

Graphing Exemplars

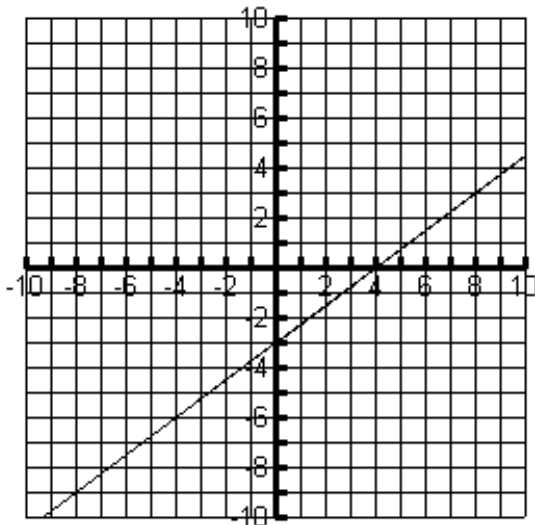
North Kingstown High School Mathematics Department

Graphs of all equations should contain the following information:

- A clearly defined vertical and horizontal scale.
- The line representing the equation or function should extend through the graphing field.
- Labels on critical points to understanding or interpreting the graph such as: x- and y-intercepts, maximums and minimums for nonlinear graphs, and points of intersection for solutions of systems of equations.
- Graphs for word problems or other problems in a context should have a title, horizontal axis label and vertical axis label. Units of measurement should be included in the labels.

Examples of graphs are below:

Linear Equations

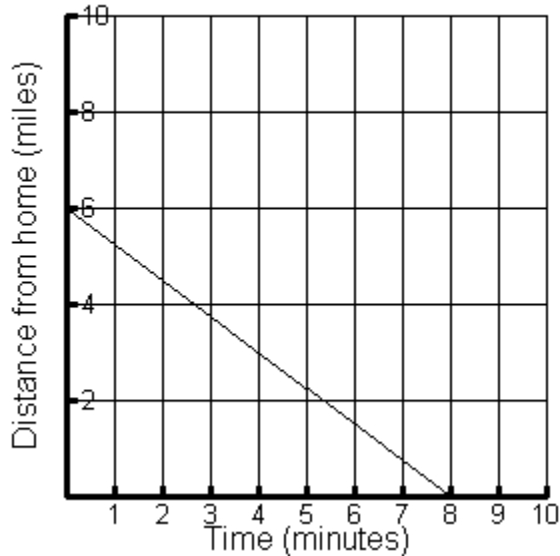


This graph of the equation $y = \frac{3}{4}x - 3$

Note the horizontal and vertical axes are labeled for units of measure.

Note the graph of the line extends across the graph.

Travel Time from School to Home



This title of this graph shows it is modeling the time it takes to travel from school to a student's home.

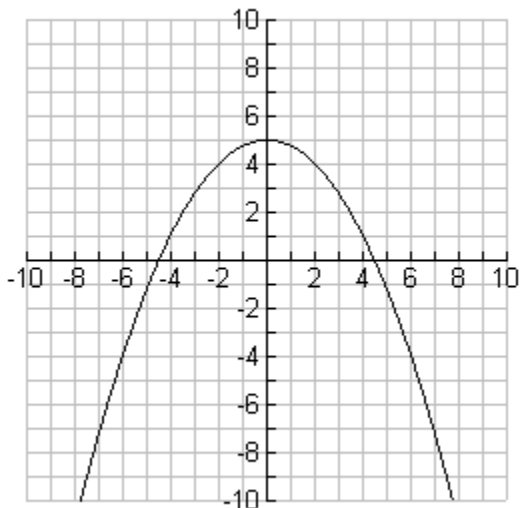
The horizontal scale shows units of 1 minute.
The vertical scale shows units of 2 miles.

The rate of change is $-\frac{3}{4}$ miles per minute.
This is interpreted the distance from the school to the student's home decreases by 3 miles every 4 minutes.

