Slope Screen

Explore the parameters of the slope formula and how modifying the graph affects the equation or modifying the equation affects the graph..

HIDE the slope formula

DRAG either point to change the slope of the line

Use the point tool to get the integer coordinates of any point

MODIFY the coordinates from within the formula

SAVE a line to compare multiple lines simultaneously

Slope-Intercept Screen

Explore the parameters of the slope-intercept form of a line.

Simplified equation of line

DRAG the blue point to change the slope of the line

DRAG the pink point along the y-axis to change the y-intercept of the line

MANIPULATE the slope and/or y-intercept from the equation

SHOW reference lines of y=x or y=-x

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Point-Slope Screen

Explore the parameters of the point-slope form of a line.

DRAG the purple point and see the point within the equation of the line change

DRAG the blue point to change the slope

MANIPULATE the purple point and/or the slope from the equation

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

$$(y - (-2)) = \frac{-1}{7}(x - (-3))$$

Save Line   Erase Lines

☑ Slope
☐ y = x
☐ y = -x
☐ Hide lines

$(y + 2) = -\frac{1}{7}(x + 3)$

(?, ?)   (?, ?)

Graphing Lines   Slope   Slope-Intercept   **Point-Slope**   Line Game   PhET

Game Screen

Challenges are random within each level, but increase in difficulty.

Levels 1-2 Set the Point, Set the Y-Intercept, or Set the Slope, by manipulating either the equation or the graph

Your Equation:
$$(y - 0) = \frac{1}{3}(x - 0)$$

Your Equation:
$$y = \frac{2}{3}x + 0$$

Your Equation:
$$y = \frac{1}{1}x - 3$$

Choose Your Level

Level 1   Level 2   Level 3
☆☆☆☆☆☆   ☆☆☆☆☆☆   ★★★★★☆

Level 4   Level 5   Level 6
☆☆☆☆☆☆   ☆☆☆☆☆☆   ☆☆☆☆☆☆

Slope   Slope-Intercept   Point-Slope   **Line Game**

Levels 3-4 Make the equation or Graph the Line

Your Equation:
$$(y - 0) = \frac{1}{1}(x - 0)$$

Levels 5-6 Make the Equation, Graph the Line, or Put Points on Line

Complex Controls

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

$$(y - 4) = \frac{-6}{0}(x - 3)$$

Save Line   Erase Lines

- If two points are stacked vertically on any screen, the slope will be displayed as undefined and a red x will appear over the equation.

Insights into Student Thinking

- Students may have difficulty with the game, particularly Set the Equation challenges, if they do not use the point tools.

See all activities for Graphing Lines [here](#).
For more tips on using PhET sims with your students, see [Tips for Using PhET](#).