Name _____ Introduction to Algebra
Date _____ Class #10

Chapter 3 – Word Problem Applications

Quality – Accuracy – Transfer – 100%

Section 1. Money Problems. The formula for Simple Interest: $I = pr$

****The TOTAL INCOME Question****

1. Paul and Donna invested $9400, part at 5% simple interest and the rest at 7% simple interest for a period of one year. How much did they invest at each rate if their annual income from both investments is $610?

	Principle	Rate	$I = pr$
Paul	$(9400 - x)$	.05	$.05(9400 - x)$
Donna	x	.07	$.07x$

Donna = $7000
Paul = $2400

$.07x + .05(9400 - x) = 610$

$.07x + 470 - .05x = 610$

$.02x + 470 = 610$

$-470 \quad -470$

$.02x = 140$

$x = 7000$

~~****The INCOMES ARE THE SAME Question****~~

2. Sharon invested $20,000, part at 5% simple interest and the rest at 7% simple interest for a period of 1 year. How much is invested at each rate, if the interest earned in the 7% account is $440 more than the interest earned in the 5% account?

Name	Principle	Rate	$I = pr$
5%	$(20000 - x)$	.05	$.05(20000 - x)$
7%	x	.07	$.07x$

@7% = $12000

@5% = $8000

$.07x = .05(20000 - x) + 440$

$.07x = 1000 - .05x + 440$

$.07x = 1440 - .05x$

$+.05x \qquad +.05x$

$.12x = 1440$

$x = 12000$

Section 5. Mixture/Money/Amount Problems. Money = Price (Number)

****The TOTAL SEPARATE Problem****

1. At Tinseltown the costs of an adult movie are $7.50 for the evening show and $4.75 for the matinee. One day there was one showing of Hitch in the afternoon (a matinee) and one show (regular priced) in the evening. If 310 tickets were sold, resulting in receipts of $2022.50, how many adults attended each of the shows?

Show	Price	Number	Money
Matinee	4.75	$(310-x)$	$4.75(310-x)$
Evening	7.50	x	$7.50x$

$4.75(310-x) + 7.50x = 2022.50$

$1472.50 - 4.75x + 7.50x = 2022.50$

$1472.50 + 2.75x = 2022.50$

$-1472.50 \quad -1472.50$

$2.75x = 550$

$x = 200$

Evening = 200

Matinee = 110

****Our first MIXTURE Problem**** Mixture = Sum of Ingredient

2. At Agway Gardens stores, birdfeed is sold in bulk. In one barrel are sunflower seeds that sell for $1.80 per pound. In a second barrel is cracked corn that sells for $1.40 per pound. If the store bags a mixture of the two by mixing 2.5 lbs of the sunflower seeds with 1 pounds of the cracked corn, what should be the cost per pound, of the mixture?

Ingredient	Pounds	Cost	Total
Sunflower	2.5	1.80	$2.5(1.80)$
CC	1	1.40	$1(1.40)$
Mix	3.5	x 1.69	$3.5x$

$2.5(1.80) + 1(1.40) = 3.5x$

$4.50 + 1.40 = 3.5x$

$5.90 = 3.5x$

$1.69 = x$

Our second MIXTURE Problem – Percent Mixture

3. Nick has two cans of white paint. One contains 2% yellow pigment and the other can contains 5% yellow pigment. Nick wants to mix the two paints together to produce a paint with 4% yellow pigment. How much of the 5% yellow pigment paint needs to be mixed with 0.4 gallons of the 2% yellow pigment paint to get the desired result?

Ing	Amount	% age	Total
2% Y	.4	.02	.4(.02)
5% Y	X	.05	.05X
4% Mix	(X+.4)	.04	.04(X+.4)

Yield for Ingredients

$.4(.02) + .05x = .04(x+.4)$

$.008 + .05x = .04x + .016$

$-.04x \quad -.04x$

$.008 + .01x = .016$

$-.008 \quad -.008$

$.01x = .008$

$x = .8 \text{ gal.}$

Our third MIXTURE Problem – Percent Mixture

4. A pharmacist has a 60% solution of the drug, sodium iodite. She also has a 25% solution of the same drug. She gets a prescription calling for a 40% solution of the drug. How much of each should she mix to make 0.5L of the 40% solution?

Ing.	Amount	% age	Total
60%	X	.60	.60x
25%	(.5-x)	.25	.25(.5-x)
40% Mix	.5L	.40	.5(.40)

$.60x + .25(.5-x) = .5(.40)$

$.60x + .125 - .25x = .20$

$.35x + .125 = .20$

$-.125 \quad -.125$

$.35x = .075$

$x = .21$

60% = .21L

25% = .29L

Homework Section:

Section(s)	*Page(s)*	*Problem(s)*
3.4	220 → 222	33, 35, 37, 41, 47, 53, 65

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