

Math 141 Help Session Interview Questions

- How many three digit numbers between 000 and 599 have a 4 in them?
- Box A has 2 blue and 3 green marbles. Box B has 4 green and 6 red marbles. You choose a marble from Box A. If it is blue you put it into Box B. You then choose a marble from Box B.
 - Draw a tree diagram representing this situation. Label the branches of the tree with the appropriate probabilities.
 - Find the probability that you choose a green marble from Box A, if you choose a red marble from Box B.
- Given the following, solve for $a, b, c,$ and d .

$$3 \begin{bmatrix} 0 & -1 \\ 1/3 & 1/3 \end{bmatrix} \begin{bmatrix} 2 & -4 \\ a & 5 \end{bmatrix} - \begin{bmatrix} 6 & b \\ c & 7 \end{bmatrix} = \begin{bmatrix} 9 & -8 \\ 0 & d \end{bmatrix}^T$$

- Equation A: $3p + 2x - 6 = 0$ Equation B: $2p - 4x - 2 = 0$
 - If the given equations are the supply and demand functions for a market, which equation is which?
 - Find the equilibrium point for the market and explain its meaning.
- You choose a letter at random from the words TEXAS AGGIES.
 - Write a uniform sample space for this experiment.
 - Write a non-uniform sample space for this experiment.
 - Find the total number of events associated with each of the above sample spaces.
- You choose 4 cards at random from a standard 52-card deck. What is the probability that you choose at least two hearts?
- Link has a total of \$17,300 to invest. He decides to invest in three different companies. The QX company costs \$130 per share and pays dividends of \$1.50 per share each year. The RY company costs \$75 per share and pays dividends of \$1.00 per share each year. The KZ company costs \$90 per share and pays \$2.00 per share per year in dividends. Link wants to have twice as much money in the RY company as in the KZ company. Link also wants to earn \$251 in dividends per year. How much should Link invest in each company to meet his goals?

8. Matrix F below shows the number of stuffed animals sold at a local shop during a month. The daddy animals sell for \$7.00, the mommies for \$6.00 and the babies for \$4.00. Find a matrix G such that the product of matrix G and matrix F will show the revenue, R, for selling each kind of animal.

$$F = \begin{matrix} & \begin{matrix} \textit{Daddy} & \textit{Mommy} & \textit{Baby} \end{matrix} \\ \begin{matrix} \textit{Horse} \\ \textit{Dog} \\ \textit{Cat} \end{matrix} & \left[\begin{array}{ccc} 2000 & 500 & 1250 \\ 1000 & 3000 & 500 \\ 1500 & 900 & 2000 \end{array} \right] \end{matrix}$$

9. Shade the region $(A \cap B) \cup C^C$ on a Venn diagram.
10. A sample of movie theater seats is examined and the number of pieces of gum under each seat is counted. The table below shows the results of this experiment:

Number of Seats	11	10	9	8	7	6	5	4
Number of Pieces of Gum	1	2	3	4	5	6	7	8

Find the following: Mean, Median, Mode, Variance and Standard Deviation

11. The weight of a medium apple can be closely approximated by the normal distribution with a mean of 200 grams and standard deviation of 12 grams. What is the weight of an apple in the 80th percentile? In a group of 50,000 apples, how many will weigh less than 180 grams? What weights bracket the middle 50% of the population?
12. After a spending spree with your new credit card, you find you owe \$2500. You cut up the card and start paying the account off. You make the minimum payment of \$50 per month. The annual interest rate is 21% compounded monthly on the remaining balance. How long until the account is paid off?
13. The Floral Factory makes three kinds of corsages: Junior, Deluxe and Grande. Each Junior corsage uses 1 flower, 2 accessories and 10 minutes of labor. Each Deluxe corsage uses 2 flowers, 3 accessories and 15 minutes of labor. Each Grande corsage uses 4 flowers, 6 accessories and 20 minutes of labor. The shop has 40 flowers and 80 accessories in inventory and 6 hours of labor available. If a Junior corsage sells for \$5, a Deluxe for \$8 and a Grande for \$12, how many of each type of corsage should be made to maximize the revenue for the Floral Factory? **Set up this problem, but do not solve it.**