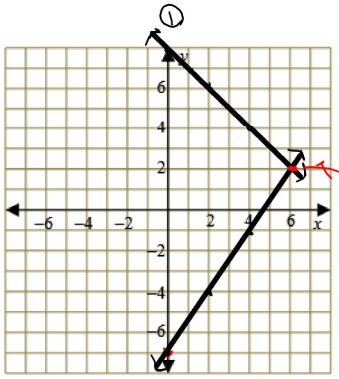
MAAPC20S Systems of Linear Relations Lesson 2

Lesson Two – Solve a Linear System Graphically

Example 1

Solve the linear System: $x + y = 8$ and $3x - 2y = 14$



① Write eqns in y=mx+b form
② Use the y-int and slope to graph
③ Determine the sol'n

① $x + y = 8$

$y = -x + 8$

$m = -\frac{1}{1}$ (1 down, 1 right) y-int

② $3x - 2y = 14$

$\frac{-2y}{-2} = \frac{-3}{-2}x + \frac{14}{-2}$

$y = \frac{3}{2}x - 7$

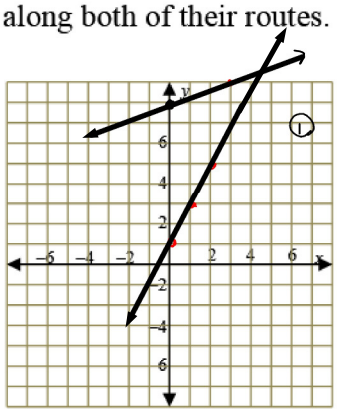
$m = \frac{3}{2}$ (3 up, 2 right) y-int -7

Independent system

∴ sol'n (6, 2) (point of intersection)

Example 2

Don and Kari are police officers. Don is in charge of patrolling a route that can be described by the equation $y = 2x + 1$. Kari is responsible for patrolling a route that can be described by the equation $y = \frac{1}{3}x + 8$. The police station is located along both of their routes. What are the coordinates of the station?



$y = 2x + 1$

$y = \frac{1}{3}x + 8$

approx $(4\frac{1}{3}, 9\frac{1}{4})$ ← estimate from the graph

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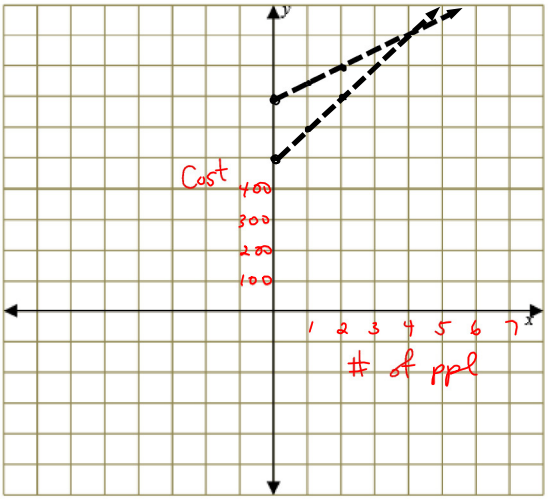
Example 3

rate of change (slope)

y-int

A hockey club must make arrangements to book a hall for their wind-up. They have narrowed their choice to two different places. Hall A requires a rental fee of $700.00 plus $50.00 per person. Hall B requires $500.00 for a rental fee plus $100 per person. How many people would have to attend the wind-up for the total cost to be the same for both halls?

Cost = price per person × # of ppl + rental fee



Hall A

$C = 50n + 700$

# of ppl

Hall B

$C = 100n + 500$

∴ 4 ppl to attend for the cost to be the same

Assignment: Pg. 409; 4, 5 a (iii, iv), 7 (a,b), 8 (graph using intercepts)