CSUSM
STEM Success Center

Math 101: Probability

1. You have a standard shuffled deck of cards.
    a. What is the probability of pulling a any queen?

    b. What is the probability of pulling a number card valued 2-7 of hearts?

    c. What is the probability of pulling two face cards in a row?

2. You have two 6 faced fair die.
    a. What is the probability of rolling a 5 of any combination?

    b. What is the Probability of rolling 6 with one of the dice showing a 2?

3. A particular genetic condition affects 4.25% of the population in a county of 15,000. Suppose there is a test for the condition that has an error rate of 1.625% (i.e., 1.625% false negatives and 1.625% false positives).

Fill in the table below.

	Has Condition	Does not have condition	Totals
Test positive			
Test negative			
Totals			

4. In how many ways can I arrange the six letters A, B, C, D, E, F?

5. five cards from a full deck are drawn. Write each probability in decimal form
    a. What is the probability that they are all black?

    b. What is the probability that they are all clubs?

Solutions

1. You have a standard shuffled deck of cards.
    a. There are 4 queens in a deck of 52 cards 4/5 $=\frac{1}{13}$

    b. The number of cards valued 2-7 is 24 out of 52 cards 24/52= $\frac{3}{26}$

    c. There are 16 face cards in a deck of 52 cards the probability (16/52)*(15/51)= $\frac{20}{221}$
2. You have two 6 faced die.
    a. There are two combinations to roll a 5: (2/6)*(2/6)= $\frac{1}{9}$

    b. One of the dice must be a 2 while the other must be a 4: (1/6)*(1/6)=$\frac{1}{36}$
3. A particular genetic condition affects 4.25% of the population in a county of 15,000. Suppose there is a test for the condition that has an error rate of 1.625% (i.e., 1.625% false negatives and 1.625% false positives).
4. Fill in the table below.

	Has Condition	Does not have condition	Totals
Test positive	637-10=627	0.1625*14363=233	860
Test negative	.01625*637=10	14363-233=14130	14140
Totals	0.0425*15000=637	15000-637=14363	15000

5. 8! Or 40320

6. five cards from a full deck are drawn. Write each probability in decimal form (show 4 decimal places)
    a. (26/52)*(25/51)*(24/50)*(23/49)*(22/48)=0.0253
    b. (13/52)*(12/51)*(11/50)*(10/49)*(9/48)=0.0004