

Unit 1 Pretest Review

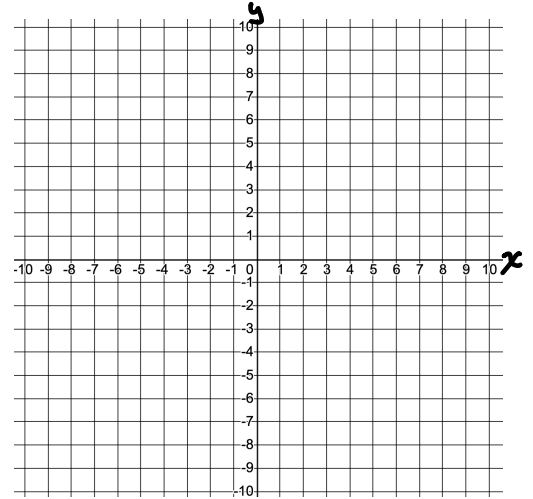
MPM2D

Jensen

1) Solve each linear system by graphing.

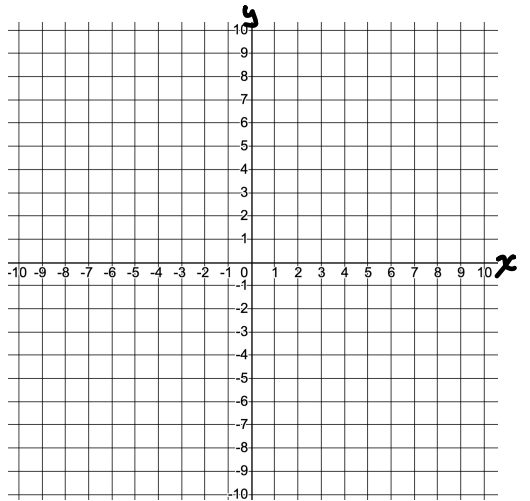
a) $l_1: y = 4x - 5$

$l_2: y = \frac{2}{3}x + 5$



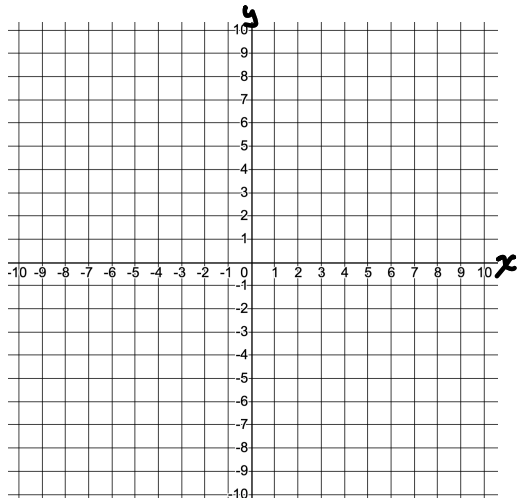
b) $l_1: 3x + y = 1$

$l_2: x + 4y = 4$



c) $l_1: y = -2x + 5$

$l_2: y = \frac{1}{2}x - 5$



2) What are the different possibilities for the number of solutions to a linear system. Explain each scenario.

3) Solve each linear system using the method of substitution.

a) $\ell_1: y = 2x + 4$
 $\ell_2: x - 4y = -9$

b) $\ell_1: 2x = 7 - y$
 $\ell_2: 3x - 2y = 21$

c) $\ell_1: 3m + 9n = 1$
 $\ell_2: m + 3n = 2$

d) $\ell_1: 2x - 3y = 6$
 $\ell_2: 2x - y = 7$

e) $\ell_1: 3x - 8 = -2y$
 $\ell_2: 2x + 3y = 7$

f) $\ell_1: 2x = 6 - y$
 $\ell_2: 3x - 2y = 2$

4) Solve each linear system using the method of elimination.

a) $\ell_1: x - y = 14$
 $\ell_2: 2x + 5y = -7$

b) $\ell_1: 9x - 3y = 15$
 $\ell_2: 3x - y = 5$

c) $\ell_1: 3x + 4y = 17$
 $\ell_2: 7x - 2y = 17$

d) $\ell_1: 2x + 5y = 18$
 $\ell_2: 3x + 5y - 17 = 0$

e) $l_1: 3x = 34 - 2y$
 $l_2: 5x - 3y = -13$

f) $l_1: 5x + 2y = 5$
 $l_2: 2x + 3y = 13$

5) Petr has \$5000 invested in two plans. One plan pays 5% simple interest per year and the other pays 8%. At the end of the year, Petr receives a total of \$340 in interest. How much did he invest in each plan?

6) A physics contest has 30 multiple choice questions. A correct answer gains 4 points, while a wrong answer loses 1 point. Rolly answered every question and scored 55 points. How many questions did he answer correctly?

7) One lawn fertilizer is 24% nitrogen, and another is 12% nitrogen. How much of each fertilizer should be mixed to obtain 100 kg of fertilizer that is 21% nitrogen?

8) A small plane took 3 hours to fly 960 km from Ottawa to Halifax with a tail wind. On the return trip, flying into the wind, the plane took 4 hours. Find the wind speed and the speed of the plane in still air.

9) The Outdoors Club held a car wash to raise money. They washed cars for \$5 each and vans for \$7 each. They washed 45 vehicles and earned \$243. How many of each type of vehicle did they wash?

Answers

1)a) $x = 3, y = 7$ **b)** $x = 0, y = 1$ **c)** $x = 4, y = -3$

2) no solutions if the lines are parallel and distinct; 1 solution if the lines are not parallel; infinitely many solutions if the lines are parallel and coincident.

3)a) $x = -1, y = 2$ **b)** $x = 5, y = -3$ **c)** no solutions **d)** $x = \frac{15}{4}, y = \frac{1}{2}$ **e)** $x = 2, y = 1$ **f)** $x = 2, y = 2$

4)a) $(9, -5)$ **b)** infinite solutions **c)** $(3, 2)$ **d)** $(-1, 4)$ **e)** $(4, 11)$ **f)** $(-1, 5)$

5) \$2000 at 5% and \$3000 at 8%

6) 17

7) 75 kg of 24% nitrogen, 25 kg of 12% nitrogen

8) wind 40 km/h; plane in still air 280 km/h

9) 36 cars and 9 vans