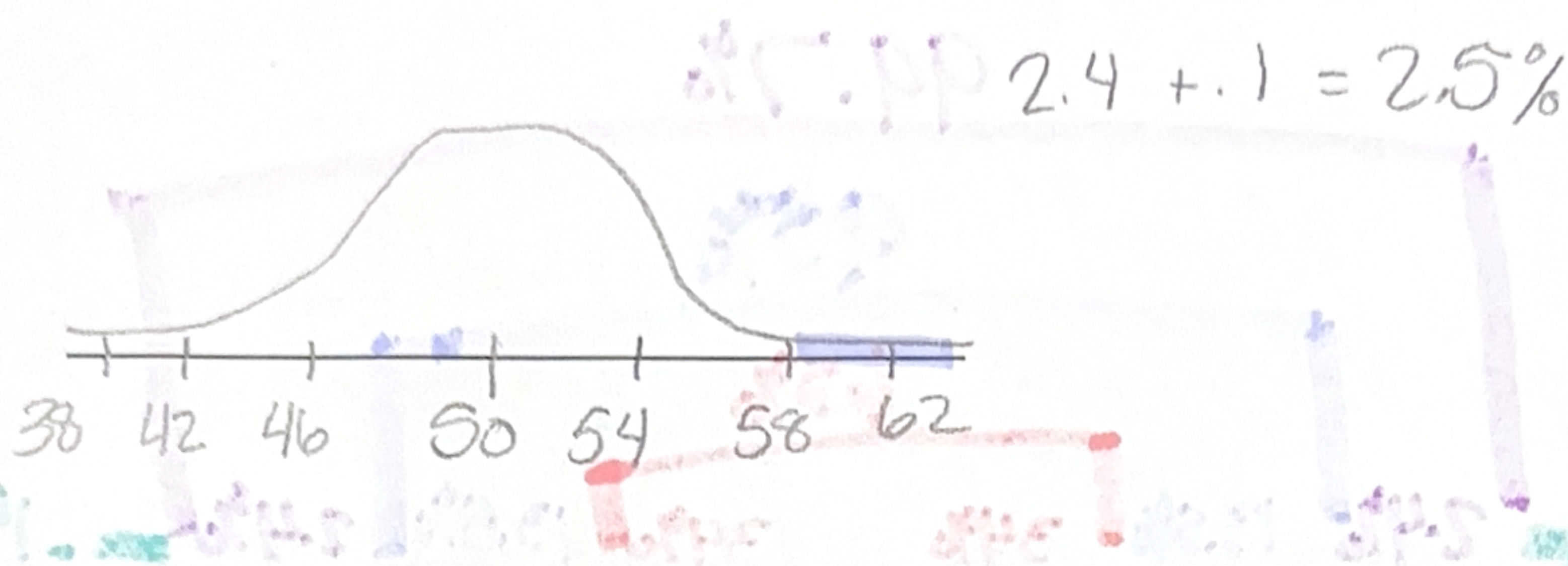
2 standard
deviations
away

3. A machine fills bags of flour with a mean weight of 16.0 ounces. The standard deviation is 0.2 ounces. What range of weights includes the middle 68% of the bags?



15.8 - 16.2 ounces

4. The lifespan of a certain type of battery is normally distributed with a mean of 50 hours and a standard deviation of 4 hours. What percentage of batteries are expected to last longer than 58 hours?



5. How do we calculate z-score?

$$z\text{-score} = \frac{X - \mu}{\sigma}$$

6. A final exam score distribution has a mean of 70 and a standard deviation of 8. If a student scores an 86, what is their z-score?

Handwritten calculations:

$$\mu = 70 \quad \sigma = 8 \quad X = 86$$

$$\frac{86 - 70}{8} = 2$$

$$z\text{-score} = 2$$

7. An incoming freshman takes placement exams in Math and English. On which test did the student perform better relative to their peers?

Subject	Score (x)	Mean (μ)	Standard Deviation (σ)
Math	86	68	12
English	82	72	8

Handwritten calculations:

$$\text{math} = \frac{86 - 68}{12} = 1.5$$

$$\text{english} = \frac{82 - 72}{8} = 1.25$$

math is higher

8. The average weight of newborn babies in a certain hospital is 7.5 pounds with a standard deviation of 1.1 pounds. A baby is born weighing 6.0 pounds. What is the baby's z-score?

$$\frac{6 - 7.5}{1.1} = -1.36 \rightarrow z\text{-score}$$