0.1

Course Overview: MATH 230 B


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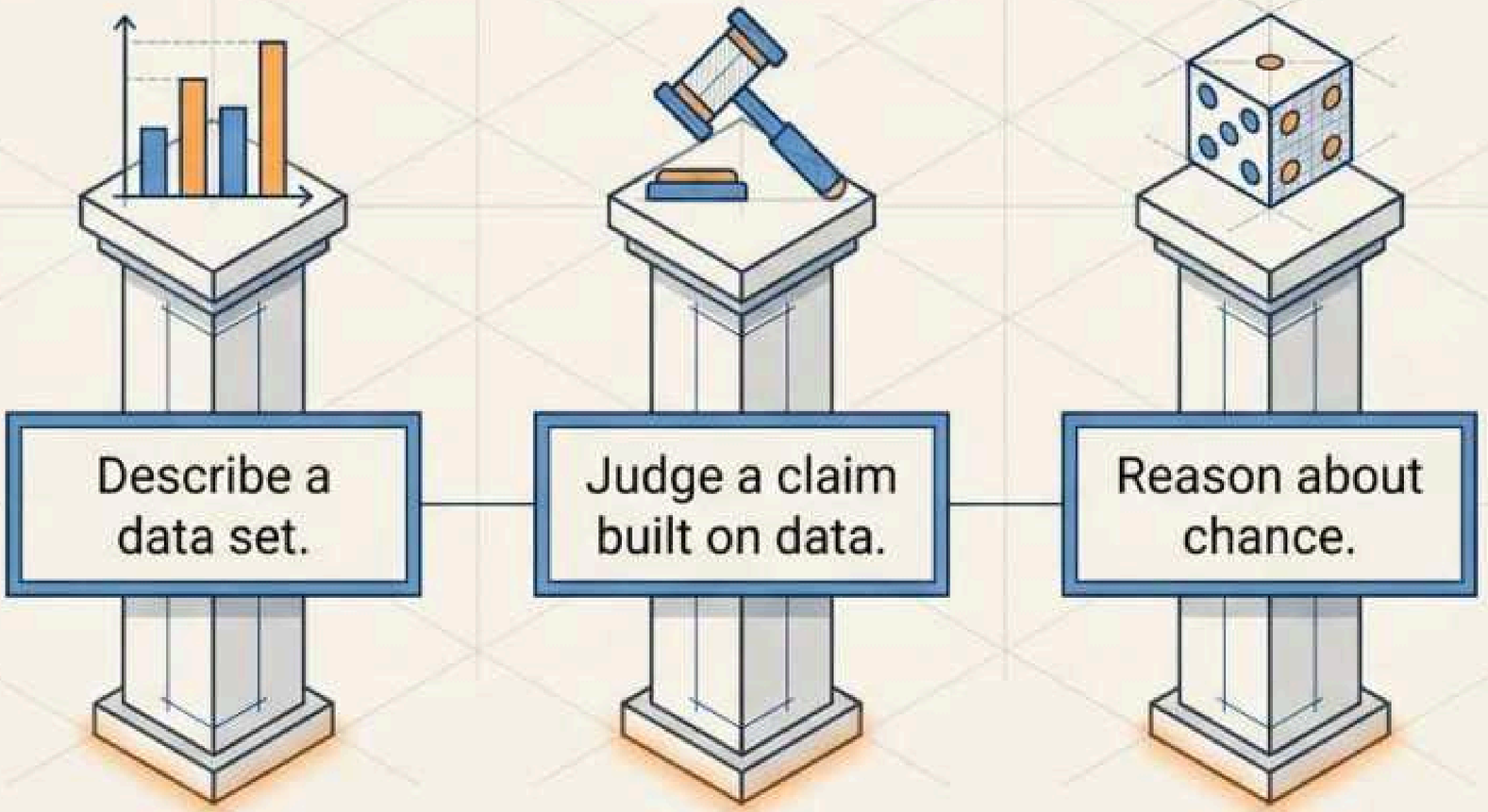
Questions or feedback are always welcome.

