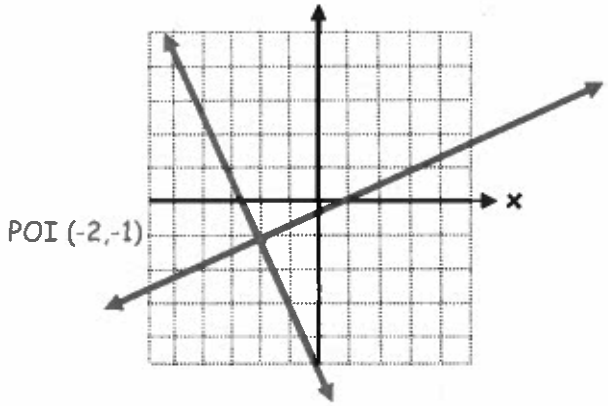
fix (d) on back

Solving by Graphing

- To solve a system of equations by graphing we need to locate the point of intersection (POI).

i.e.



The POI is the single point where the two lines cross. It is where both equations are equal.

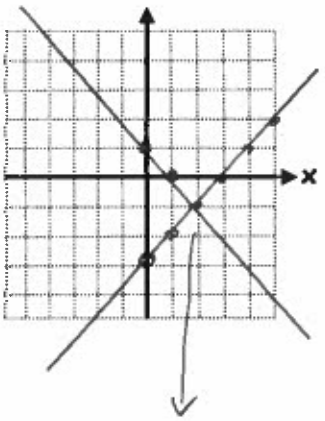
- When graphing the system, use the most appropriate method (table, slope-intercept, xy-intercepts).

Ex/ Solve the following systems by graphing.

a) $y = x - 3$
$y = -x + 1$

start at -3 on y then rise 1 / run 1

start at 1 on y then down 1 / right 1

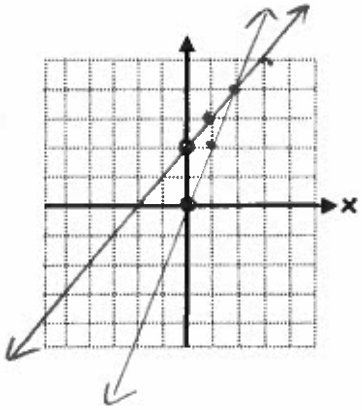


☆ Make more dots to stay straight

POI
(1, -2)
x y

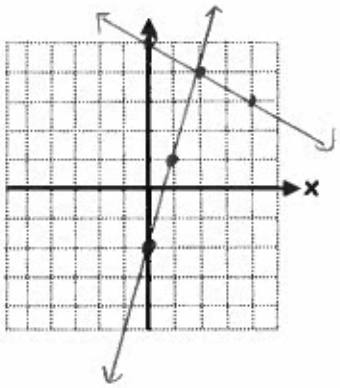
b) $y = x + 2$
$y = 2x$

start at zero then up 2 / right 1



POI
(2, 4)

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



POI
(2, 4)

d) $x+2y=4$
$2x+3y=6$

x	y
0	2
4	0

x	y
0	2
3	0

e) $x+y=5$
$2x-y=4$

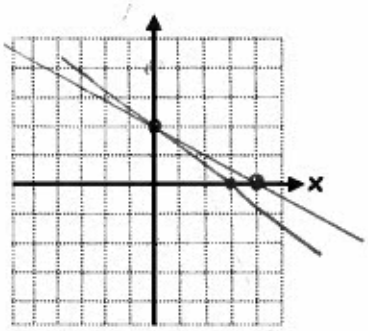
x	y
0	5
5	0

x	y
0	-4
2	0

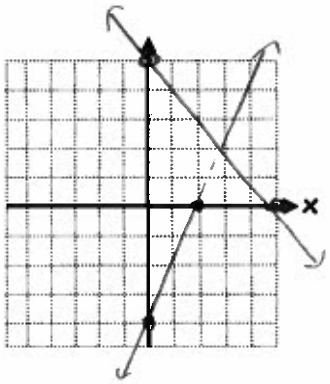
f) $x+2y=4$
$2x+4y=8$

x	y
0	2
4	0

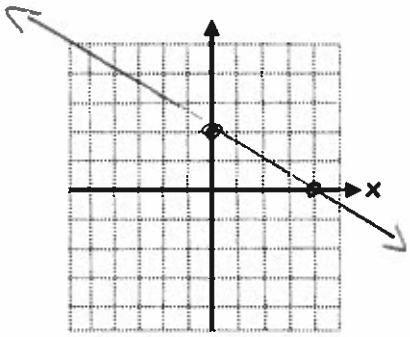
x	y
0	2
4	0



POI (0,2)



POI (3,2)



Infinite POIs (same line!)

To check whether a POI is in fact the solution to a system, the coordinates of the POI should be substituted into both equations. If LS = RS for both, the point is the solution.

Ex/ Determine if (4,2) is the solution to the following systems.

x y

a) $x+y=6$
$2x-y=6$

sub in 4 and 2

$x+y=6$
$4+2=6$
$6=6$ ✓

$2x-y=6$
$2(4)-2=6$
$8-2=6$
$6=6$ ✓

Works in both so it is the POI

b) $3x-2y=8$
$x-y=-2$

$3x-2y=8$
$3(4)-2(2)=8$
$12-4=8$
$8=8$ ✓

$x-y=-2$
$4-2=-2$
$2=-2$ ✗

Does not work in both so is not the POI

Practice: Handout - Solve by Graphing