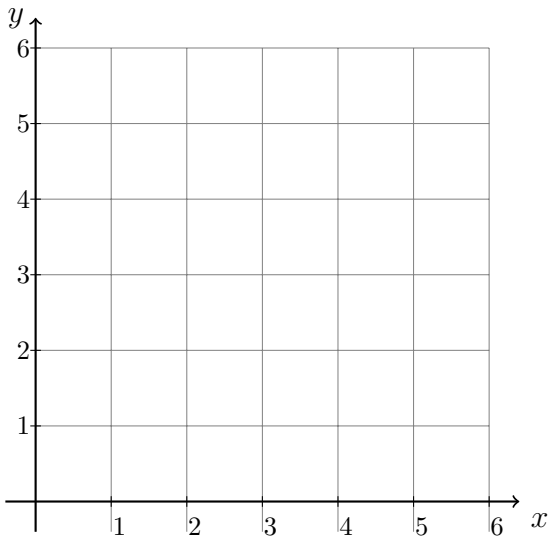
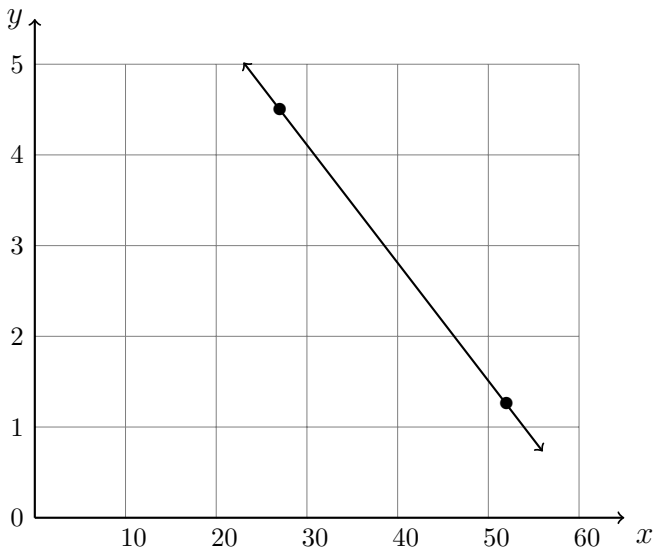
6.14 PreExam: Slope and linear equations
You must show the values substituted in the formula **for credit. Optional: Graspable Math, Geogebra**

1. Plot the points and the line $\overleftrightarrow{PQ}$, $P(2,1)$, $Q(3,4)$. Calculate its slope:

$$m = \frac{y_Q - y_P}{x_Q - x_P}$$



2. Find the slope of the line $\overleftrightarrow{AB}$, $A(27, 4.5)$, $B(52, 1.25)$. Express the value as a percent (the percent grade).



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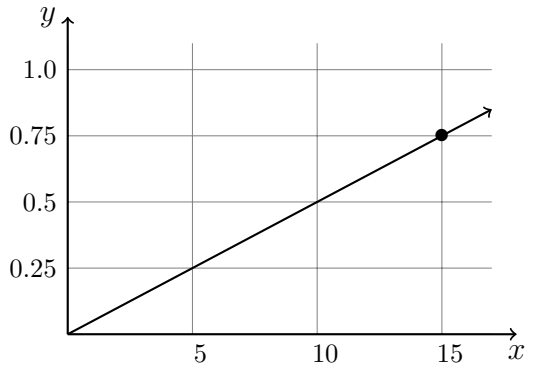
3. Find the slope (or "grade") for a nine inch rise over a run of 15 feet.

   Express your result as follows:

   (a) Fraction

   (b) Decimal

   (c) Percentage



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4. Complete each statement about linear equations.

   (a) What is the slope of a horizontal line?

   (b) What is the y-intercept of the line $y = -5.75x - 8.25$?

   (c) What is the percent grade of the line $y = 0.075x + 135$?

   (d) What is the slope of the line $y = 73.2$?

   (e) If $m = 0.25$ then $m_{\perp} =$

   (f) Lines p and q have slopes $m_p = -2$ then $m_q = 0.50$. Are they parallel, perpendicular, or neither? Justify your answer by showing the product of their slopes.

5. Find the equation of the line through the points $(0, 1.8)$, $(60, 4.2)$. First find the slope, then substitute the slope and y-intercept into a linear equation.