0.2

Mathematics 230 B: Foundations of Statistical Thinking, Part 1

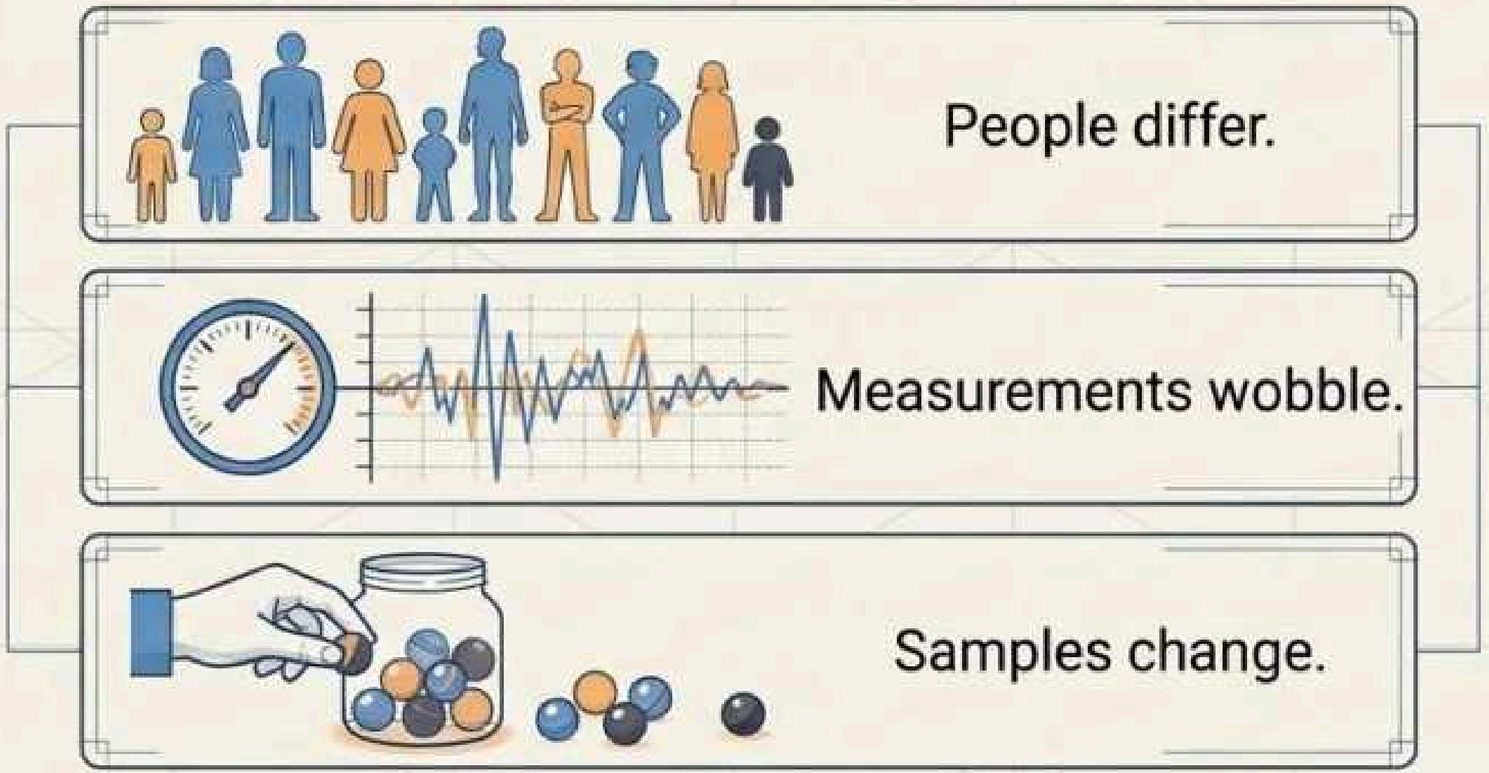
B = Brief (Overview + 6 short lectures = ~1 Hour)

Outcome Triad



0.3

Data + Variation = Learning



Careful Thinking > Arithmetic. (Tools to describe variation honestly and decide what data can and cannot tell us.)

