

Warm-Up Notes

MAT 100: ELEMENTARY ALGEBRA

Fall 2026

SECTION 4.4 UNDERSTAND SLOPE OF A LINE

Install — 10 minute lesson

Objectives of this Section

- Use geoboards to model slope
- Use
- to find the slope of a line from its graph
- Find the slope of horizontal and vertical lines
- Use the slope formula to find the slope of a line between two points
- Graph a line given a point and the slope
- Solve slope applications
- 442
- 4 • Graphs
- Access for free at openstax.org

Skills**Introduced in this section:**

- **LIN.SE** — Finding the slope given an equation
- **LIN.SP** — Finding the slope given points

Also practiced: LIN.GL (Graphing a Line), WRD.NM (Naming the model).

Lesson

Slope measures how steep a line is: how far it rises for every step it runs. You'll find slope from a graph, from two points, and from an equation, and you'll see that horizontal and vertical lines are the two special cases where that ratio behaves in opposite ways.

I do

Watch. Why is the slope of a vertical line “undefined”?

We do

Together. A line intercepts the y -axis at $(0, -2)$ and passes through the point $(3, 3)$.

Find its slope m . Use $m = \frac{\text{rise}}{\text{run}}$.

You do

Your turn. Find the slope of the line with equation $x = -4$.

Your turn. Graph the line that passes through the point $(-3, -5)$ with slope $\frac{3}{2}$.

Practice

1. Graph the line through the point $(2, 3)$ with slope -1 .
2. How does the graph of a line with slope $m = 1/2$ differ from the graph of a line with slope $m = 2$?
3. Create a mathematical model for a wheelchair ramp that adheres to the 1:12 rise-to-run rule. Express the horizontal run L as a function of the vertical rise R , and determine the ramp length along the incline for a rise of $R = 24$ inches.
4. A line intercepts the y -axis at $(0, 6)$ and passes through the point $(4, 3)$. Find its slope m . Use $m = \text{rise}/\text{run}$.