KEY

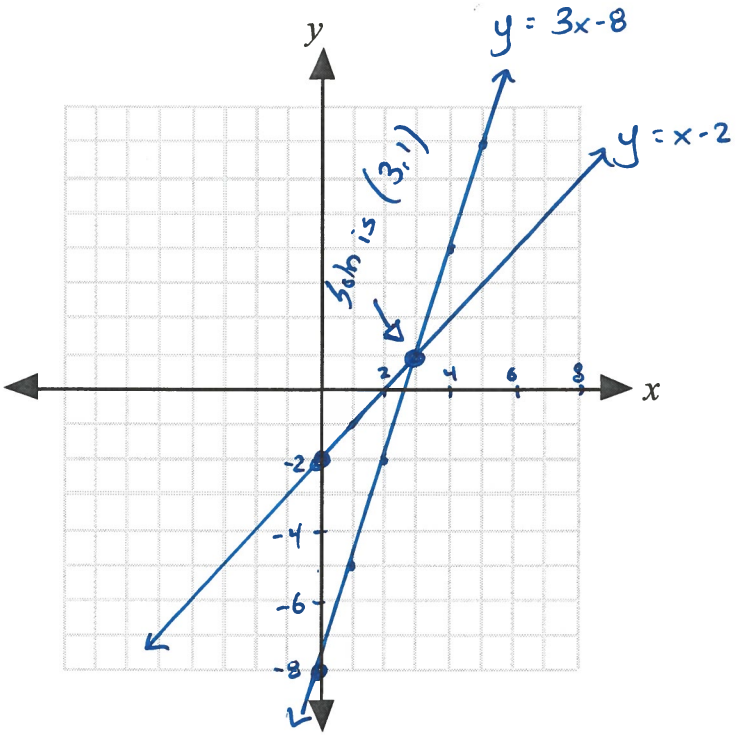
L27 - Math 10C - Chapter 8&9 Review

NAME

1. Solve the following systems of equations by graphing on the grid below. Make sure you draw your lines accurately.

a) $y = x - 2$ $3x - y - 8 = 0$

$y = 3x - 8$



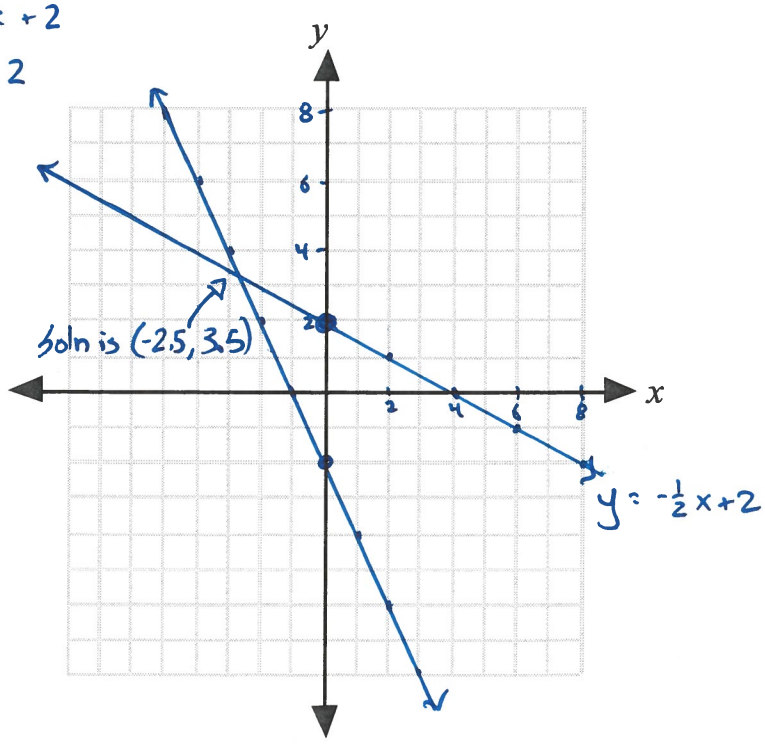
b) $2x + 4y = 8$ $y + 4 = -2(x - 1)$

$4y = -2x + 8$

$y = -\frac{1}{2}x + 2$

$y + 4 = -2x + 2$

$y = -2x - 2$



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c) $x - 4y = 6$

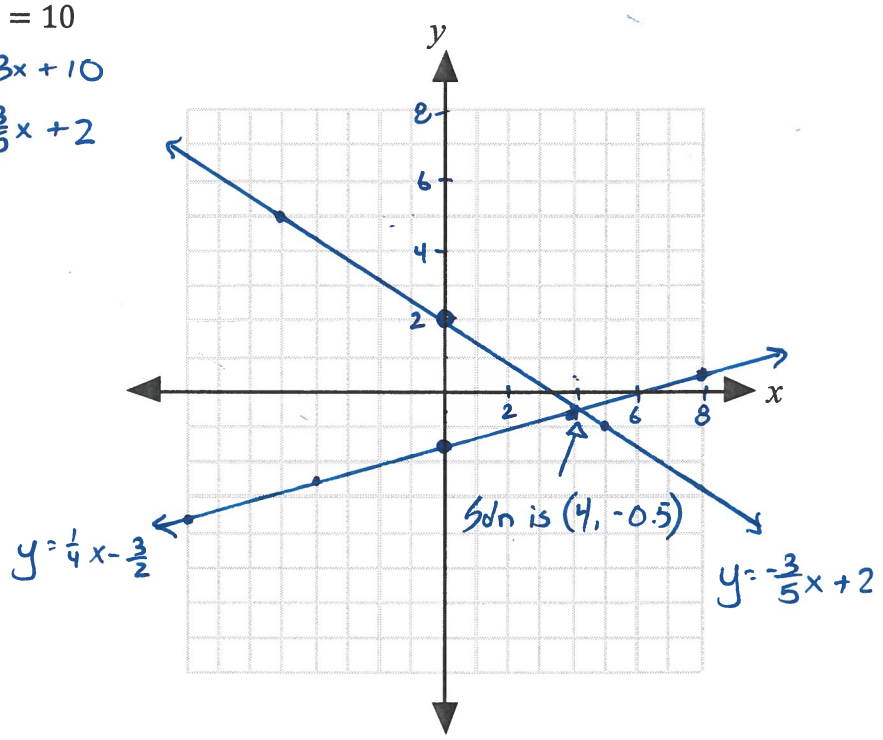
$-4y = -1x + 6$

$y = \frac{1}{4}x - \frac{3}{2}$

$3x + 5y = 10$

$5y = -3x + 10$

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



2. Solve the following using the elimination method.

a) $4x + y = 13$

$+(x - y = 12)$

$5x = 25$

$\div 5 \quad \div 5$

$\boxed{x = 5}$

$x - y = 12$

$(5) - y = 12$

$-1y = 7$

$\boxed{y = -7}$

Soln is $(5, -7)$

b) $2x - 3y = -14$

$2(x + y = 3)$ → $2x - 3y = -14$

$(2x + 2y = 6)$

$-5y = -20$

$\boxed{y = 4}$

$x + y = 3$

$x + (4) = 3$

$\boxed{x = -1}$

Soln is $(-1, 4)$

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c) $2(3x + 5y = 4)$
$3(2x + 4y = 2)$

$6x + 10y = 8$
$-(6x + 12y = 6)$
$-2y = 2$
$y = -1$

$2x + 4y = 2$
$2x + 4(-1) = 2$
$2x - 4 = 2$
$2x = 6$
$x = 3$

Soln is $(3, -1)$

d) $4x - 2y = -3$
$2(2x + 14y = 36)$

$4x - 2y = -3$
$-(4x + 28y = 72)$
$-30y = -75$
$y = 2.5$

$2x + 14y = 36$
$2x + 14(2.5) = 36$
$2x + 35 = 36$
$2x = 1$
$x = 0.5$

Soln is $(0.5, 2.5)$

3. Solve the following using the substitution method.

