Day 6 – Comparing Standard Form and Slope Intercept Form – Notes

	Standard Form	Slope Intercept Form
Form	$Ax + By = C$ a, b, and c are constants	$y = mx + b$ m = slope b = y-intercept
Information	Gives x intercept (when substituting 0 for y) Gives y-intercept (when substituting 0 for x)	Gives slope and y-intercept
Advantages	Easy to calculate x and y intercepts Helpful when we solve systems of equations (Unit 3) using elimination	Easily determine slope and y-intercept Easiest and fastest to graph the line Only form you can put in the graphing calculator
Disadvantages	Do not know the slope unless you convert to slope intercept form (solve for y) A, B, and C do not stand for anything obvious (like slope or y-intercept) Harder to graph a line	Finding the x-intercept takes a little more work Not every linear equation can be written in slope intercept form (like x = 5)
Context	Adding or subtracting two amounts and setting equal to a total *Example: Tickets for the school play cost $5.00 for students and $8.00 for adults. On opening night $1600 was collected in ticket sales.* $5x + 8y = 1600$	Multiplying a constant to a changing amount and then adding or subtracting a starting amount *Example: Carl has $200 in his bank account and each week he withdraws $25 dollars.* $y = 200 - 25x$

Practice with Standard and Slope Intercept Form in a Context

Practice: For each scenario, create an equation and solve for the missing variable.

a. A bookstore has mystery novels on sale for $2 each and sci-fi novels on sale for $3 each. Bailey has $30 to spend on books. How many mystery novels can she buy if she buys 6 sci-fi novels?

x: # of mystery novels
y: # of sci-fi novels

$2x + 3y = 30$

$y = 6$

$2x + 3(6) = 30$

$2x + 18 = 30$

$2x = 12$

$x = 6$

She can buy 6 mystery novels if she buys 6 sci-fi novels.

b. Your little brother is having a party at the local zoo. The zoo charges a party fee of $50 plus $5 for each guest. How many guests did he invite if the total cost was $115?

x: # of guests
y: total cost

$y = 5x + 50$
$115 = 5x + 50$
$65 = 5x$
$x = 13$

If they spent $115, they invited 13 guests.

c. Alex's goal is to sell $100 worth of tickets to the school play. The tickets are $4 for students and $10 for adults. How many student tickets does he need to sell if he sells 6 adult tickets?

x: # of student tickets
y: # of adult tickets

$4x + 10y = 100$
$4x + 10(6) = 100$
$4x + 60 = 100$
$4x = 40$
$x = 10$

If he sells 6 adult tickets, he needs to sell 10 student tickets.

d. It costs $4 to order a chicken sandwich and $3 to order a cheeseburger form the local fast food restaurant down the street for dinner for the math team before their competition. They have $60 to spend on food. Calculate the x and y intercepts of this problem and interpret your answers in terms of the problem.

x: # of chicken sandwiches
y: # of cheeseburgers

$4x + 3y = 60$

x-int: $y = 0$
$4x + 3(0) = 60$
$4x = 60$
$x = 15 \rightarrow (15, 0)$

If they do not order any cheeseburgers, they can order 15 chicken sandwiches.

y-int: $x = 0$
$4(0) + 3y = 60$
$3y = 60$
$y = 20 \rightarrow (0, 20)$

If they do not order any chicken sandwiches, they can order 20 cheeseburgers