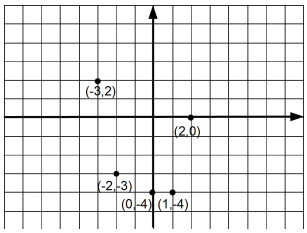
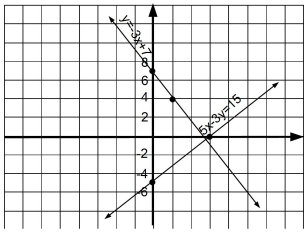
DEPARTMENT OF MATHEMATICS and COMPUTER SCIENCE
BCC, CUNY

MATH 05 Test 2 Chapter 4 Answers to review

1. $(3,0),(6,2)$ are solutions

2. $(6,0),(-2,-2)$ are solutions

3. 



4.

5. **(•)** $\frac{2}{3}$ **(b)** 0 **(c)** 1 **(d)** $\frac{4}{5}$

6. the slope of the line passing through the points $(2,-6)$ and $(-5,-2)$ is $-\frac{4}{7}$

7. the slope of the line passing through the points $(-3,-6)$ and $(5,-2)$ is $\frac{1}{2}$

8. **(a)** $\frac{2}{3}$ **(b)** 2 **(c)** 1 **(•)** $-\frac{2}{3}$

9. For the following pair of lines find whether they are **parallel**, **perpendicular** or **neither** (choose the answer bellow)?

(a) **(•)** lines are parallel **(b)** lines are perpendicular **(c)** neither

Explanation: slopes of both lines are equal to $\frac{5}{4}$

(b) **(a)** lines are parallel **(b)** lines are perpendicular **(•)** neither

Explanation: $m_1 = \frac{5}{7}, m_2 = \frac{7}{5}$ - they are not negative reciprocals.

10. Since the slope is undefined, it is a vertical line, i.e. x-coordinate is fixed.
    Hence the equation is $x = -\frac{5}{2}$

11. **(a)** $y = -\frac{5}{2}$ **(b)** $x = -\frac{5}{2}$ **(c)** $y = x + \frac{3}{2}$ **(•)** $y = -1$

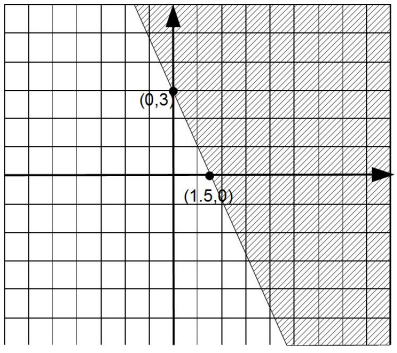
12. by starting with $y - (-4) = -\frac{5}{2}(x - (-2))$, we will finally get $5x + y = -18$

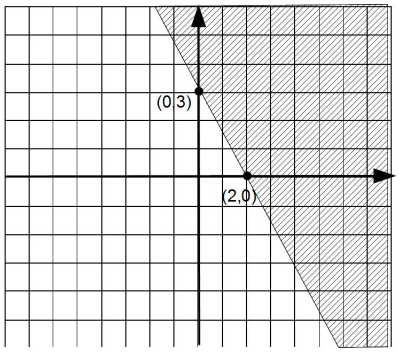
13. $m_1 = m_2 = \frac{3}{2}$, then we get $y + 1 = \frac{3}{2}(x - 2)$, and eventually $y = \frac{3}{2}x - 4$.

14. $m_2 = \frac{3}{2}$, hence $m_1 = -\frac{2}{3}$. Then we use $y + 1 = -\frac{2}{3}(x - 2)$, and after some work we will get $y = -\frac{2}{3}x + \frac{1}{3}$

15. Graph the solution set for the given linear inequalities:

    a) $y + 2x \geq 3$ b) $3x + 2y \geq 6$





16. If we multiply both sides of the first equation by 2, and then add corresponding sides of the resulting new system of equations, we get $0 = -1$, which is a False statement.

(a) $(1, 3)$ **(b)** Infinitely many solutions. Dependent system. **(•)** No Solutions. Inconsistent system. **(d)** $\{(-11, -1)\}$

17. By multiplying the first equation by 3, the second one by -2, and then adding the sides, we will get $x = 21$

(a) $x = 1$ **(•)** $x = 21$ **(c)** $x = -3$ **(d)** $x = \dfrac{69}{17}$

18. If we multiply the second equation by 3, and then add corresponding sides of the equations of the new system, we will get $7x = 7$, so $x = 1$.

    By substituting 1 for x in any of the original equations, we will find that $y = 3$. Hence, the solutions is $(1, 3)$.

19. Let the numbers be x, y, and $y = 3x - 4$. There are at least two ways to solve this problem.

    1) their sum is 36, hence $x + y = 36$, or $x + (3x - 4) = 36$ - solving it for x we will get $x = 10$, and then $y = 3x - 4 = 30 - 4 = 26$.

    2) here is our system of linear equations:

$$\begin{cases} \text{y} &= \text{3x-4} \\ \text{x+y} &= 36 \end{cases}$$

    re-writing the system (moving the term $3x$ to the left side in the first equation):

$$\begin{cases} \text{-3x + y} &= \text{-4} \\ \text{x +y} &= 36 \end{cases}$$

    After solving it, we will get $x = 10, y = 26$.

20. Solving using systems of linear equations:

$$\begin{cases} \text{L} &= \text{2W-3} \\ \text{2W + 2L} &= 84 \end{cases}$$

    re-writing the system (moving the term $2W$ to the left side in the first equation):

$$\begin{cases} \text{-2W + L} &= \text{-3} \\ \text{2W + 2L} &= 84 \end{cases}$$

After solving it, we will get $W = 15, L = 27$.

21. Solving using systems of linear equations:

$$\begin{cases} \text{s} \quad + \text{ a} &= 750 \\ \text{4.50s + 8a} &= \text{5,300} \end{cases}$$

re-writing the system (multiplying the first equation by -4.5):

$$\begin{cases} \text{-4.5s - 4.5a} &= \text{-3,375} \\ \text{4.50s + 8a} &= \text{5,300} \end{cases}$$

By adding corresponding sides of the equations, we will get $3.4a = 1,925$, or $a = 550$ adult tickets. Therefore, $s = 750 - 550 = 200$ student tickets.