**7.7 – Applications of Linear
Systems WORKSHEET**

Name: _____

Date: _____

Complete on separate paper, show all work, give sentence answers

1. Two shirts and one sweater cost $60. Three shirts and two sweaters cost $104. Write a system of equations to represent this problem. Start by giving a *let statement* for x and for y. Then, *solve the system* to find the cost of one shirt and the cost of one sweater.

2. The length of a basketball court is 7 meters longer than its width. The perimeter of basketball court is 82m. Draw a diagram for assistance, give let statements, build two equations, and find the length of the court and the width of the court.

3. For the puppet play at the library, tickets for adults and tickets for children were sold. *Give let statements.* The total number of tickets sold was 256. *Write your first equation.* Tickets for adults cost $5 each and tickets for children cost $2 each. The total revenue was $767. *Write your second equation.* How many adult tickets were sold and how many children tickets were sold? *Solve the system.*

4. At a fitness centre, the initiation fee is twice the cost of the monthly fee. If the cost of the initiation fee plus 7 months of fitness is $252, what is the initiation fee and monthly fee?

5. A person invested $2000. A portion of the $2000 was invested at 4% per year. The other portion was invested at 5% per year (*when you put % in an equation, change to decimal…4% would be 0.04*). After one year, the total interest earned was $95. How much was invested at 4% and how much was invested at 5%.

    Hint: Let x = portion of $2000 invested at 4% and let y = portion of $2000 invested at 5%...build two equations…solve by substitution.

6. Jennifer had a total of $500 invested in high-yield investments. Part of the $500 was invested at 7% per year and the rest at 10% per year. After one year, the total interest earned was $44. How much did Jennifer invest at each rate?

7. The area of Regina is two thirds of the area of Calgary. The difference in the areas of the two cities is 1 700 km². What is the area of each city?

8. Balcony seats for the gymnastics championships costs $10, and floor-level seats cost $15. The total number of tickets sold was 331. The total revenue from sales was $3 915. How many balcony seats were sold? Floor-level?

Answers:
1. (a) x + y (b) 6x + 2y   (c) 5y – x   **2.** (a) x + y   (b) 10x   (c) 5y (d) 10x + 5y
3. Shirt: $16 & Sweater: $28   **4.** length: 24m & width: 17m
5. 85 adult tickets & 171 children tickets   **6.** initiation fee is $56, monthly $28
7. $500 invested at 4%, $1500 invested at 5%
8. $200 invested at 7%, $300 invested at 10%
9. area of Regina is 3400km² and area of Calgary is 5100km²
10. 210 balcony seats and 121 floor seats