6.6 General Form of the Equation for a Linear Function

General Form of the Equation of a Linear Relation
$Ax + By + C = 0$
is the general form of the equation of a line,
where A is a whole, positive number, and B and C are integers.

No fractions!

① get rid of fractions by multiplying by denominator
② move all terms to one side so "x" term is positive.

Example1: Write each equation in **general form**.

a) $y = -\frac{2}{3}x + 4$ (×3)

$3y = 3\left(-\frac{2}{3}x\right) + 3(4)$

$3y = -2x + 12$

$+2x \quad +2x \quad -12$

-12

$2x + 3y - 12 = 0$

b) $y = \frac{1}{4}x + 3$ (×4)

$4y = 4\left(\frac{1}{4}x\right) + 4(3)$

$4y = x + 12$

$-4y \quad -4y$

$0 = x - 4y + 12$

c) $y + 2 = \frac{3}{2}(x - 4)$

$2(y+2) = 2\left[\frac{3}{2}(x-4)\right]$

$2(y+2) = 3(x-4)$

$2y + 4 = 3x - 12$

$-2y \ -4 \quad -2y \ -4$

$0 = 3x - 2y - 16$

d) $y - 1 = \frac{3}{5}(x + 2)$

$5(y-1) = 5\left[\frac{3}{5}(x+2)\right]$

$5(y-1) = 3(x+2)$

$5y - 5 = 3x + 6$

$-5y + 5 \quad -5y + 5$

$0 = 3x - 5y + 11$

Example 2: Graph the line whose equation is $3x+2y-18=0$ by finding the x - and y - intercepts of the line.

Determine the x - intercept:

↳ x-value when $y=0$

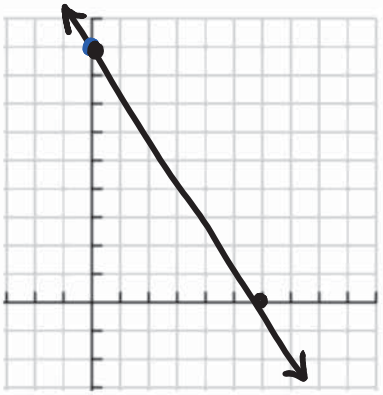
$3x+2(0)-18=0$

$3x-18=0$

$+18 \quad +18$

$\frac{3x}{3}=\frac{18}{3}$

$x=6$



Determine the y - intercept:

↳ y-value when $x=0$

$3(0)+2y-18=0$

$2y-18=0$

$+18 \quad +18$

$\frac{2y}{2}=\frac{18}{2}$

$y=9$

Example 3: Determine the slope of a line with the equation: $3x-2y-16=0$

↳ must rewrite in slope-intercept form ($y=mx+b$)

$3x-2y-16=0$

$-3x \quad +16 \quad -3x+16$

$\frac{-2y}{-2}=\frac{-3x}{-2}+\frac{16}{-2}$

$y=\frac{3}{2}x-8$

slope $=\frac{3}{2}$

Standard Form	$Ax+By=C$
General Form	$Ax+By+C=0$
Slope-Intercept Form	$y=mx+b$
Slope-Point Form	$y-y_1=m(x-x_1)$

Practice: p284 #4 – 8, 12 – 14, 18

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