

Week-In-Review #10 (8.5, 8.6, 5.1)

- Let Z be the standard normal random variable. Calculate the following probabilities:
 - $P(-2 \leq Z < 0.22)$
 - $P(Z \leq 1.75)$
 - $P(Z > -0.35)$
- Let Z be the standard normal random variable. Find a such that
 - $P(Z < a) = 0.8158$
 - $P(Z > a) = 0.3257$
 - $P(-a < Z < a) = 0.6102$
- Let X be a normal random variable with $\mu = 260$ and $\sigma = 35$. Find each of the following.
 - $P(X < 200)$
 - $P(X \geq 180)$
 - The value of a such that $P(260 < X < a) = 0.22$
 - The values of a and b such that $P(a < X < b) = 0.4198$ if a and b are symmetric about the mean.
- Suppose weights of bags of snack mix are normally distributed with a mean of 10 ounces and a standard deviation of 0.6 ounces. What is the probability that a bag selected at random weighs
 - Between 9.5 and 11 ounces?
 - At least 9 ounces?
 - Less than 8.5 ounces?
- A study finds that the lifespan of phone batteries are normally distributed with a mean of 2 years and a standard deviation of 1.5 months.
 - What is the probability that a phone battery will have a lifespan between 22 and 26 months?
 - What battery lifespan corresponds to the 95th percentile?
- Find the amount of money at the end of 5 years on a \$200 deposit in an account paying simple interest at a rate of 4.75% per year. How much interest is earned?
- A bank deposit paying simple interest grew from an initial sum of \$2000 to a sum of \$2150 in 7 months. Find the interest rate.
- How much money will be in an account after 2 years on a \$500 deposit that earns interest at a rate of 5% per year compounded continuously?

9. If Mark invests \$5000 into an account paying interest at a rate of 8% per year compounded monthly, how much money will he have at the end of 5 years (assuming no additional deposits or withdrawals)?
10. In 18 months Brian needs \$1750 in order to buy a specific computer. If he finds an account paying interest at a rate of 5.95% per year compounded weekly, how much could he invest now in order to have the money he needs for the computer?
11. Kevin inherits \$50,000. If he invests it by placing it into an account paying interest at a rate of 10.5% per year compounded monthly, how long would he have to leave his money in the account before having \$100,000?
12. What interest rate, compounded daily, will quadruple \$1200 after 5 years?
13. A major credit card company has a finance charge of 1.5% per month on the outstanding indebtedness. Susie charged \$1000 and did not pay her bill for 6 months. What is the bill after the 6 months?
14. Which account would be a better account for an investment? For a credit card?
OPTION A: 9% per year, compounded monthly
OPTION B: 8.8% per year, compounded daily
OPTION C: 8.9% per year, compounded continuously
15. Determine whether the following statements are True or False.
 - (a) A normal curve with a higher variance is taller than one with a lower variance.
 - (b) In a normal distribution, approximately 99.73% of the data lies further than 3 standard deviations from the mean.
 - (c) A normal random variable with a mean of zero is the standard normal curve.
 - (d) The more times a year an account is compounded, the more interest that is earned.