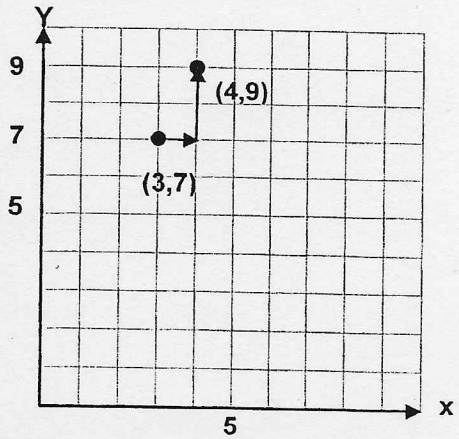
Forming Equations

Case 1 Write an equation given slope and y-intercept	Case 2 Write an equation given a point and the slope	Case 3 Write an equation given two points
Method Place "*m*" and "*b*" into the equation.	**Method** - Substitute the *x* and *y* values of the point and the slope value as m into the equation - Solve for "*b*" - Place "*m*" and "*b*" into the equation	**Method** - Find the slope by graphing the points. - Substitute one point and the slope into the equation. - Solve for "*b.*" - Place "m" and "b" into the equation.
Example Write the equation when: $m = 0.50$, $b = 20$ The equation is: $y = 0.50x + 20$	**Example** Write the equation through (160,100) with a slope of 0.50. $y = mx + b$ — Using $y = mx + b$, substitute in the point (160,100) and the slope. $100 = 0.50\,(160) + b$ $100 = 80 + b$ — Solve for *b*. $100 - 80 = 80 - 80 + b$ $20 = b$ m= 0.50 and $b = 20$, so the equation is: $y = 0.50x + 20$ — Place "*m*" and "*b*" into the equation.	**Example** Write the equation of the line through: (3, 7) and (4, 9) First, find the slope by graphing the points and calculating the rise/run.  Next, substitute (3, 7) and $m = 2$ into the equation and solve for "b" $y = mx + b$ $7 = 2(3) + b$ $7 = 6 + b$ $1 = b$ The equation is $y = 2x + 1$
Check your understanding: Write the equations given: m = −1 and b = 8 m = 3.5 and b = −2 m = 0 and b = 1 m = 15 and b = 0 m = $\frac{1}{3}$ and b = 6	**Check your understanding:** Write the equations given: Point (2, 10) and m = 3 Point (4, −18) and m = −5	**Check your understanding:** Write the equations given: Points (5, −1) and (3,3) Points (9,2) and (0,−7)