



Middlebury

CSCI 200: Math Foundations of Computing

Spring 2026

Lecture 1M: Propositions

Goals for today

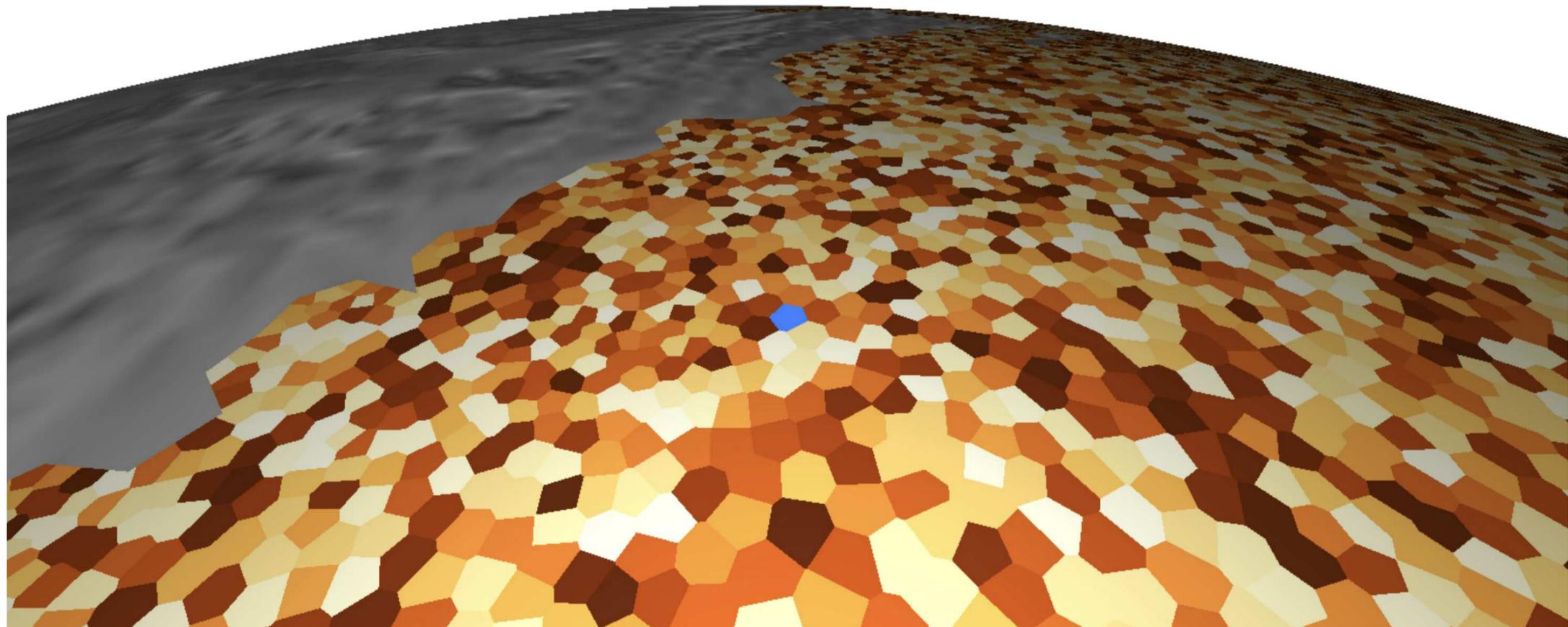
- Introduce ourselves.
- Introduce the course:
 - What will we be doing and how?
 - What will you know at the end of the semester?
- Define **propositions, predicates, and proofs**.

Visit [go/cs200](https://go.cs200), click on **Reactions** tab, then click one of the emojis.
Use this any time! (during class)

Course objectives:

Primary goal: enhance your **problem-solving** skills for computer science applications.

- working with your peers,
- communicating your solutions.

