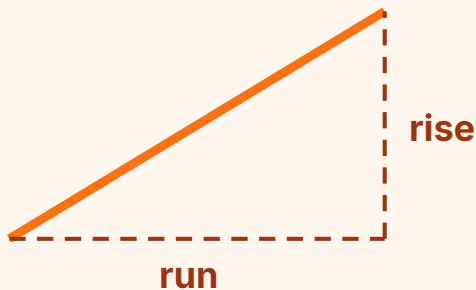


Linear Functions

8th Grade

Slope, intercepts, the three forms of a line, and what each one is good for.

SLOPE — rise over run



$$m = (y_2 - y_1) / (x_2 - x_1)$$

Positive → uphill. Negative → downhill.

Zero → horizontal. Undefined → vertical.

Always subtract in the same order, top and bottom.

THE THREE FORMS

Slope-intercept

$$y = mx + b$$

best for graphing — b is where it crosses the y -axis

Point-slope

$$y - y_1 = m(x - x_1)$$

best when you have a point and the slope

Standard

$$Ax + By = C$$

best for intercepts — set $x = 0$, then $y = 0$

GRAPHING FROM $y = mx + b$

- 1 Plot b on the y -axis — that is your starting point.
- 2 From there, count the rise, then the run, and plot a second point.
- 3 Repeat once more, then join the three points with a straight line.

Parallel lines: same m . Perpendicular lines: slopes multiply to -1 .