0.4

Doctors

Judging whether a treatment works.



Pollsters

Estimating millions of voters from a thousand answers.



Engineers

Testing quality.



Economists

Tracking prices.



Citizens: Navigating daily headlines about risks, rankings, and polls (easy to misread without basic ideas)

0.5

Required
In the Toolbelt

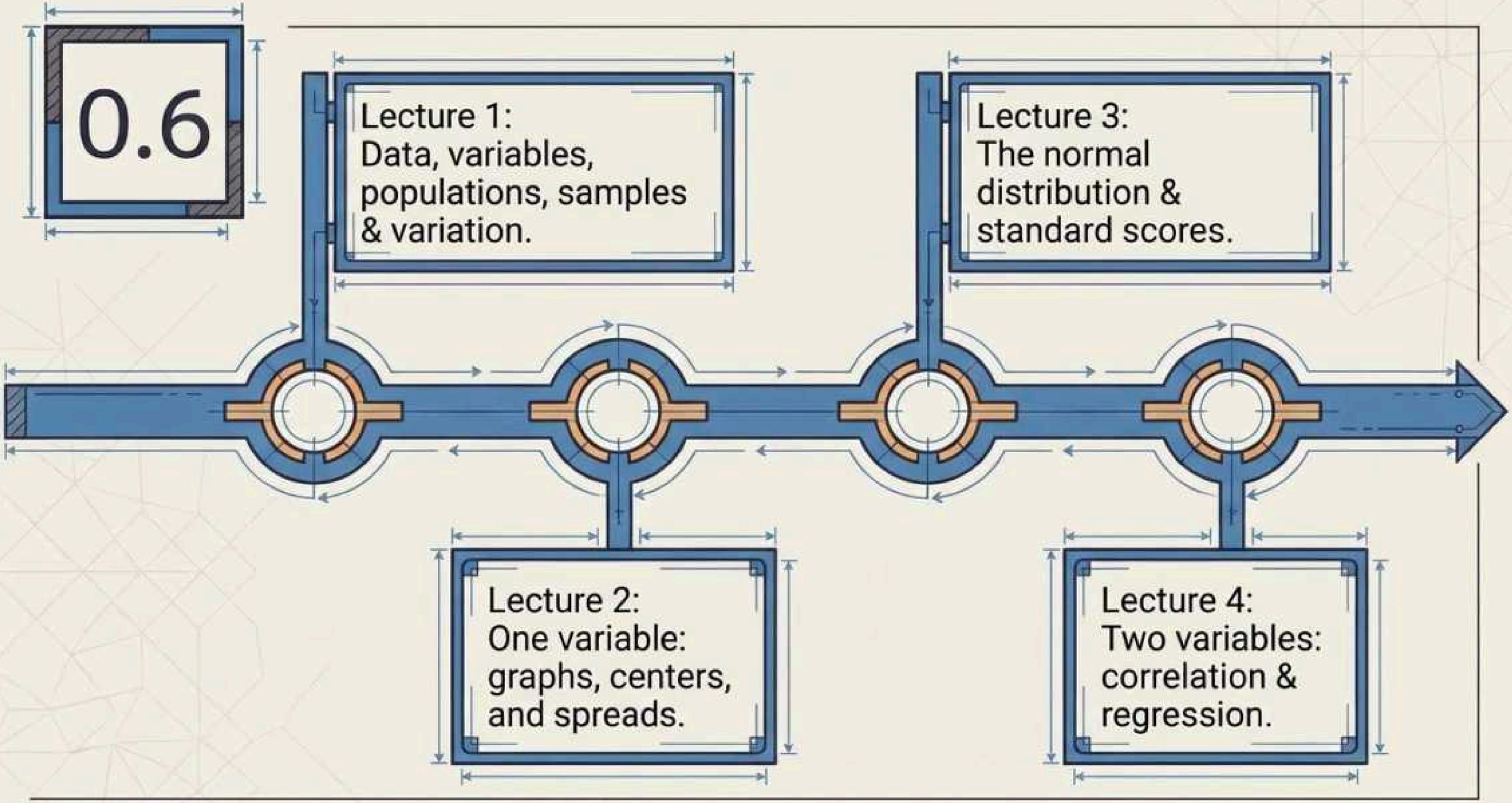
- Ordinary arithmetic
- Basic algebra (fractions, percentages, squares, square roots)
- A calculator

