

Investigation 2.2 Equations for Linear Relationships

- Standard form of a line— $y = mx + b$
- x is the **independent variable**
- y is the **dependent variable**
- m is the **slope/pattern in table/constant rate of change**
- $m = \text{rise/run}$
- b is the **y-intercept/starting point**

Part A—Squeaky Clean Car Wash charges

Time (min)	5	10	15	20	25
Charge	\$8	\$13	\$18	\$23	\$28

1. How do you know that this relationship is linear? _____

2. The slope (m) is _____
The y-intercept (b) is _____
3. Write an equation relating charge c to time t in minutes. _____

Part B—Refer to the graph on page 28.

Write an equation in $y = mx + b$ form for the charge plan at Euclid's.

$c =$ _____

$t =$ _____

slope (m) = _____

y-intercept (b) = _____

Part C—Refer to the receipts on page 29.

- Time t is the x value.
 - Charge c is the y value.
 - The relationship between (x,y) is linear.
1. Each receipt represents a point (x,y) on the line. Find the coordinates of the two points.
3/14/05 (_____ , _____) 4/04/05 (_____ , _____)
 2. What is the slope (m) of this line? _____
What is the y-intercept (b) of this line? _____
 3. Write an equation in $y = mx + b$ form for this line. _____

Part D

Write an equation in $y = mx + b$ form for the line with slope -3 that passes through the point (4, 3).

Part E

Write an equation in $y = mx + b$ form for the line with points (4, 5) and (6, 9).

Part F

Suppose you want to write an equation in the form of $y = mx + b$ to represent a linear relationship. What is your strategy if you are given...

1. a description of the relationship in words? _____

2. two or more (x, y) values or a table of (x, y) values? _____

3. a graph showing points with coordinates? _____
