MA 110 WORKSHEET (8.2) “EXTRA WORKSHEET 2”

Name __Solutions________________________

1. A shipment of 50 hand-held digital planners, including four that are defective, is sent to a large electronics store.
   
   A. If one planner is selected, what is the probability that it is defective?
      
      4/50
   
   B. If three planners are selected, what is the probability that all three are defective?
      
      \[
      \frac{\binom{4}{3}}{\binom{50}{3}} = \frac{4}{19,600} \quad \text{or} \quad \frac{4 \cdot 3 \cdot 2}{50 \cdot 49 \cdot 48} = \frac{24}{117,600}
      \]
      
      C. If three planners are selected, what is the probability that exactly two are defective?
      
      \[
      \frac{\binom{4}{2} \cdot \binom{46}{1}}{\binom{50}{3}} = \frac{276}{19,600}
      \]
      
      D. If three planners are selected, what is the probability that exactly at least two (that is exactly two or all three) are defective?
      
      \[
      \frac{4}{19,600} + \frac{276}{19,600} \approx 0.0143 \quad (\text{part B + part C})
      \]
      
      E. If the original shipment of 50 hand-held digital planners, with 4 defective were representative of a larger batch of 2400 planners, how many planners would you expect to be defective in this larger batch of 2400?
      
      \[(4/50)(2400) = 192\]