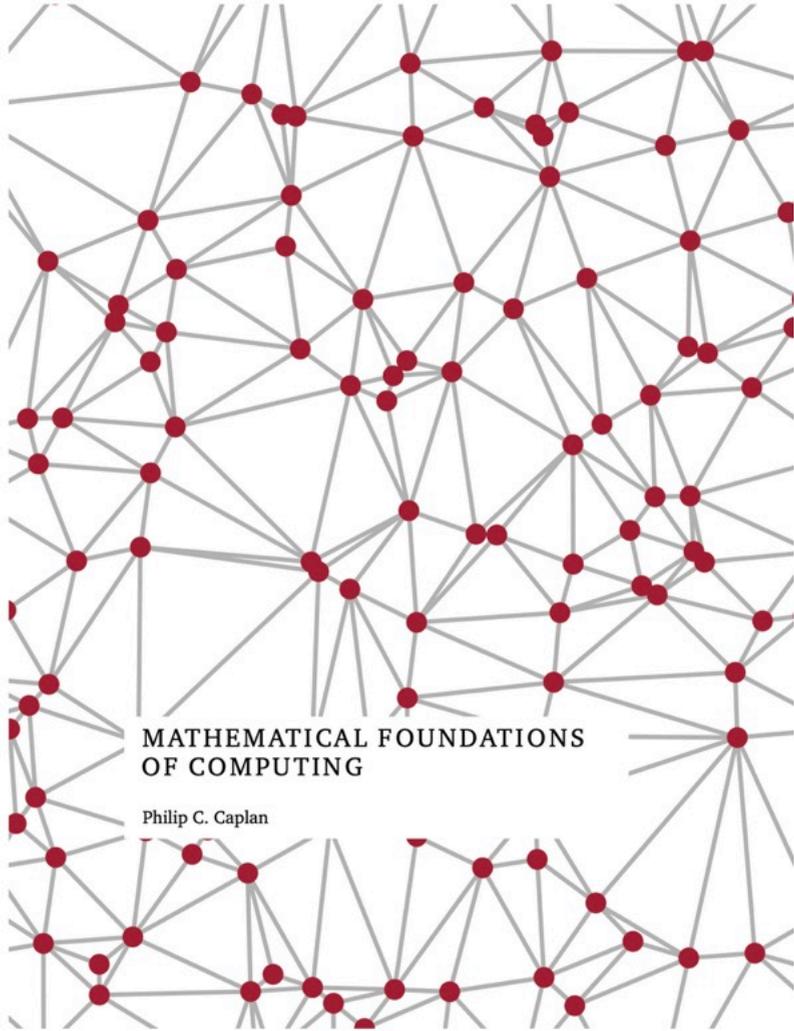


Course logistics:

- New material will be covered in class (annotated slides posted afterwards).
- **Problem Sets: (15%)**
 - Due on (most) Fridays, see problem lists in **Assignments** page on course website.
 - Solutions will be available when problems are released.
 - Each problem graded **complete/incomplete**.
 - Handwritten, submitted on **paper** (please print a copy if written digitally).
- **Quizzes: (15%), closed-book**
 - 15 minutes on Fridays in which Problem Sets are due. Re-solving 1 problem from the Problem Set.
- **Labs: (10%)**
 - Rest of class on Fridays. Will involve more practice problems and an opportunity to typeset solutions using Markdown and LaTeX. Will sometimes have a **Python** programming component.
 - Developed in notebooks, submitted to Gradescope.
 - All labs are due at the end of the semester. You can submit/resubmit as many times as you want and grading requests must be made via the form linked in the Gradescope **Autograder Results** section.
- **Exams: (60%), open-book**
 - 15 questions total split into three exams: Midterm 1 (4 questions), Midterm 2 (5 questions), Final (6 questions).
 - Each question is worth 5% of the final grade and only your **top 12 questions count** ($12 \times 5\% = 60\%$).
 - **Only the provided book is allowed.** You can take notes in the book (margins, blank pages) but extra sheets are not allowed. No other resources. Internet and AI are not permitted for the exams.

Book, AI usage, and attendance.

