MATH M118 Sample Test #3 Chapters 5 and 6 Name: _____ ID#: _____

Note: a copy of Table B will be provided on the actual test.

Circle your answers. Partial credit will be awarded.

1. There are 10 light bulbs in a carton, and 3 of them are defective. Suppose 2 light bulbs are randomly selected (without replacement) and let X be the random variable which is defined to be the number of defective light bulbs selected. Construct the probability density function.

2. A random selection of 2 coins is made from a collection of coins containing 3 nickels, 2 dimes, and 1 quarters. What is the expected value of the coin selected?

3. A waitress receives varying amounts in tips each day. Rather than keep detailed records, she simply records \$5 if the amount is \$10 or less, \$15 if the amount is between \$10 and \$20, and \$25 if the amount is \$20 or more. View the amounts recorded as a random variable X and given the density function below, calculate the expected value of X.

Outcome	Value of X	Probability
\$0 - \$10	\$5	0.25
\$10 - \$20	\$15	0.20
\$20 - up	\$25	0.55

4. A bag of 800 unfair pennies is dumped onto a table top. The probability of heads is .6 on every penny in the bag. What is the standard deviation for the number of heads that will appear?

5. Find the standard deviation for the probability density function with E[x] = 1.25

X	P
-2	.10
-1	.15
0	.15
1	.10
3	.50

6. What percent of the adult male population is taller than a man who measures 6 foot 5 inches tall, if the mean is 5 foot 9 inches and the standard deviation is 3 inches?

7. A study shows that the mean number of lights from a lighter is 800 and the variance is 36. If the study is correct, find the number M such that the following claim is legitimate: " 80 percent of the lighters will give more than M lights.

8. Solve using the All Integer Method

$$\begin{aligned} -2x + 3y &= 13, \\ 5x - y &= -\tfrac{13}{2} \end{aligned}$$

9. Solve using the All Integer Method

$$\begin{aligned} 2x + 2y + z &= 6, \\ 4x - 3y + z &= -8, \\ -2x - 6z &= 5 \end{aligned}$$

10. Complete the solution using the All-Integer Echelon method.

x	y	z	1
1	–2	9	6
0	0	0	0
0	2	4	6

Let A, B, and C be the following matrices. Perform the indicated operation, if possible.

$$A = \begin{bmatrix} 3 & -1 & 2 \\ 0 & 3 & 0 \\ -1 & 0 & 1 \end{bmatrix}, \quad B = \begin{bmatrix} -1 & 2 & 3 \\ -4 & 0 & 1 \\ 0 & -2 & 1 \end{bmatrix} \quad \text{and} \quad C = \begin{bmatrix} 1 & 0 \\ -2 & 3 \end{bmatrix}$$

11. $A + B$

12. $-3C$

13. AB

14. C^t

15. Find A^{-1}, if it exists.

$$A = \begin{bmatrix} 1 & 0 & 3 \\ 0 & -2 & 0 \\ 4 & 0 & 0 \end{bmatrix}$$