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How many hands did my wife shake?
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- If you’ve seen this problem before, raise your hand (please, no spoiling)
How many hands did my wife shake?

- If you’ve seen this problem before, raise your hand (please, no spoiling)
- Think about it, then work with a neighbor or two
How many hands did my wife shake?

- If you’ve seen this problem before, raise your hand (please, no spoiling)
- Think about it, then work with a neighbor or two
- I’m looking for a proof that your answer is correct
A proof (sketch)

• Each person shook 0–6 hands.
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- Each person shook 0–6 hands.
- For every $0 \leq n \leq 6$, 1 person shook $n$ hands.
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- For every $0 \leq n \leq 6$, 1 person shook $n$ hands.
- Someone shook 6 hands (call him/her $p6$).
A proof (sketch)

• Each person shook 0–6 hands.
• For every \( 0 \leq n \leq 6 \), 1 person shook \( n \) hands.
• Someone shook 6 hands (call him/her \( p_6 \)).
• Someone shook 0 hands (call him/her \( p_0 \)).
A proof (sketch)

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• For every $0 \leq n \leq 6$, 1 person shook $n$ hands.
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• $p_6$ is married to $p_0$. 
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- $p_6$ is married to $p_0$.
- Similarly $p_5$ is married to $p_1$ and $p_4$ is married to $p_2$. 
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- $p_3$’s spouse also shook 3 hands.
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- 2 married people shook 3 hands each.
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- Since I got different responses from everyone, I must be one of them, and my wife must be the other.
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\[ \therefore \text{My wife shook 3 hands.} \]
Theory in Practice

In theory, there’s no difference between theory and practice.
In theory, there’s no difference between theory and practice. But in practice, there is.
In theory, there’s no difference between theory and practice. But in practice, there is.

A use of theory in my research: RoboCup soccer
Good Afternoon, Colleagues

Welcome to a fun, but challenging course.
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Goal

• Learn about and appreciate CS Theory (discrete math)
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Goal

- Learn about and appreciate CS Theory (discrete math)
  - For students who appreciate mathematical elegance
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Goal

- Learn about and appreciate CS Theory (discrete math)
  - For students who appreciate mathematical elegance
  - For students who focus more on applications
Good Afternoon, Colleagues

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Goal

● Learn about and appreciate CS Theory (discrete math)
  – For students who appreciate mathematical elegance
  – For students who focus more on applications

● Make sure you’re comfortable with rigorous proofs
A Walk through the Syllabus

Official syllabus is on-line
Workload Summary

- Pre-class learning (video modules and/or reading)
Workload Summary

• Pre-class learning (video modules and/or reading)

• Pre-class questions  

5%
Workload Summary

- Pre-class learning (video modules and/or reading)
- Pre-class questions 5%
- Class participation 15%
Workload Summary

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- Homework Assignments (written) 20%
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- 2 Midterms 30%
Workload Summary

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- Pre-class questions 5%
- Class participation 15%
- Homework Assignments (written) 20%
- 2 Midterms 30%
- Final 30%
Assignments for Tuesday

● Read the syllabus
Assignments for Tuesday

- Read the syllabus
- Join Piazza
Assignments for Tuesday

• Read the syllabus

• Join Piazza

• Post something on Piazza
Assignments for Tuesday

- Read the syllabus
- Join Piazza
- Post something on Piazza
- First 2 modules with associated readings
Assignments for Tuesday

- Read the syllabus
- Join Piazza
- Post something on Piazza
- First 2 modules with associated readings
- Look at first HW assignment (requires module 3 to complete)