Because a line is defined by constant slope (change), we can represent it with equations as demonstrated below.

Suppose a line contains the points \((2, 7)\) and \((5, 4)\). The slope for this line is

\[
\frac{4 - 7}{5 - 2} = \frac{-3}{3} = -1.
\]

We want an equation that represents any point \((x, y)\). The slope between \((2, 7)\) and \((x, y)\) is

\[
\frac{y - 7}{x - 2}.
\]

Because the slope is constant, these two slopes are equal. Thus

\[
\frac{y - 7}{x - 2} = -1
\]

is an equation for a line. This is called “point-slope form.”

If we want, we can manipulate the equation as follows.

\[
\frac{y - 7}{x - 2} = -1
\]

\[
x - 2 \cdot \frac{y - 7}{x - 2} = x - 2 \cdot -1
\]

\[
y - 7 = -x + 2.
\]

\[
y + 7 = -x + 9.
\]

This is called “slope-intercept form.” Where do you see the slope \((-1)\) in this form of a line?