6.8 Slope as a percent, "grade"

1. Do Now: Use the online calculator to calculate slope (or "grade") for a six inch rise over a run of 20 feet.

GRADE

Rise: 6 in

Run: 20 ft

CALCULATE

Express your result as follows:

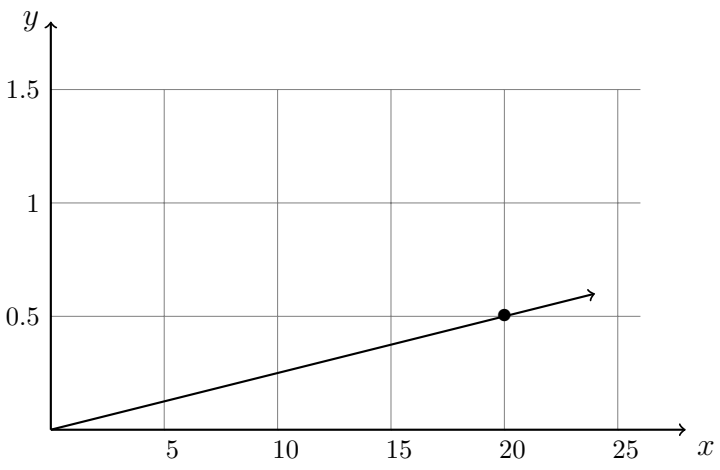
Fraction:

Decimal:

Percentage:

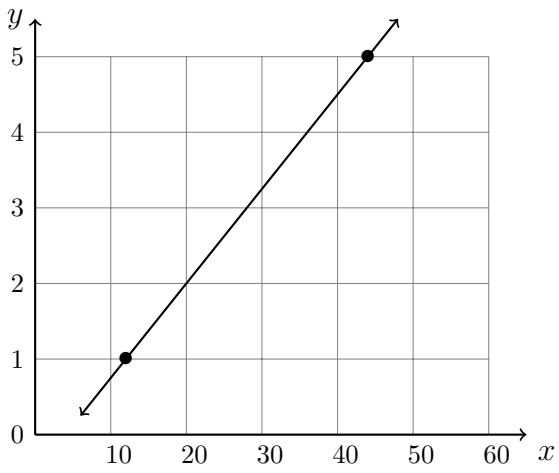
Angle:

Not to scale



2. Find the slope of the line $\overleftrightarrow{AB}$, $A(12, 1)$, $B(44, 5)$. Use the formula and show the substitution step. Express your result as a fraction, a decimal, and a percent grade.

$$m = \frac{y_B - y_A}{x_B - x_A}$$



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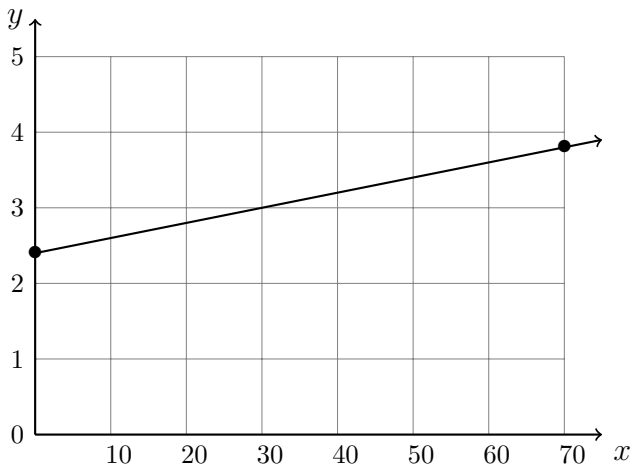
3. Find the equation of the line through the points $(0, 2.4)$, $(70, 3.8)$. Use the slope formula, then substitute the slope and y-intercept into a linear equation.

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$, $\qquad y = mx + b$

Not to scale



4. Complete each statement about linear equations.

   (a) What is the y-intercept of the line $y = 1.25x - 13.5$?

   (b) What is the percent grade of the line $y = 0.04x + 12.5$?

   (c) What is the slope of a vertical line?

   (d) What is the slope of the line $x = 7$?

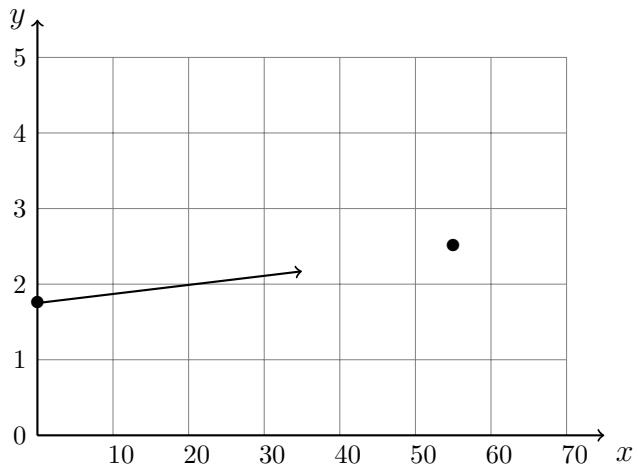
   (e) If $m = 4$ then $m_{\perp} =$

   (f) Lines p and q have slopes $m_p = -\frac{3}{2}$ then $m_q = +\frac{2}{3}$. Are they parallel, perpendicular, or neither? Justify your answer by showing the product of their slopes.