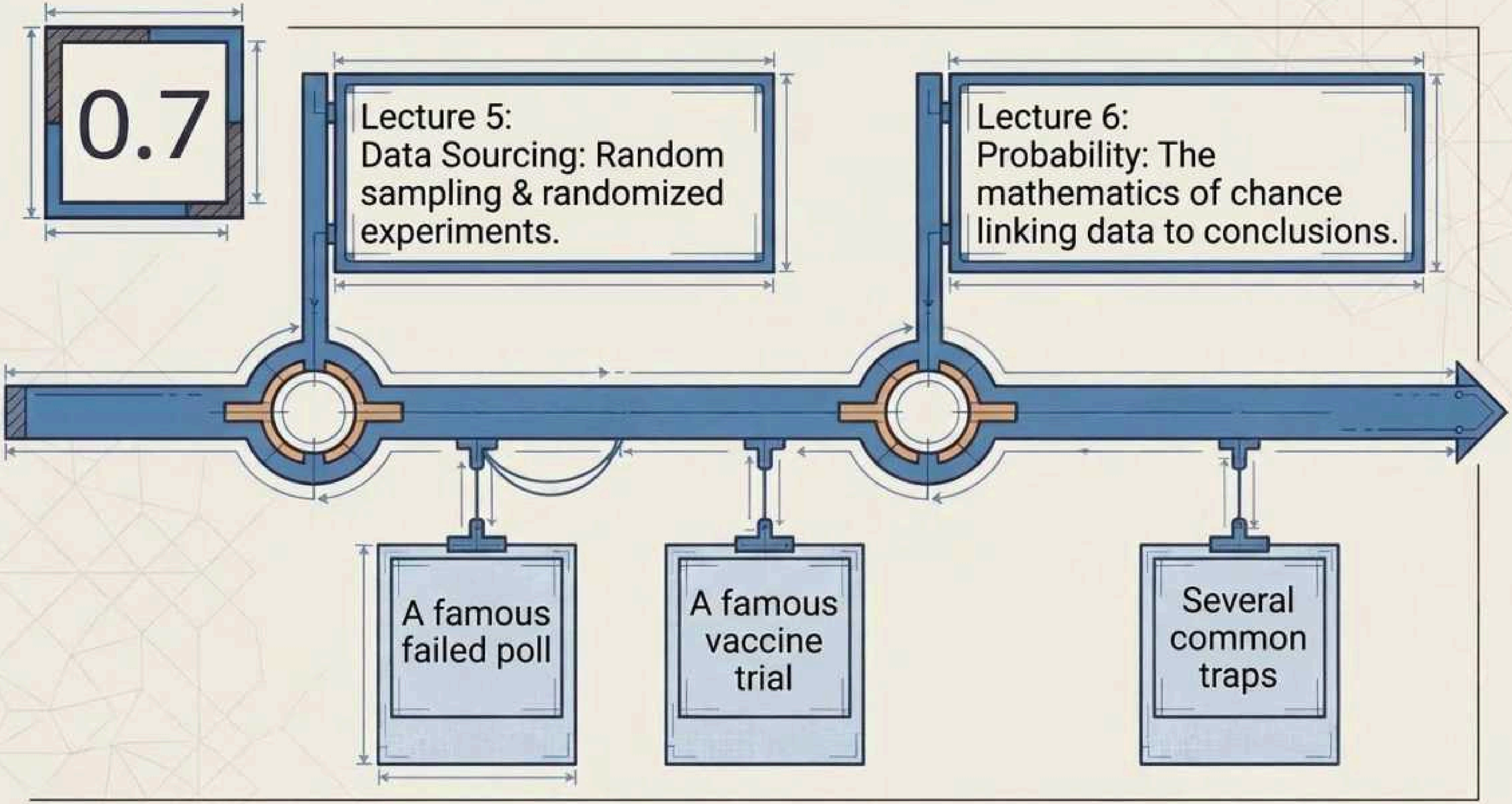
Not Required
Leave Behind

- ~~Calculus~~
- ~~Prior statistics knowledge~~

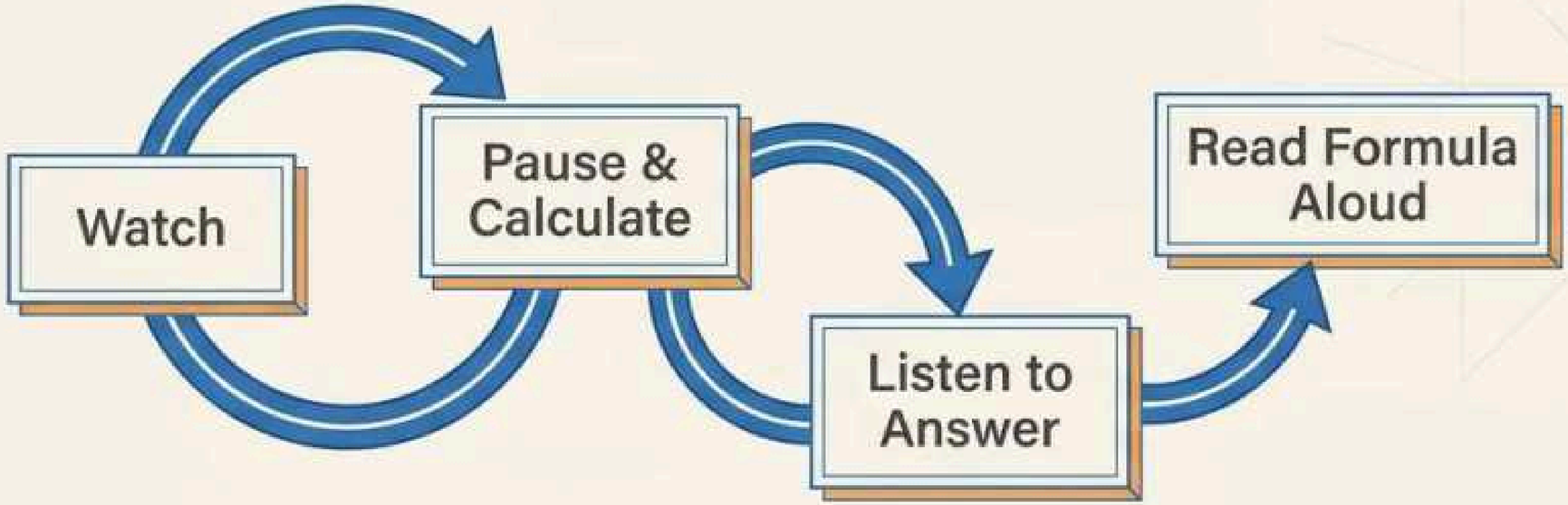
Part 1: Current Course

Part 2: Confidence Intervals & Significance Tests


0.6
Lecture 1:
Data, variables,
populations, samples
& variation.
Lecture 3:
The normal
distribution &
standard scores.
Lecture 2:
One variable:
graphs, centers,
and spreads.
Lecture 4:
Two variables:
correlation &
regression.


0.7
Lecture 5:
Data Sourcing: Random sampling & randomized experiments.
Lecture 6:
Probability: The mathematics of chance linking data to conclusions.
A famous failed poll
A famous vaccine trial
Several common traps

0.8



The 3 Core Questions

- [ ] 1. Where did the data come from?
- [ ] 2. What do they show?
- [ ] 3. What else could explain it?

