15. ① $Ax + By = C$

② $Dx + Ey = F$

if $(x\ 0)$ is a sol^{n}

if $(0, y)$ is a sol^{n}

① $\cancel{A(0)} + By = C$

$\frac{B}{B}y = \frac{C}{B}$

$y = C/B$

② $\cancel{D(0)} + Ey = F$

$\frac{E}{E}y = \frac{F}{E}$

$y = \frac{F}{E}$

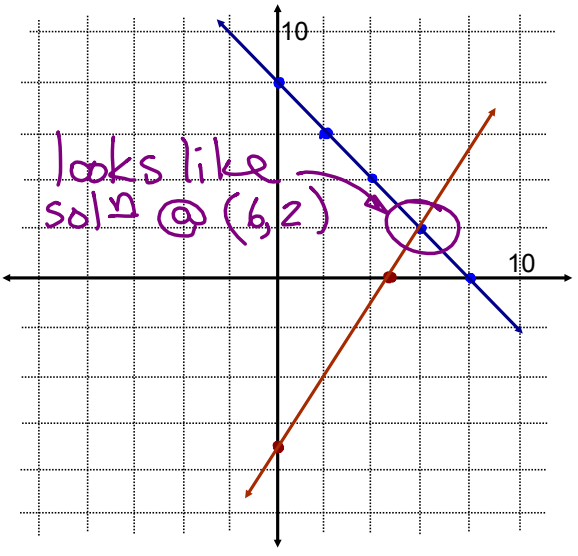
$\therefore \frac{C}{B} = \frac{F}{E}$

7.2 Solving Systems Graphically

* The solution of a system of equations is the point of intersection of the two graphs. This coordinate satisfies both equations at the same time.

ex. Graphically solve the the following system:

$$\begin{cases} x + y = 8 & ① \\ 3x - 2y = 14 & ② \end{cases}$$



① $y = -x + 8$ ← y-int.
$m = -1$

② y-int: $x = 0$

$3(0) - 2y = 14$

$-2 \quad -2$

$y = -7$

③ x-int: $y = 0$

$3x - 2(0) = 14$

$3 \quad 3$

$x = 14/3$

≈ 4.6

Test the solution in equation ①&② $x = 6$ & $y = 2$

① $x + y = 8$

$6 + 2 = 8$ ✓

satisfies equⁿ ①

② $3x - 2y = 14$

$3(6) - 2(2) = 14$

$18 - 4 = 14$

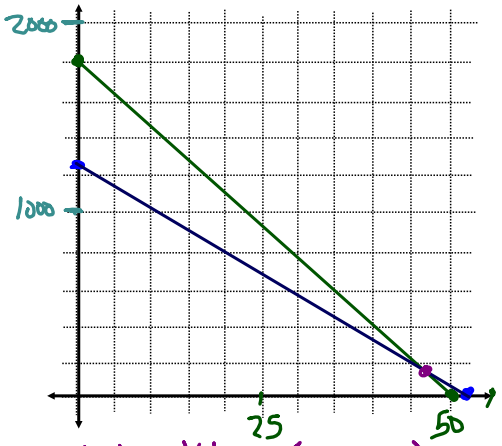
$14 = 14$ ✓

satisfies equⁿ ②

∴ (6,2) is definitely the pt. of intersection

ex. A box of 36 golf balls has a mass of 1806 g. If we remove 12 balls, the box has a mass of 1254 g. What is the mass of one ball? How much does the empty box weigh?

let x = the mass of one ball y = the mass of the box



① $36x + y = 1806$

x-int: $y = 0$

$\frac{36x}{36} = \frac{1806}{36}$

$x = 50.16$

y-int: $x = 0$

$36x + y = 1806$

$y = 1806$

② $24x + y = 1254$

x-int: $y = 0$

$\frac{24x}{24} = \frac{1254}{24}$

$x = 52.25$

y-int: $x = 0$

$y = 1254$

Test the solution in equation ① & ②

Test (46, 180)

① $36(46) + 180$

$= 1836$

$\neq 1806$ but is close

② $24(46) + 180$

$= 1284$

$\neq 1254$

∴ The golf ball weighs about 46 g and the box weighs around 180 g (160 g would be a better estimate)

Homefun: Pg. 409 # 3-9, 11, 12, 15, 19