

Statistical Reasoning
HW #2 Normal Distribution

Name: _____ Date: _____ Class: _____

Normal Distribution Practice

1. A few months ago, Super Star Sam picked up a new iPhone 6S. As he was listening to it on the train Tuesday, he wondered how much longer his battery will last. After a quick online search, he discovered that the expected battery life for a 6S is 400 full charges with a standard deviation of 25 and the distribution is Normally distributed.

a. What percent of the 6Ss can recharge at least 450 times?

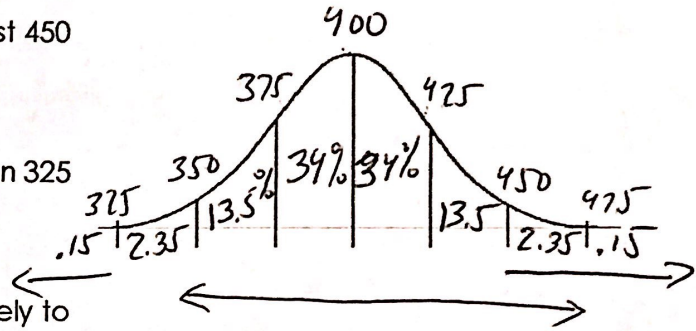
$z = 3.5 \pm 1.5 = 2.5\%$

b. What percent of the 6Ss can recharge less than 325 times?

1.5%

c. In a box of 200 6Ss, how many of those are likely to recharge between 350 and 475 times?

$13.5 + 34 + 34 + 13.5 + 2.35 = 97.35\% \text{ of } 200 = 194.7 \text{ or } 195$

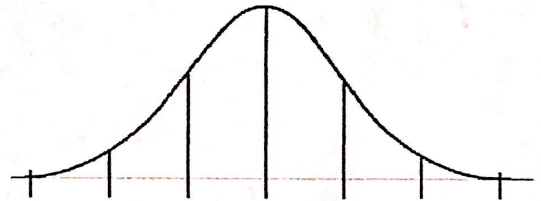


2. The mean gas mileage for cars driven by the students at North Cobb High School is 30 miles per gallon, and the standard deviation is 4 miles per gallon. Assume that the gas mileages are normally distributed. Today there are 350 cars in the parking lot.

a. How many of the cars have gas mileages between 22 and 34 miles per gallon?

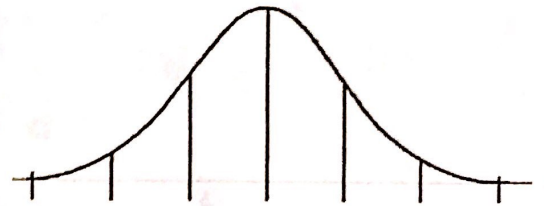
b. How many of the cars have gas mileages greater than 34 miles per gallon?

c. How many of the cars will have a gas mileage of at most 26 miles per gallon?



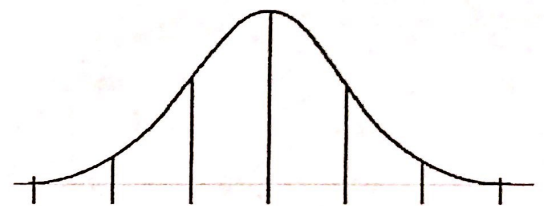
3. A person's blood glucose level and diabetes are closely related. After a 12-hour fast, the random variable x will have a distribution that is approximately Normal with a mean of 85 and standard deviation of 25 for people under the age of 50.

- What percentage of people under 50 have a blood glucose level less than 60 milligrams per deciliter?
- What percent have a blood glucose level greater than 10 milligrams per deciliter?
- What percent having a blood glucose level greater than 135 milligrams per deciliter (borderline diabetes starts at 140)?



4. The quality control inspector for a bagel shop periodically checks the calorie content of the bagels. The inspector has determined that the multi-grain bagels have a mean of 300 calories and a standard deviation of 10 calories. The inspector has determined that the calories are normally distributed.

- What percent of the multi-grain bagels have a caloric content between 270 and 330?
- What percent of the multi-grain bagels have a caloric content within two standard deviations of the mean?
- If the inspector grabs 523 bagels, how many are likely to have a caloric content at least 280 calories?



5. The response times for a certain ambulance company are normally distributed, with a mean of 12 minutes. Ninety-five percent of the response times are between 8 and 16 minutes.

- What is the standard deviation of the response times?
 $\sigma =$
- What percent of the response times are longer than 18 minutes?

