

Title: “The Curious Case of P vs NP”

Minutes 0:00–2:00 — The Live Detective Game

Characters on Stage:

- **Victim (Student A):** Pretend to fall mid-scene.
- **Suspects:** 3 friends (Students B, C, D).
- **Detective (You):** The presenter.

Scene Setting (30s):

You enter dramatically, shouting:

“A murder has taken place in this very room! But don’t worry, I’m the best detective in town.”

Point to the victim:

“Our poor victim here has been ‘*killed*’. But don’t worry—they’re just bad at acting.”

Bring up your 3 suspects and announce:

“Here are the only three people who were near the victim.”

Clues Presentation (1 min):

Hold up or write on the board 3 short, vague clues. Example:

- Clue 1: The killer was holding a pen.
- Clue 2: The killer is left-handed.
- Clue 3: The killer was wearing black shoes.

(You could coordinate this beforehand with one of your friends who matches all clues.)

Then ask the class:

“Based on these clues, who do you think is the killer? Shout out your guesses!”

Take answers for 15 seconds.

Then dramatically point to the correct suspect:

“YES! It was YOU!”

Let the audience cheer/laugh. Then drop this line to transition:

Minute 2:00–2:10 — The Real Mystery Begins

“Now... why did I make you solve a murder in 2 minutes? Because this silly little game hides one of the greatest unsolved mysteries in all of computer science...”




Minutes 2:10–3:30 — Explaining P and NP through the Game

Step-by-step Breakdown:

“Solving the murder using clues is like solving a *hard* problem. You had to look at all the clues, test who fits what, and think hard.”

“But now imagine I gave you the name of the killer first. Let’s say I tell you it was ‘Suspect C’.”

“Now *you* can easily go back and check:

- Were they holding a pen? 
- Left-handed? 
- Wearing black shoes? 

“See? Verifying a solution is easy. Solving the problem is the hard part.”

Use this analogy:

Task	What you did	What it means in CS
Figuring out the killer	Solving a problem	P (Can we solve it fast?)
Checking if a person fits the clues	Verifying a solution	NP (Can we check it fast?)

Then pause for drama:

“So here’s the billion-dollar question: if checking a solution is easy... can solving it also be easy?”

Minutes 3:30–4:30 — What is P vs NP?

Now reveal:

“In computer science, we call this the **P vs NP problem**. It asks a simple but deep question: **If we can easily check the solution to a problem, does that mean we can easily find the solution too?**”

“Every day, computers check passwords, validate transactions, scan job applications... all of which are easy to *check*. But finding the correct answer from scratch? That’s still hard.”

Use a clear analogy:

“Think of trying every possible key to open a lock—that’s hard. But once someone hands you the right key, you can test it in a second. That’s P vs NP.”

Minute 4:30–5:00 — Wrap-Up with Impact

Bring it full circle:

“Just like you struggled to find the killer but easily checked if a suspect fit the clues—our computers face problems just like this.”

“If someone ever proves $P = NP$... then we could crack every password, solve every puzzle, plan the perfect wedding seating chart in seconds...”

“But until then, some problems are like murder mysteries—easy to verify, but really hard to solve.”

Final line:

“So next time you solve a puzzle or crack a case... ask yourself: did I just prove $P = NP$?”