# Customary Function Language
## Discussion and Exercise
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- $x$ is the <u>independent</u> variable; the $x$ value in $(x, y)$ is the <u>abscissa.</u>
  "Variable of choice" also means independent variable.
  *Domain* is the set of used or useful $x$ values.

- $y$ is the <u>dependent</u> variable; the $y$ value in $(x, y)$ is the <u>ordinate.</u>
  "Variable of consequence" also means dependent variable.
  *Range* is the set of used or useful $y$ values.

- A function or equation is written so as to represent the dependent variable $y$ (or $y = f(x)$ or $y = f(n)$) <u>in terms of</u> the independent variable $x$ or $(n)$. "Solving for $y$ in terms of $x$" should be as familiar as "$y$ is a function of $x$."

**"$y$ is a function of $x$"** is a very helpful phrase in many situations, as when a problem states that "Stock tank levels are a function of how much rain we get." Here, the stock tank levels are ____ (Which: $x$ or $y$ ?) "How much rain we get" is _____.
   Then which variable is independent? ____ Dependent variable? ____

1. The squad paid $275 for the caps and sold them at $12 each. The relationship between the number $n$ of caps sold and the profit $P = f(n)$ from the sale is represented by the function $P = f(n) = 12n - 275$. What is the dependent quantity in this functional relationship?

   Note that the profit depends on the number of caps sold.

2. You rent a Toro chipper/shredder for a fee of $12, plus $15 per hour of use. Let $c$ be the total cost and $t$ be the number of hours of use. Write an equation that represents the dependent variable in terms of the independent variable.

   A. $c = f(t) = \$15t + 12$          B. $t = f(c) = \$15c + 12$
   C. $c = f(t) = \$12t + 15$          D. $t = f(c) = \$12c + 15$

Note here that <u>time</u> is very, very, often the independent variable that is graphed (therefore) on the $x$ axis. It also belongs where we customarily see $x$ in function notation such as choices A and C above.

3. Circle those ideas below that are associated with $y$:

   abscissa      ordinate      domain      range      dependent variable

independent variable      variable of choice      variable of consequence