7.7 Solving Word Problems

Example: Kelowna Community Theatre earned $9184 when 550 people attended a concert. An adult ticket cost $20 each and a child's cost $12 each. How many adults and children attended the show?

a) Create a system of equations to represent the question. Clearly state what each variable represents.

let a = # of adults

c = # of children

equation 1 : total revenue

$$20a + 12c = 9184$$

equation 2 : total in attendance

$$a + c = 550$$

b) Solve the system of equations by the method of your choice.

① $20a + 12c = 9184$

② $a + c = 550$

Use either substitution or elimination to solve this system.

rewrite equation ② for "a"

$a + c = 550$

$- c \quad - c$

$a = 550 - c$

① $20a + 12c = 9184$

$20(550 - c) + 12c = 9184$

$11000 - 20c + 12c = 9184$

$-11000 \qquad\qquad -11000$

$$\frac{-8c}{-8} = \frac{-1816}{-8}$$

$c = 227$

$a = 550 - c$

$a = 550 - 227$

$a = 323$

There were 323 adults and 227 children in attendance at the concert.

Check to see if it makes sense to have a negative answer. (Most times it won't for word problems)

Must include a concluding sentence with each word problem.

Mrs. Donnelly

F & PC 10

Answer the following questions on a separate piece of paper.

a) Create a system of 2 linear equations to represent each scenario. Clearly state what each variable represents.

b) Solve each system by the method of your choice (by graphing, substitution or elimination).

1. The cost of 4L of oil and 50L of gas is $42.50. The cost of 3L of oil and 35L of gas is $30.30. Find the cost of 1L of oil and 1L of gas.

(2.75/L , .63/L)

2. When john rented a car for 3 days and drove 160km, the charge was $124. When he rented the same car for 5 days and drove 400km, the charge was $240. What was the charge per day and per kilometer?

($28/day , $.25/km)

3. At a sale, all shirts are one price and the sweaters are another. Two shirts and 4 sweaters cost $98. One shirt and 3 sweaters cost $69. What is the sale price of one shirt and one sweater?

($9 shirts , $20 sweaters)

4. A sports club charges an initiation fee and a monthly fee. At the end of 5 months a member had paid a total of $170. At end the end of 10 months another member had paid $295. What are the initiation and monthly fees?

($45 initiation fee , $25 monthly fee)

5. Three footballs and 1 soccer ball cost $155. Two footballs and 3 soccer balls cost $220. What is the cost of a football and a soccerball?

($35 football , $50 soccer ball)

6. Jennifer invested $500 in two different investments. Part of the $500 was invested at 7% and the rest at 10%. After a year the total interest earned was $44. Determine how much was invested at each rate.

($200 investment A , $300 investment B)

7. A vending machine coin box has $6.20 in dimes and quarters. There are 32 coins in total. How many dimes and quarters are there?

(20 quarters , 12 dimes)

8. For a school play Janis sold 6 adult tickets and 15 student tickets, and collected $48. Pariz sold 8 adult tickets and 7 student tickets, and collected $38. Find the cost of adult and student tickets.

($3 adult tickets , $2 student ticket)