**Fall 2010 STAT 511 Solution to Midterm Exam**

1. 0.80
2. 216
3. 0.10
4. 13
5. 6
6. 32
7. 3.2
8. unbiased
9. d
10. d
11. b
12. c
13. a
14. b
15. h
16. **ANSWER**
17. P(at least one F among 1st 3) = 1 – P(no F’s among 1st 3)

 =1 - 

An alternative method to calculate P(no F’s among 1st 3) would be to choose none of the females and 3 of the 4 males, as follows:

  = obviously producing the same result.

 b. P(all F’s among 1st 5) =  = 

1. **ANSWER to the gas problem**

   

 

 

 

 Therefore,

 

 

 

1. *P* = .21
2. *P*(*B*) = 
3. P(





1. **ANSWER:**

a. 

b. = .40 +.15+0.0 +.25 +.20 = 1.0

c. 

d. $F\left(x\right)=0 if x<0;F\left(x\right)=0.1 if 0\leq x<1;F\left(x\right)=0.25 if 1\leq x<2;$
$$F\left(x\right)=0.7 if 2\leq x<3;F\left(x\right)=0.95 if 3\leq x<4;F\left(x\right)=1 if x\geq 4. $$

1. **ANSWER to the binomial problem**

Let *S* represent a telephone that is submitted for service while under warranty and must be replaced. Then *p* = *P*(*S*) = *P*(replaced | submitted)*P*(submitted) = (.40)(.25) = .10. Thus, *X*, the number among the company’s 10 phones that must be replaced, has a binomial distribution with

 

1. **ANSWER to Time headway**

a. 

 

1. 
2. 

 



1. **ANSWER:**

a. 

b. The marginal pdf of *X* is 



1. **ANSWER fertilizer**



 

 