slope-intercept form given a
situation.

## Equations of Lines (slope-intercept form)

When you have a real world (word problem) that requires you to write an equation in slope interc
form, there are two things that you want to look for:

1. **A Rate.** The rate is your slope in the problem. The following are examples of a rate
   - $3 per day
   - $2 an hour
   - 60 mph
   - 2 m/s
   - $6 a minute
   - 45 words per minute

   This number is always related to the x-value.

   Per is a key word that is often associated with slope.

2. **A Flat Fee.** A flat fee or starting value is your y-intercept. This value is a constant. It never changes.

Use the chart below to help you organize your information as you analyze each word problem. T
will help you to write your equation!

| | | |
|---|---|---|
| Flat Fee (starting #) | b (y-intercept) | ? |
| Rate | m (slope) | ? |

Take a look at the examples below to better clarify how this chart can help you!

### Example 1

You are visiting Baltimore MD, and a taxi company charges a flat fee of $3.00 for using the taxi and an additional $0.75 per mile. Write an equation that you could use to find the cost of a taxi ride in Baltimore, MD.

Let x represent the number of miles and y represent the total cost.

- How much would a taxi ride for 8 miles cost?

| | | |
|---|---|---|
| Flat Fee (starting #) | b (y-intercept) | 3 |
| Rate | m (slope) | 0.75 |

$y = m x + b$

$y = .75(x) + 3$

- The equation could be used to find the cost of a taxi ride in Baltimore, MD is $y = 0.75x + 3$
- To find out the cost for an 8 mile ride, substitute 8 for x.

$y = 0.75(8) + 3$

$6 + 3$

#9

for 8 miles.

$\frac{3}{4} \cdot 8^2$

## mple 2

A plumber charges a fee of $120 to make a house call. He also charges $10.00 an hour for labor. Write an equation that you could use to find the amount a plumber charges for a house call based on the number of hours of labor. Let x represent the number of hours of labor and y represent the total cost.

- How much would a house call cost that requires 2.5 hours of labor?

| | | |
|---|---|---|
| Flat Fee (starting #) | b (y-intercept) | 120 |
| Rate | m (slope) | 10 |

y= m x + b

y = 10 ( x ) + 120

- The equation could be used to find the amount a plumber charges is y = 10x + 120
- To find out the cost for the 2.5 hours, substitute 2.5 for x.

y = 10 (2.5) + 120

25 + 120

A plumber would cost $145 for 2.5 hours.

## Your Turn...

1. Hannah's electricity company charges her $0.10 per kWh (kilowatt-hour) of electricity, plus a basic connection charge of $15.00 each month. Write a linear function that models her monthly electricity bill as a function of electricity usage. Let y represent the cost and x represent the amount of electricity.
   - How much would her bill be if she used 500kWh of electricity?

| | | |
|---|---|---|
| Flat Fee (starting #) | b (y-intercept) | 15 |
| Rate | m (slope) | 0.10 |

y= m x + b

y = 0.10 ( x ) + 15

- The equation could be used to find the charge on her electric bill is y = 0.10x + 15
- To find out the cost for the electricity, substitute 500 for x.

y = 0.10(500) + 15

50 + 15

A bill would be $65 for 500kWh.

Homework is continued