

## Lesson 1 (cont): Introduction to Euclidean Geometry

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### 3 Tips to do well in the class.

1. **Attend class.** Your participation just by attending the class increases your chances for success. If you do the assignments, you'll have the information for the quiz. Keep the quizzes and you'll have information for the exams.
2. **Use your resources.** If you are having trouble in the class, come see me. We will work together to make sure you succeed. I'm here for you. Talk to your friends, ask them for help, but do not cheat. Plagiarism will only lead to failure, in class and in life.
3. **Take notes.** Take notes in class as we work through the content. I will be providing some guided note-taking sheets to help you, but you must put it in your own words and include additional information we discuss. This will help you stay engaged and not wander off into thoughts about the girl/boy you like and how to impress them, what you want to eat for dinner, or which party you want to go to on the weekend.

### Why are we learning Euclidean Geometry?

"No work, except The Bible, has been more widely used. . . ."

The method provides an ability to *establish that knowledge without the need to cite any external authority*.

### Types of Reasoning

#### Inductive Reasoning

Premise: Every swan I have ever seen is white.

Conclusion: Therefore, all swans are white.

But black swans exist.

- Scientists use inductive reasoning. They gather data, they formulate theories based on their data, and they come up with plausible conclusions. When new data arises, their theories change.

#### Deductive Reasoning

Premise A: All men are mortal.

Premise B: Justin Vera is a man.

Conclusion: Therefore, Justin Vera is mortal.

- If the premises are true, the conclusion has to be true. You can know with certainty that your conclusions are true. This is the methodology of mathematics. You don't need an "experiment" to know that the conclusion is true.
- If the premise is self-evident, it is an axiom. Self-evident means that it doesn't need to be explained or demonstrated, it's obvious.
- Deductive reasoning uses syllogisms - a kind of logical argument that applies deductive reasoning to arrive at a conclusion based on two or more propositions that are asserted or assumed to be true.

In life, you will come across all kinds of information. You will also need to present your knowledge and understanding in some capacity. Knowing how to determine the validity of information you receive and critique it, and formulating well-reasoned arguments and points of discussion is a valuable skill.