

Course Readiness

Prerequisite self-check for Intro to Counting 1

If you are comfortable with arithmetic, fractions, integer powers, basic algebra, and organizing simple cases carefully, then you are ready to begin **Intro to Counting 1**. Answers appear on the final page.

1. Evaluate

$$3(14 - 8) + 2^4.$$

2. Write the following as a single fraction in lowest terms:

$$\frac{3}{4} + \frac{5}{6}.$$

3. Solve for x :

$$5x + 7 = 3x + 25.$$

4. Expand and simplify:

$$(x + 3)(x - 2).$$

5. Factor completely:

$$x^2 + 7x + 12.$$

6. List all ordered pairs of positive integers (a, b) satisfying

$$a + b = 7.$$

7. A badge consists of one letter chosen from A, B, C followed by one digit chosen from 1, 2, 3, 4. How many different badges are possible?

8. The sequence

$$2, 5, 8, 11, \dots$$

continues with the same pattern. What is its 20th term?

9. A fair six-sided die is rolled once. What is the probability that the result is greater than 4?

10. In a group, 18 students enjoy chess, 12 enjoy football, and 5 enjoy both. How many students enjoy at least one of the two activities?

Answer Key

The answers below are intentionally brief. In the course, class discussions and problem sets will emphasize systematic organization, careful casework, and clear explanations.

1. 34.
2. $\frac{19}{12}$.
3. $x = 9$.
4. $x^2 + x - 6$.
5. $(x + 3)(x + 4)$.
6. The ordered pairs are
 $(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)$.
7. 12 badges. There are 3 choices for the letter and 4 choices for the digit.
8. 59, since each term is 3 more than the preceding term.
9. $\frac{2}{6} = \frac{1}{3}$.
10. $18 + 12 - 5 = 25$ students.

What is not required before the course?

You do not need prior knowledge of permutations, combinations, complementary counting, probability formulas, double counting, or the Binomial Theorem. These ideas are developed in Intro to Counting 1.