

## Comparing Slope Intercept and Standard Forms of Equations

Key 11/7

### When to Use Slope Intercept Form ( $y = mx + b$ )

- **Rate** – the rate is your slope
  - This number is always related to the x value
  - Per or each is often associated with slope
- **Flat Fee/Starting Amount** – this is your y-intercept
  - This value is constant

### When to Use Standard Form ( $Ax + By = C$ )

- **Two Numbers** – represent x and y
  - Numbers per x and numbers per y
  - Typically addition is involved
- **Total** – what equation is set equal to
- No beginning amount
- Neither variable is dependent on the other

**Directions:** Define your variables (use x and y) and set up an equation for each scenario.

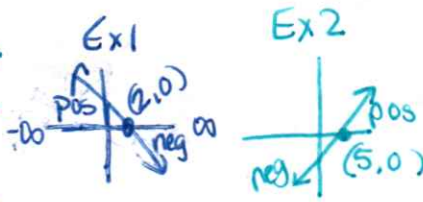
<p>1. A basketball team scored 60 points by making a combination of 2 point shots and 3 point shots. Write an equation to determine the combination of points scored by the team.</p> <p>x: 2pt shots (#of)     <math>2x + 3y = 60</math>                      y: 3pt shots (#of)                      C: total pts</p>	<p>2. Marsha has \$125 now and plans to save \$35 per week. Write an equation to determine how much she has in savings each week.</p> <p><math>y = 35x + 125</math></p>
<p>3. Raul and his friends rent a sailboat for \$15 per hour plus a basic fee of \$50. Write an equation to determine the total cost of renting a sailboat.</p> <p>m: 15     <math>y = 15x + 50</math>                      b: 50</p>	<p>4. Ed has \$35 to buy paints and brushes for a school project. Jars of paint cost \$4 each. The brushes are \$2 each. Write an equation to determine the combination of brushes and paint he can buy.</p> <p>x: Jars of paint (#of)     <math>4x + 2y = 35</math>                      y: brushes (#of)                      C: total</p>
<p>5. A teacher starts the year with \$600 for art supplies. He plans to spend \$40 per week on supplies. Write an equation to determine how much money he has remaining each week.</p> <p>m: -40     <math>y = -40x + 600</math>                      b: 600</p>	<p>6. Your school is sponsoring a pancake dinner to raise money for a field trip. You estimate that 200 adults and 250 children will attend. You want to raise \$3800. Write an equation to find out what ticket prices to set to raise \$3800.</p> <p>x: Adult tickets (cost of)     <math>200x + 250y = 3800</math>                      y: Children tickets (cost of)                      C: total</p>
<p>7. Gail orders CDs for \$8 each plus a total shipping cost of \$5. Write an equation to determine the total cost of purchasing CDs.</p> <p>m: 8     <math>y = 8x + 5</math>                      b: 5</p>	<p>8. In a supermarket, each cup costs \$4 and each bowl costs \$6. You have \$34 to spend. Write an equation to determine the combinations of bowls and cups you can buy.</p> <p>x: # of cups     <math>4x + 6y = 34</math>                      y: # of bowls                      C: total</p>
<p>9. You are running a concession stand for the football game. You sell hot dogs for \$1 and sodas for \$.50. At the end of the night you made \$200. Write an equation to determine how many hot dogs and sodas were sold.</p> <p>x: hot dogs (#of)     <math>1x + .5y = 200</math>                      y: # of sodas</p>	<p>10. You are visiting Washington DC 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 determines the cost of the taxi ride.</p> <p>m: .75     <math>y = .75x + 3.00</math>                      b: 3.00</p>

# Characteristics

- ▷ Domain: all possible x values  
left to right  $(-\infty, \infty)$ ;  $\mathbb{R}$
- ▷ Range: all possible y values  
bottom to top  $(-\infty, \infty)$  or  $\mathbb{R}$   
(min to max)
- ▷ Y-Intercept:  
point where graph crosses the  
y-axis  $(0, \#)$
- ▷ X-Intercept:  
point where graph crosses the  
x-axis  $(\#, 0)$
- ▷ Zero:  
X-intercept  
 $x = \#$
- ▷ Maximum:  
highest point
- ▷ Minimum:  
lowest point



- ▷ Interval of Increase:  
+ slope; goes  $\uparrow$   $\& \rightarrow$
- ▷ Interval of Decrease:  
- slope; goes  $\downarrow$   $\& \rightarrow$
- ▷ Interval of Constant:  
 $\emptyset$  slope  $\leftrightarrow$   
flat
- ▷ Positive:  
 $(-\infty, 2)$  above x axis  
 $(5, \infty)$  below x axis
- ▷ Negative:  
 $(2, \infty)$  above x axis  
 $(-\infty, 5)$  below x axis
- ▷ End Behavior: \*look at left & right arrows;  
are they pointing up or down?  
As  $x \rightarrow -\infty$ ;  $f(x) \rightarrow \frac{\infty}{\text{up or down}}$   
left  
As  $x \rightarrow \infty$ ;  $f(x) \rightarrow \frac{-\infty}{\text{up or down}}$   
right



Based on x-int

## arithmetic sequences

- +/- the same
- common difference
- ROC or slope

- ▷ Recursive Formula \*must have both  
 $a_1 = \#$   
 $a_n = a_{n-1} + d$
- ▷ Explicit Formula \*multiply d to (n-1)  
 $a_n = a_1 + (n-1)d$   
or  
 $a_n = dn + b$

## Other Notes