

Final Review

Exponential vs. Linear Growth

Label if following are exponential or linear growth. If exponential find the approximate doubling or half-life time. Exponential or linear determine how big your quantity will be in the given time period.

1. The population of Boulder is increasing at a rate of 3% per year. If the population is 100,000 today, what will it be in 35 years?
2. The price of gas is decreasing by 4 cents per week. If the price is 3.20 today what will in be in 2 months?
3. The value of a car is decreasing by 8% a year. If the car is worth 15,000 today, what will it be worth in 25 years?

Doubling Time and Half-life

Do the following make sense.

4. Our town grows at a rate of 7% per year, so it will double in population every 10 years.
5. The half-life of Pu-239 is 24,000 years. If we have 10 lbs. then in 1 million years there will be nothing left.
6. The current population of threatened animal species is 1 million, but is declining at 7% a year. What is the half-life? How many animals will be left in 40 years? What about 70 years?

Experiments or Observations Studies

Say whether the following is an experiment, case-control observational, or observational study. Identify the treatment/control groups. Also state the population, sample, population parameters, and sample statistic. If it is an experiment say whether or not it is blinded, and if so if it is a single or double blind.

7. The Gallup Organization conducted a poll of 1200 adults to determine how Americans respond to the question "Do you think college coaches use physical force with their athletes?"
8. page 315 #38
9. page 315 #36
10. page 315 #40

Determine whether the following data sets are quantitative or qualitative.

11. A theater audience was asked what their favorite aspect of the movie was?
12. The set of all major league baseball parks in U.S.
13. The results from a poll asking "Are you in favor of war?"

Histogram and Central Tendencies

14. Consider the following set of data {11, 80, 56, 41, 36, 13, 82, 55, 33, 36, 15, 82, 47, 17, 57, 48, 36, 95, 49, 36, 22, 33, 44, 47, 51, 8, 3, 6, 77, 88, 99, 73, 68, 64}. With bins of 20 do the frequency table, histogram, and line chart. Find the mean, median, mode, range, and the standard deviation. Also approx. the standard deviation. Describe the distribution (ie # of peaks, skewness/symmetry, and big/small variation).

Probability

Do the following make sense?

15. The probabilities my sister gets into college of her choice is 3.7.
16. The probability I get a haircut is .6, and the probability I get new shoes is .5. So, the probability I get a haircut or new shoes is $.5 + .6$.

17. The car model you want comes with or without air conditioning, with or without a sun roof, with or without a CD-ROM, and in 8 colors, blue, yellow, green, red, orange, yellow, brown, black.
- (a) What is the probability of getting either a red or blue car?
 - (b) What is the probability of getting a blue car with air conditioning, with a CD-ROM, and without a sunroof?
18. If you roll 2 die, what is the probability the total is 3?
19. Are the following events independent or dependent, and find $P(A)$, $P(B)$, $P(A \text{ or } B)$.
- (a) Out of a 52 card deck you draw a queen.
 - (b) Out of a 52 card deck you draw a club.
- (a) Roll a 4 on a dice.
 - (b) Roll an even number on a dice.
- (a) Flip 3 head in a row on a fair coin.
 - (b) Flip 3 tails in a row on a fair coin.
20. You have lost 24 slot pulls in a row. The probability to hit a slot pull is 25%. What is the probability you hit your next pull.
21. How many different 5 card hands can be dealt from a deck with 52 cards?(An ace of spades is considered different from an ace of clubs)
22. How many ways can you order 5 books on a shelf?