

Honors Math 3 Empirical Rule & Z-Score Practice!

1. Given an approximately normal distribution what percentage of all values are within 1 standard deviation from the mean?
2. Given an approximately normal distribution what percentage of all values are within 2 standard deviations from the mean?
3. Given an approximately normal distribution what percentage of all values are within 3 standard deviations from the mean?
4. Given an approximately normal distribution with a mean of 175 and a standard deviation of 37.
 - a) Draw a normal curve and label 1, 2, and 3 standard deviations on both sides on the mean.
 - b) What percent of values are within the interval (138, 212)?
 - c) What percent of values are within the interval (101, 249)?
 - d) What percent of values are within the interval (64, 286)?
 - e) What percent of values outside the interval (138, 212)?
 - f) What percent of values are outside the interval (101, 249)?
 - g) What percent of values are outside the interval (64, 286)?
 - h) What percent of values are outside the interval (101, 286)?
 - i) What percent of values are below 138?
 - j) What percent of values are above 286?

5. The heights of male students is normally distributed with a mean of 170 cm and a standard deviation of 8 cm. Find the percentage of male students whose height is: (Draw and label a normal curve to help)

- a) between 162 cm and 170 cm
- b) between 170 cm and 186 cm
- c) between 178 cm and 186 cm
- d) less than 162 cm
- e) less than 154 cm
- f) greater than 162 cm

Z SCORE PRACTICE!

1) A population has a mean of 45 and a standard deviation of 5. Find the z-scores of the following raw scores:

- a) score = 47
- b) score = 48
- c) score = 40
- d) score = 39

2) Three students take equivalent stress tests. Which is the highest relative score (meaning which has the largest z score value)?

- a. A score of 144 on a test with a mean of 128 and a standard deviation of 34.
- b. A score of 90 on a test with a mean of 86 and a standard deviation of 18.
- c. A score of 18 on a test with a mean of 15 and a standard deviation of 5.

3) The following table shows the scores of subject 1 on six different scales of an aptitude test. Also shown are the means and standard deviations of these scales.

Test	Mean	Standard Deviation	Score	Z-Score
Clerical Ability	50	15	41	
Logical Reasoning	40	4	47	
Mechanical Ability	120	25	100	
Numerical Reasoning	100	10	105	
Spatial Relations	70	20	90	
Verbal Fluency	60	6	70	

- a) Calculate the z-scores for each.
- b) On which test did subject 1 score the highest? The lowest?