

Unit 4 Day 2: Writing Equations from Verbal Scenarios

Focus Question: Which form of a line is best to use in each situation?

Review: What are the three ways you can write the equation of a line?

① Standard
 $Ax + By = C$

② Point-Slope
 $y - y_1 = m(x - x_1)$

$f(x) = mx + b$
③ Slope-Intercept
 $y = mx + b$

A. For each situation below, identify your variables and what they represent. Then write a linear equation in slope-intercept form, standard form, or point-slope form to represent each situation. Explain why your choice is the best representation.

1. Mary is selling popcorn for \$5.00 per bucket and hotdogs for \$ 4.75 each. After one hour, she makes \$72.50.

Variable 1: x: # of popcorn buckets sold variable 2: y: # of hot dogs sold

My equation: $5x + 4.75y = 72.50$ $20x + 19y = 290$	This is written in <u>Standard</u> form. It is the best choice because... <u>2 rates</u>
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2. Matt is in charge of selling roses for the Valentine's Day dance. The roses sell for \$3.75 each. He estimates that the expenses for the roses are \$25. Matt wants to write an equation for the profit.

Variable 1: x: # of roses sold variable 2: y: Profit

My equation: $y = 3.75x - 25$	This is written in <u>Slope int</u> form. It is the best choice because... <u>slope & starting value</u>
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3. George is trying to save money to buy his books for college. He opened a savings account with his graduation money and each month he puts in \$50 from his paycheck. After 3 months of working over the summer he has saved \$700 dollars. George wants to write an equation for how much money he has after each month.

Variable 1: x: monthly paychecks variable 2: y: money in acct.

My equation: $y - 700 = 50(x - 3)$	This is written in <u>pt. slope</u> form. It is the best choice because... <u>slope & point in time</u>
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B. For each situation below, identify what your variables represent. Then write an equation to represent the situation.

1. An airplane 30,000 feet above the ground begins descending at the rate of 2000 feet per minute. Assume the plane continues at the same rate of descent.

sl. int
 x : time (min)
 y : height (feet)

$y = mx + b$

$$y = -2000x + 30000$$

2. At the Virginia Beach Boardwalk, a rental shop will rent roller blades for \$3 an hour and skateboards for \$5 an hour. A customer was charged \$30.

std. form
 x : # of hours roller blading
 y : # of hours on skateboard

$Ax + By = C$

$$3x + 5y = 30$$

3. Marco bought flowers for his girlfriend for Valentine's Day. Two flowers are dying each day. After 6 days, she has 10 flowers left. He wants to figure out when all the flowers will be dead and he should buy new ones.

pt. slope
 x : days
 y : flowers remaining

$y - y_1 = m(x - x_1)$

$$y - 10 = -2(x - 6)$$

4. Suppose you receive \$100 for a Christmas present, and you deposit it in a savings account. Then each week thereafter, you add \$5 to the account but no interest is earned.

sl. int
 x : # of weeks
 y : amount of \$ in savings

$f(x) = 5x + 100$

$$y = 5x + 100$$

5. Xavier is selling bags of popcorn for \$2 and candy bars for \$1. He wants to raise \$200 to buy a pair of Beats.

x : # of popcorn bags sold
 y : # of candy bars sold

$$2x + y = 200$$