



MATH 110: General Education Math

Fall 2026

Worksheet 1

Name: _____

1. A pharmacy needs a lead pharmacist and a backup pharmacist, chosen from its 5 pharmacists, and 3 pharmacy technicians with no distinct roles, chosen from its 8 technicians. In how many ways can these positions be filled?

2. The hospital cafeteria's lunch special is either a bowl of soup with a roll, or a salad. There are 4 soups and 3 kinds of rolls to choose from. A salad comes with 2 different toppings, chosen from 6 toppings. How many different lunch specials are possible?

3. A committee of 3 will be chosen from 5 nurses and 4 doctors, and the committee members have no distinct roles. The committee must have more nurses than doctors. How many different committees are possible?

4. A coin is tossed 8 times. How many of the possible sequences of heads and tails contain at least 2 heads?

5. A hospital's Wi-Fi password has 4 characters, each of which is a lowercase letter (a–z) or a digit (0–9). Letters and digits may be repeated. How many possible passwords contain at least one digit?

6. A team of 5 will be chosen from 8 nurses and 6 medical assistants, and the team members have no distinct roles. How many different teams include at least one nurse and at least one medical assistant?

7. A hospital surveyed 120 of its employees. Of these, 70 had received a flu shot this season, 45 had received a COVID-19 booster, and 30 had received both.

(a) How many of the employees had received at least one of the two?

(b) How many had received neither?

(c) How many had received exactly one of the two?

8. The lockers in a clinic's staff room open with 3-digit codes, such as 070. Each digit can be any of 0 through 9, and digits may be repeated. How many codes begin with 7 or end with 7?

9. A hospital unit needs a charge nurse and 4 staff nurses with no distinct roles for the night shift, all chosen from its 12 nurses. No nurse can fill more than one position. Two of the nurses, Dana and Eli, carpool to work, so either both of them work the night shift or neither of them does. In how many ways can the night shift be staffed?

10. A committee of 5 will be chosen from 7 nurses and 6 doctors, and the committee members have no distinct roles. The committee must include at least one nurse and at least one doctor. In addition, Nurse Kim and Dr. Patel refuse to serve on the committee together. How many different committees are possible?