

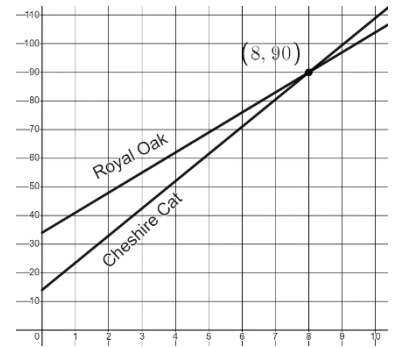
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**Part A – Attempt all questions in Part A before moving on to Part B**

1. The graph shows the cost in dollars to play trivia at two Ottawa restaurants versus the number of times you play. [3]

a) State the **point of intersection** of the graph. **Explain** its real-life meaning in this situation. Be specific!

b) **Using the graph**, which restaurant should you choose if you plan on going **more than 8** times? Why?



2. Is  $(-4, 7)$  the solution to the following system? **Justify** your answer for full marks. **DO NOT SOLVE THE SYSTEM.** [2]

$$x - 2y = -18$$

$$3y + 2x + 13 = 0$$

3. Given the following linear system fill in the blanks to create a linear system with infinite solutions. [1]

①  $y = 5x + 20$   
 ②  $2y = \square x + \square$

4. Without solving for the solution, determine the number of solutions for the given system. Explain your reasoning. [2]

①  $6x - 2y = -18$

②  $3y - 4x + 36 = 0$

Number of solutions: \_\_\_\_\_

Reasoning or proof:

5. Solve the following system by graphing. Graph equation ① using the slope and y-intercept and equation ② using the x and y intercepts. [4]

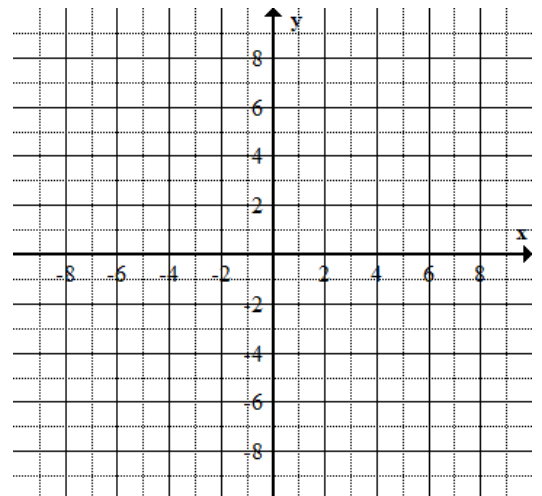
①  $y = \frac{-3}{4}x + 8$

②  $5x - 2y = 10$

Slope:

y-intercept:

X	Y
0	
	0



Therefore the solution is \_\_\_\_\_.

6. Solve the following systems using **substitution**.

[5]

a)  $y = -8x + 12$

$y = 5x - 14$

b)  $6x - 2y - 8 = 0$

$3x + y = 14$

7. Solve the following system using **elimination**.

[5]

a)  $5x + 8y = 10$

$3x + 4y = 2$

b)  $3x - 2y = 12$

$6y - 9x + 36 = 0$

8. The following equations represent two different orders placed at an ice-cream shop, where  $c$  is the cost of a cone in \$ and  $b$  is the cost of an ice-cream bar in \$.

**What is the cost of one ice-cream cone? What is the cost of one ice-cream bar?** Solve algebraically.

[3]

$6c + 8b = \$25.80$

$3c + 8b = \$18.30$

**Part B**

9. For each situation below, model the linear system that you would use to solve the problem. Models should include clearly defined variables and the two equations that would be used to solve. **DO NOT SOLVE THESE PROBLEMS.** [4]

a) When 3 times the larger of 2 numbers is added to 2 times the smaller number, the result is 91. Seven less than two times the larger number is the smaller number. What are the numbers?

b) Xan paid \$122 for new rollerblades. They paid with \$2 coins and \$5 bills. If they used 37 pieces of money (coins and bills together), how many \$5 bills did they use?

10. Model the following situation with a linear system and **SOLVE** the problem. Be sure to include let statements. [4]

Mariska had \$7900 to invest. She invested part at 3% interest and the rest at 9%. If the interest on her investments totaled \$459, how much did she invest at each rate?

**Part C**

11. The system  $ax - by = -13$  and  $ax + 3y = 6$  has one solution at the point  $(-1, 4)$ . Find the values of  $a$  and  $b$ . [3]