

**A.P. Statistics**  
**Assignment 6-1**

**Remember to show your thinking through your work.**

1. Given the following probability distribution, find  $P(X=3)$ .

X	1	2	3	4	5
P(X)	.4	.1		.15	.2

2. A study of social mobility in America examined the social class attained by the sons of lower class fathers. Social classes were numbered from 1 to 5 with 1 representing the lower class and 5 the higher class. Consider the random variable  $X$  to the class of a randomly chosen son. The study found the following distribution:

Son's Class	1	2	3	4	5
Probability	0.48	0.38	0.08	0.05	0.01

- a. What percent of the sons reached the highest class?

- b. Check that this distribution meets the requirements of a discrete probability distribution.

- c. What is  $P(X < 2)$ ?

- d. What is  $P(X \leq 2)$ ?

- e. Write the event: a son of a lower class father attains one of the highest two social classes in terms of  $X$ .

3. The number of cars an American family owns follows the distribution below:

Number of Cars	0	1	2	3	4	5
Probability	0.09	0.36	0.35	0.13	0.05	0.02

a. Verify that this is a legitimate probability distribution.

b. Interpret (in words) the notation  $P(X > 2)$ .

c. Interpret (in words) the notation  $P(X \geq 2)$ .

d. Find  $P(X > 2)$ .