

Name: _____

1. We have a vase with 4 red balls, two green balls, three blue balls and 6 purple balls. We will select two without replacement.
 - (a) Find probability that we select two red balls.
 - (b) Find probability that we select one red and one green ball.

2. Look at the following table for the outcome of an experimental drug.

	Drug A success	Drug A Failure
Male	6	7
Female	23	33

- (a) Compute the probability that a randomly selected person in the survey was male.
- (b) Compute Probability of success for Drug A given that the participant was male.
- (c) Compute Probability that the participant was male given that the drug was successful (Use Bayes' Rule).

3. Let $f(x) = \frac{1}{3}e^{-x/3}$ for $x \geq 0$ be the probability function for some random variable X .
- (a) Compute $Pr(X \geq 2)$.
 - (b) Compute $Pr(X \geq 5|X \geq 3)$.
 - (c) Compare your answers to Problem 3a and Problem 3b

4. Roll a four sided die with the following probability table.

x	1	2	3	4
$f(x)$	0.4	0.3	0.2	?

Compute μ_X , $VAR(X)$, $SD(X)$ and $CV(X)$.

5. Let X be a continuous RV with PF defined below.

$$f(x) = \frac{1}{4}e^{-x/4} \text{ for } x \geq 0$$

Compute μ_X , $VAR(X)$.

6. Find the MGF for

(a) $Pr(X = -1) = 1/3, Pr(X = 2) = 2/9, Pr(X = 1) = 1/9$ and $Pr(X = 2) = 1/3$.

(b) $f(x) = \frac{1}{2}x$ for $0 < x < 2$.

7. Compute $E(X)$ and $\text{VAR}(X)$. for the following

(a) Let $M(t) = \frac{1}{1-t}$ be the MGF for some RV X .

(b) Let $M(t) = e^{3t}$ be the MGF for some RV X .

8. Let X be a continuous RV with pdf $f(x) = c \frac{1}{(1+x)^3}$ for $x \in (0, \infty)$.

- (a) Compute C .
- (b) Compute $E(X)$ and $VAR(X)$

9. Let X be a continuous RV with pdf $f(x) = 3x^2$ for $x \in (0, 1)$.
- (a) Let $Y = X^2$. Find the pdf for Y .
 - (b) Let $Z = 3X + 2$. Find the pdf for Z .