

MAT 114 – 001
Review for Text Three
Show all work.

1. A and B are sets. $n(A) = 70$, $n(B) = 8$, and $n(A \cap B) = 50$. Determine $n(A \cup B)$.

2. The universal set $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 3, 5, 7, 9\}$, $B = \{2, 4, 6, 8, 10\}$, and $C = \{1, 3, 4, 5, 8, 9\}$.
 - 2a. Find $n(A')$.
 - 2b. Find $n(B \cup C)$.
 - 2c. Find $n(A \cup (B \cap C))$.
 - 2d. Find $n(A \times B)$.

3. A candy manufacturer makes 5 kinds of brown chocolate candies and 3 kinds of white chocolate candies. A sample package contains 2 kinds of brown and 2 kinds of white chocolate candies. How many different sample packages can be prepared?

4. 6 runners are competing in a 100-meter race. In how many ways can runners finish in first, second, and third?

5. How many 3-digit numbers can be formed using the digits $\{1, 2, 3, 4, 6, 7, 8\}$ if repetitions are not allowed? How many of those 3-digit numbers are odd?

6. A committee of 5 is selected from 5 men and 6 women. How many committees are possible if there must be at least 3 men on the committee?
7. There are 12 freshmen and 9 sophomores in a class. 3 students are selected for a committee. What is the probability that the committee consists of 2 freshmen and 1 sophomore?
8. The probability of a preschool child contracting chicken pox is 0.75, the probability of contracting measles is 0.24, and the probability of contracting both is 0.18. Find the probability of a preschool child contracting measles or chicken pox.
9. A furniture company makes desks. Inspectors find that the probability that a desk has a structural defect is 0.04, the probability that it has a defect in finish is 0.09, and the probability that a desk has both kinds of defects is 0.02. Find the probability that it has a structural defect given that it has a defect in finish.