

Algebra I Worksheet #5 Unit 9 selected solutions

1. The sum of two numbers is 8. The first number is one less than two times the second. What are the numbers?

first number : x	$x + y = 8$	$(2y - 1) + y = 8$
second number : y	$x = 2y - 1$	$3y - 1 = 8$
		$3y = 9$
		$y = 3$
		$x = 5$

The first number is 5, and the second is 3.

3. The sum of two numbers is 8. Their difference is 2. What are the numbers?

first number : x	$x + y = 8$	
second number : y	$x - y = 2$	
	$2x = 10$	
	$x = 5$	The numbers are 5 and 3.
	$y = 3$	

5. A coin collection consists of ordinary dimes and nickels and is worth a total of \$5. If there are 65 coins in the collection, then how many coins of each type are there?

Number of dimes: D	$D + N = 65$ (coins)	$-5D - 5N = -325$
Number of nickels: N	$10D + 5N = 500$ (¢)	$10D + 5N = 500$
Value of the dimes: 10D (in cents)		$5D = 175$
Value of the nickels: 5N (in cents)		$D = 35$
There are 35 dimes and 30 nickels in the collection.		$N = 30$

9. Coffee worth \$1.30 per pound is mixed with coffee worth 90 cents per pound to produce a 50 pound blend worth \$1.14 per pound. How many pounds of each type of coffee is used? **Note: The first equation gives the total number of pounds used, while the second equation gives the total value of the mixture in cents.**

Am't worth \$1.30 per pound: x	$x + y = 50$ (pounds)	$-90x - 90y = -4500$
Am't worth 90¢ per pound: y	$130x + 90y = 5700$ (cents)	$130x + 90y = 5700$
The total value of x pounds at 130¢ per pound is 130x (cents).		$40x = 1200$
The total value of y pounds at 90¢ per pound is 90y (cents).		$x = 30$
The total value of the mixture (50 lb. @ 114¢ per pound) is 5700 (cents).		$y = 20$

30 pounds of the coffee worth \$1.30 per pound should be mixed with 20 pounds of the coffee worth 90¢ per pound.