# 03/07/2025: Catch-Up Day

CSCI 246: Discrete Structures

Textbook reference: None

## Graded Quiz Pickup

Quizzes are in the front of the room, grouped into four bins (A-G, H-L, M-R, S-Z) by last name. The quizzes are upside down with your last name on the back. Come find yours before, during, or after class. Only turn the quiz over if it's yours.

## Today's Agenda

- Problems quiz (15 mins)
- Course feedback ($\approx$ 10 mins)
- Group exercises ($\approx$ 20 mins)

# Feedback on Wednesday's Quiz

# Scores On Reading Quiz (Binomial Coefficients)

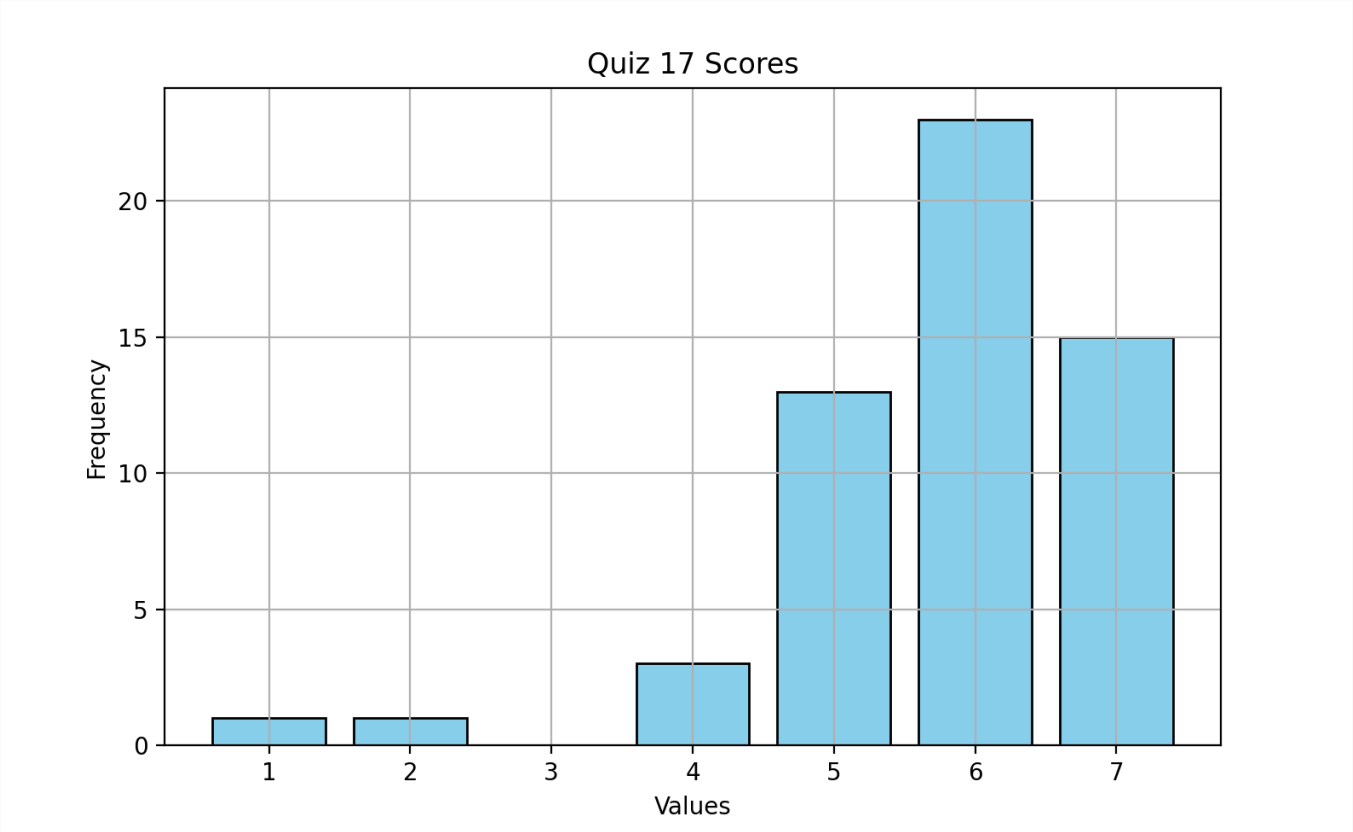
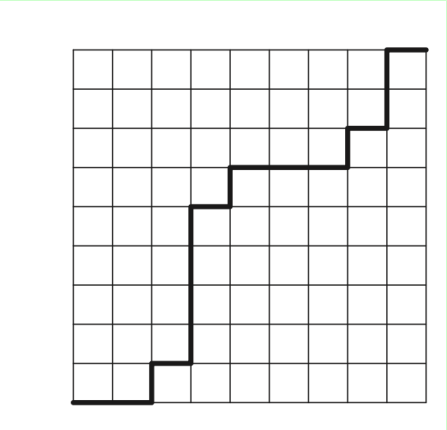



**Figure 1:** Median Score = 6/6 (100%)

# Counting Lattice Paths

## Original Problem

Suppose we want to count the number of grid paths from the lower left corner to the upper right corner in which each step of the path either goes one unit to the right or one unit vertically. How many paths are there?



## Erik's Problem

How many paths would there be if the paths were allowed go down and backwards, but not cross itself?

## Status

This is still open! I asked one of the smartest people I know, and he said:

"I feel like you are trying to nerd snipe me right now while Emily wants me to do chores." Later: "I'm unsure of an answer but this is a fun problem."

# Problems Quiz

## Problems Quiz (Equivalence Relations, Partitions, and Functions)

1. Let $A = \{1, 2, 3, 4\}$ and $B = \{5, 6, 7\}$. Let $f$ be the relation

$$f = \{(?, ?), (2, 6), (3, 6), (4, 7)\}$$

   Find replacements for (?,?) so that each of the following is true.

   a. The relation $f$ is not a function from $A$ to $B$.
   b. The relation $f$ is a function from $A$ to $B$ but is not onto $B$.
   c. The relation $f$ is a function from $A$ to $B$ and is onto $B$.

2. Fourteen people join hands for dance. Suppose seven of these people are men, and the other seven are women.

   a. In how many different ways can they join hands for a circle dance, assuming they alternate in gender around the circle?
   b. How many different ways can they join hands for a line dance, assuming they alternate in gender along the line?

3. Prove Proposition 15.11: Let $R$ be an equivalence relation on the set $A$ and let $a, x, y \in A$. If $x, y \in [a]$, then $xRy$.

# Course Feedback

## Course Feedback Instructions

Please write your name on a piece of paper and answer the questions below.

## Course Feedback

1. What aspects of the course so far are you enjoying?
2. What aspects of the course so far are you **not** enjoying?
3. What aspects of the course so far are helping with your learning?
4. What aspects of the course so far are hindering your learning?
5. What other comments would you like to make about the course so far (e.g. proposed tweaks)?

# Group exercises (Binomial Coefficients)