The y-intercept indicates the school is 6 miles from the student's home.

The x-intercept indicates that it takes 8 minutes travel time to get from school to home.

Nonlinear equations



This graph is for $y = .25x^2 + 5$

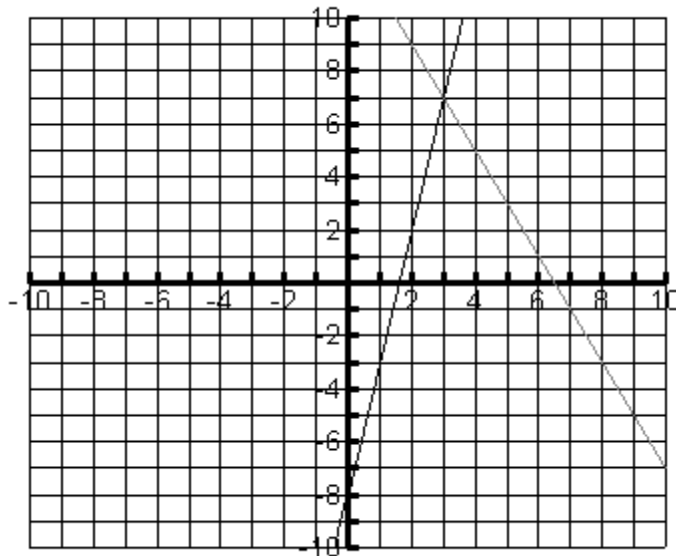
The vertex is at the maximum $(0, 5)$.

The x-intercepts are at approximately $(-4.5, 0)$ and $(4.5, 0)$. It is acceptable to use the axis scales to estimate the intercepts unless directed otherwise.

The axis of symmetry, $x = 0$, is found at the vertex.

Other nonlinear equations would follow the same format, but may have more intercepts, maximum and minimum points.

System of Two Equations



This system is defined by:

$$y = 5x - 8$$

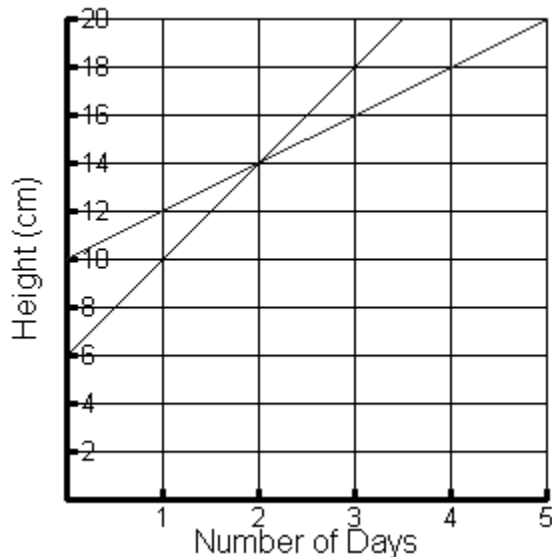
$$y = -2x + 3$$

Note that since the equations are generic (they have no context as in a word problem), there is no need to label the x and y axes

The solution (3 , 7) should be labeled on the graph and noted as the solution.

For assistance on solving systems, see pgs. 374 – 400 of the text.

Growth of Bamboo Plants



This graph is for a word problem found on page 375 of the text.

Important aspects of this graph that are referenced in the rubric:

- The graph is labeled appropriately for situation.
- The vertical axis is labeled for appropriate units
- The horizontal axis is labeled for appropriate units.

The solution of (2, 14) indicates that the height of both bamboo plants is 14 cm after 2 days.

The y-intercepts indicate the initial heights of the bamboo plants were 6 cm and 10 cm. The rates of change indicate that the plant that was initially 6 cm high grew at a rate of 4 cm per day; the rate of change for the other plant indicates it grew at a rate of 2 cm per day.