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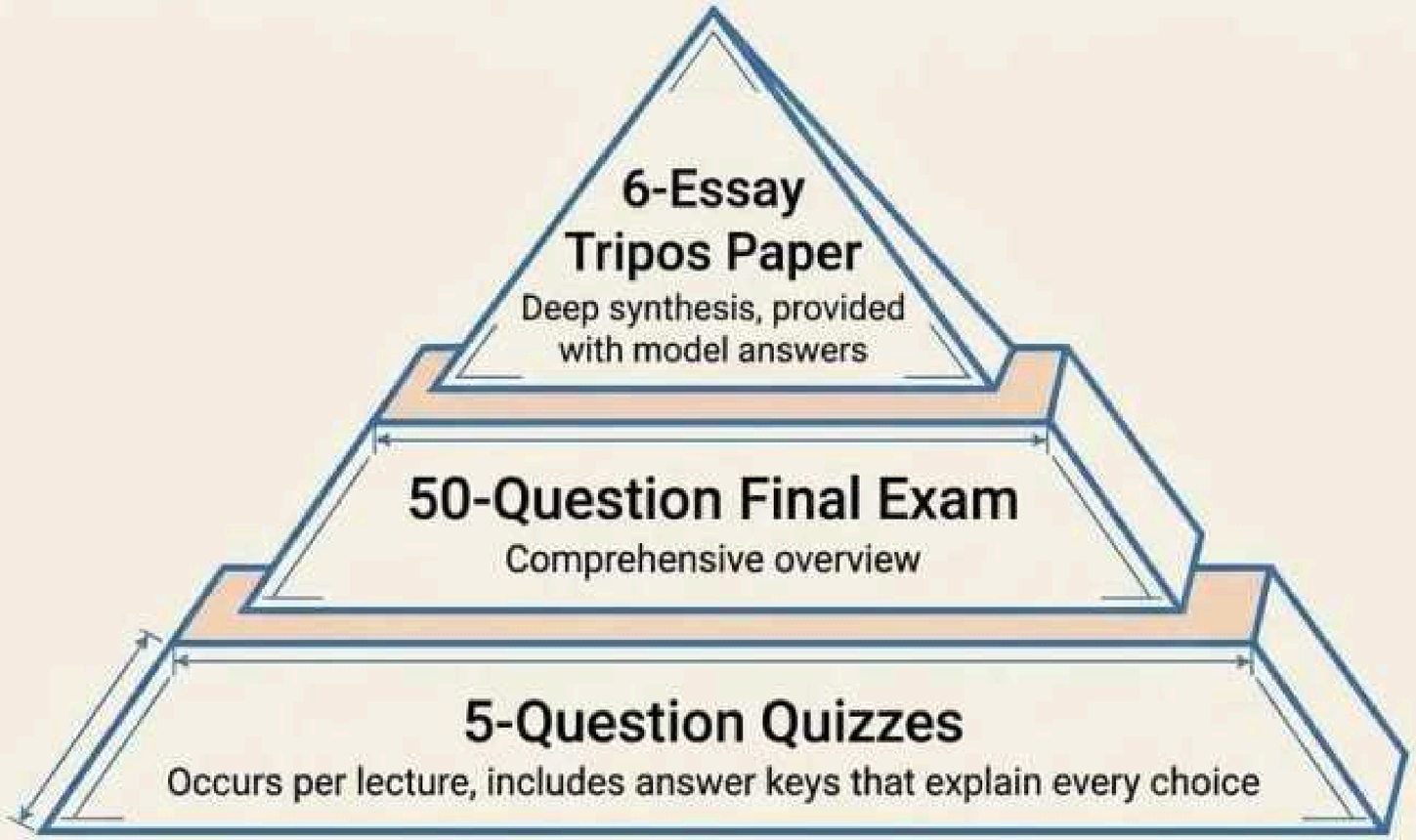


AI Development → Human Direction → Computer Verification

> ⚠ Mistakes happen. If you find one, report errors using the paragraph numbers (e.g., paragraph 4.6).

0.10

Formative Assessments = Built to help you learn, not to grade you.



START LECTURE 1: Data & Variation