- This is *your* copy to keep (printing cost paid using CS department funding). Problem Sets will be drawn from the end-of-chapter problems. The PDF will not be posted.
- **Please come to class!** Grade modifiers +/- may be used based on attendance records.
- You are allowed to use AI for Problem Sets and Labs. But AI is not allowed for Quizzes and Exams.
 - Be careful how much you use it though. AI can be wrong, and relying on it can interfere with your learning experience.



computing
?
with/together

combination
communication
community
computer

What is a proof?

demonstrating that something is true.
→ ? what is this.

laying out a quantitative foundation for
a mathematical true.

A proof is a method for ascertaining a truth.

A *proposition* is a statement that is either true or false.

- ✓ • $1 + 1 = 2$. (true)
- ✗ • What did you do over break?
- ✗ • Pass the salt, please.
- ✓ • It was sunny on Monday.

Monday which Monday?

Monday	sunny?
Feb. 2	?
Feb. 9	T

A *predicate* is a proposition that depends on some variables.

$p(x) =$ "We have class on x "

x	$p(x)$
M	T
T	F
W	T
R	F
U	T

Which of the following are propositions?

Visit Reactions page on course website to vote.

- 1. Everyone likes spaghetti.
- 2. The product of 2 and 5.
- 3. $2 + x = 10$. *→ predicate*

- A. 1
- B. 2
- C. 3
- D. 1 and 2
- E. 1 and 3 *ok*

A	B	C	D	E										
1	79	2	4	39	0	0	0	0	4	0	0	6	2	19



Theorem: Given a planar right triangle with side lengths a , b and c (meaning there is one angle of 90° , which we will take to be opposite the side with length c), then $c^2 = a^2 + b^2$.

Proof:

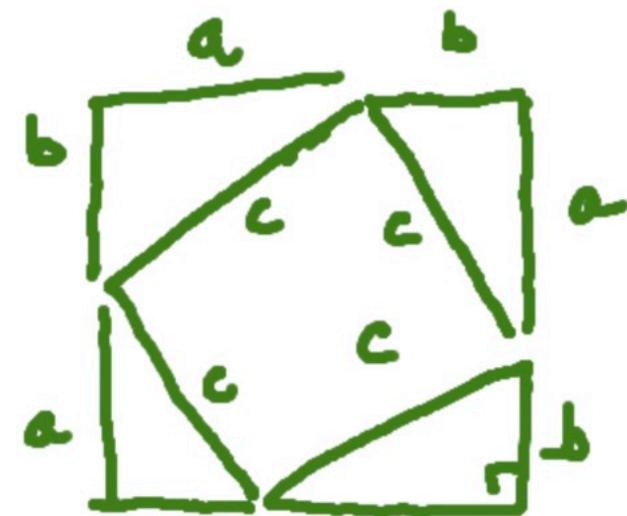
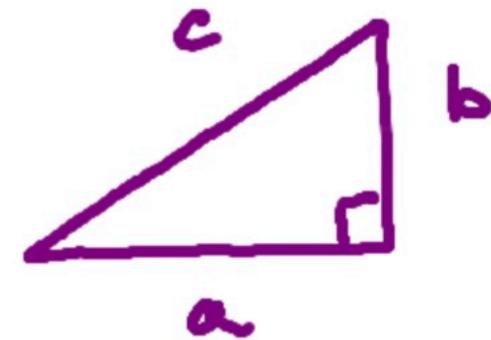
$$\Delta_{abc} = \frac{1}{2} ab$$

$$\square_c = c^2$$

$$\square_{a+b} = (a+b)^2 = a^2 + 2ab + b^2$$

$$\square_{a+b} = \square_c + 4 \Delta_{abc} = a^2 + \cancel{2ab} + b^2 = c^2 + 4 \left(\frac{1}{2} ab \right) = c^2 + \cancel{2ab}$$

$\hookrightarrow a^2 + b^2 = c^2$ QED



See you on Wednesday!

- Bookmark [go/cs200](#).
- Familiarize yourself with the syllabus, calendar, annotated notes from today (which will be posted after class).
- Get a copy of the book!
- Please complete the [Intro Survey](#).
- Problem Set 1 problems are listed in the **Assignments** tab on the course calendar (due on Friday). Remember Problem Sets are graded based on effort (1 problem will be drawn from this list for the quiz on Friday).