5. Is the point $P(55, 2.5)$ on the line: $y = 0.012x + 1.75$?

   Support your answer algebraically (substitute P's coordinates into the equation).

Not to scale



6. Quadrilateral $ABCD$ with vertices $A(-2, 5)$, $B(0, -1)$, $C(4, 0)$, and $D(2, 6)$ is shown.

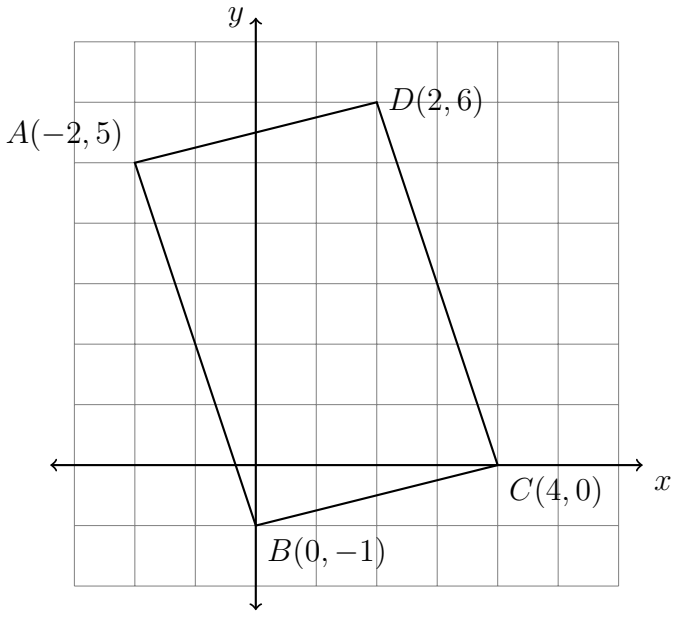
   Find the slopes of each side. Is $ABCD$ a parallelogram? a rectangle? Justify your answer.

   Slope of $\overline{AB}$ =

   Slope of $\overline{BC}$ =

   Slope of $\overline{CD}$ =

   Slope of $\overline{AD}$ =



7. Plot a parallelogram (not a rectangle) using Geogebra (use the grid). The legs must not be horizontal or vertical. Paste an image of your work in this Classkick slide from the clipboard or by using the "camera" tool.

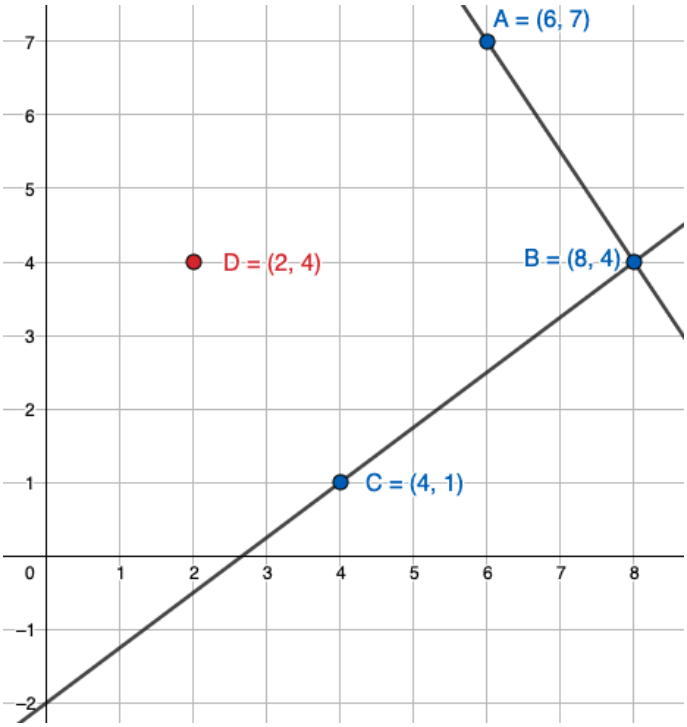
   Spicy: Show the measures the slopes of the quadrilateral sides.

8. (a) Draw two sides $\overline{AD}$, $\overline{CD}$ to complete a parallelogram $ABCD$.

   (b) Write the slope of line $\overleftrightarrow{CD}$.

   (c) Write the equation of line $\overleftrightarrow{BC}$.

   (d) Is $\overleftrightarrow{CD} \perp \overleftrightarrow{BC}$? Show the product of their slopes is or is not -1.



Link: https://www.geogebra.org/calculator/j8kx5ykf