a) $4x + y = 13$
$y = 11$

$4x + (11) = 13$
$4x = 2$
$x = 0.5$
$y = 11$

Soln is $(0.5, 11)$

b) $x + y = 12$
$y = 2x$

$x + (2x) = 12$
$3x = 12$
$x = 4$

$y = 2x$
$y = 2(4)$
$y = 8$

Soln is $(4, 8)$

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c) $2x - y = 18$
$x = 2y + 6$

$2(2y+6) - y = 18$
$4y + 12 - y = 18$
$3y + 12 = 18$
$3y = 6$
$\boxed{y = 2}$

$x = 2(2) + 6$
$x = 4 + 6$
$\boxed{x = 10}$

Soln is $(10, 2)$

d) $2y + 5 = x - 7$
$y = -x + 3$

$2(-x+3) + 5 = x - 7$
$-2x + 6 + 5 = x - 7$
$-2x + 11 = x - 7$
$11 = 3x - 7$
$18 = 3x$
$\boxed{6 = x}$

$y = -(6) + 3$
$\boxed{y = -3}$

Soln is $(6, -3)$

4. Solve the following word problems.

a) A preschool playground has both bicycles and tricycles. There is a total of 30 seats and 70 wheels. How many bicycles are there? How many tricycles are there?

Let B = bicycles
Let T = tricycles

Seats → $1B + 1T = 30$
Wheels → $2B + 3T = 70$

$3(1B + 1T = 30)$
$2B + 3T = 70$

→ $3B + 3T = 90$
$-(2B + 3T = 70)$
$1B = 20$
$\boxed{B = 20}$

$1B + 1T = 30$
$1(20) + 1T = 30$
$20 + T = 30$
$\boxed{T = 10}$

So 20 bicycles, 10 tricycles.

b) Whitehorse, YT, has three times as much snowfall each year as Vancouver, BC. The total combined snowfall for these two cities is approximately 192 cm. What is the snowfall in each city?

Let W = Whitehorse
Let V = Vancouver

$W = 3V$
$W + V = 192$

$W + V = 192$
$(3V) + V = 192$
$4V = 192$
$\boxed{V = 48}$

$W + V = 192$
$W + (48) = 192$
$\boxed{W = 144}$

Whitehorse has 144cm snow.
Vancouver has 48cm snow