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

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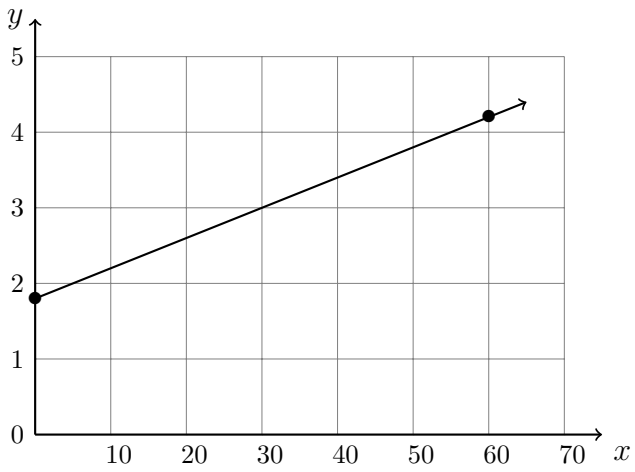

6. Is the point $P(64, 1.8)$ on the line: $y = -0.035x + 3.90$?

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

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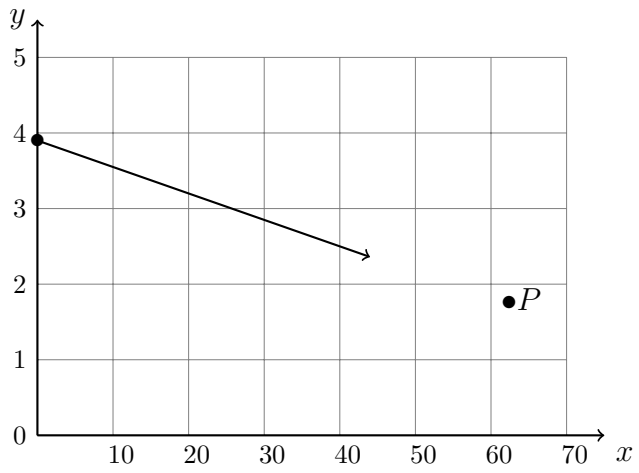


7. Quadrilateral $ABCD$ with vertices $A(-2, 5)$, $B(0, -1)$, $C(4, 0)$, and $D(2, 6)$ is shown.

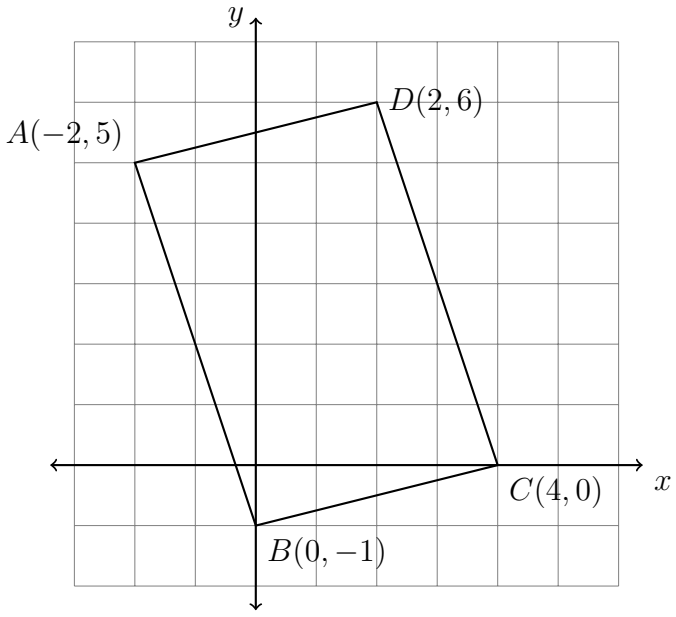
   Find the slopes of each side. Is $ABCD$ a parallelogram? a rectangle? Justify your answer.

   Slope of $\overline{AB}$ =

   Slope of $\overline{BC}$ =

   Slope of $\overline{CD}$ =

   Slope of $\overline{AD}$ =



8. 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.

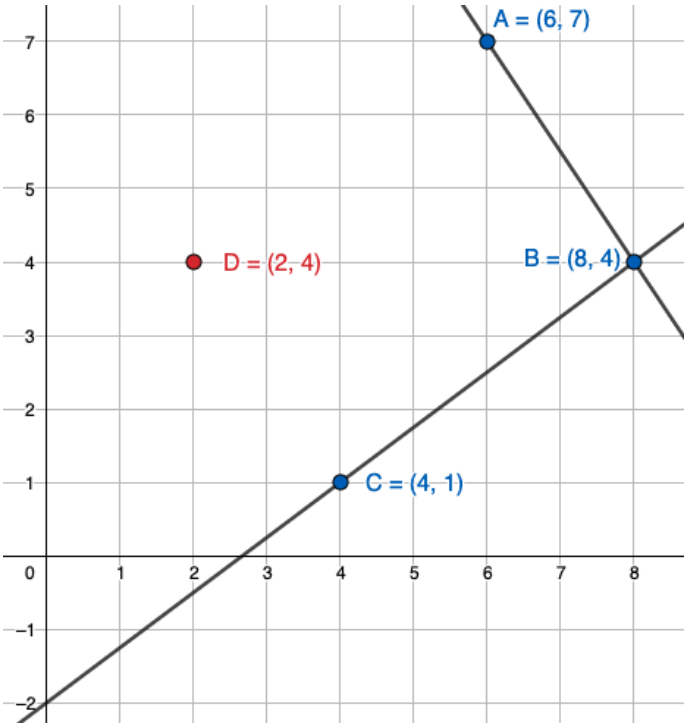
   Spicy: Show the measures the slopes of the quadrilateral sides.

9. (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