

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?

$$\frac{C_{4,3}}{C_{50,3}} = \frac{4}{196,000} \text{ or } \frac{4}{50} \cdot \frac{3}{49} \cdot \frac{2}{48} = \frac{24}{117,600}$$

C. If three planners are selected, what is the probability that exactly two are defective?

$$\frac{C_{4,2} \cdot C_{46,1}}{C_{50,3}} = \frac{276}{196,000} \text{ or } C_{3,2} \cdot \left( \frac{4}{50} \cdot \frac{3}{49} \cdot \frac{46}{48} \right) = 3 \cdot \left( \frac{4}{50} \cdot \frac{3}{49} \cdot \frac{46}{48} \right) = \frac{4968}{117,600}$$

D. If three planners are selected, what is the probability that exactly at least two (that is exactly two or all three) are defective?

$$\frac{24}{117,600} + \frac{4968}{117,600} = \frac{4992}{117,600} \text{ (part B + part C)}$$

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?

$$(4/50)(2400) = 192$$