Forms of Linear Equations

Form	Type of Contexts	Writing Equations	Graphing	Tables
Slope Intercept Form $y = mx + b$ $(0,b)$ is y int. · Slope · rate of change · Common diff.	When you know: ① The "0" term AND ② rate of change	Need to know... • Slope AND y intercept	Easy & not too much work: ① Start by plotting the y-intercept ② Then move up & over the rate of change to get to a 2nd point *If y intercept is NOT an integer this is difficult & possibly inaccurate!	Easy to find output values by SUBSTITUTING input values into rule *Inputs do not need to be in any particular order!
Point Slope Form $y = m(x - x_1) + y_1$ slope (x_1, y_1) is a point on the line	When you know: ① ANY related INPUT/OUTPUT AND ② rate of change	Need to know... → slope and ANY POINT → TWO given POINTS → y-intercept is NOT an INTEGER	Easy & not much work: ① Start by plotting the given point ② Then move up & over the rate of change to get a 2nd point	Easy to find output values by SUBSTITUTING input values into rule, but there are MORE ALGEBRAIC STEPS than slope-intercept form (Less efficient!)
Recursion Formula $f(x_1) = y_1$; (x_1, y_1) is "start" point $f(n) = f(n-1) + m$ common difference	*Discrete relationships ONLY! Any context where inputs (domain) are restricted to WHOLE #'s ONLY (includes Arithmetic Sequences)	Need to know... "start" point AND common difference AND INTEGER inputs ONLY (discrete)	Easy & not much work: ① Start by plotting the "start" point ② Then move up & over the common difference to find additional points *Points are NOT connected!!	*Inputs MUST BE CONSECUTIVE! Take any output & add common difference to get to NEXT output.