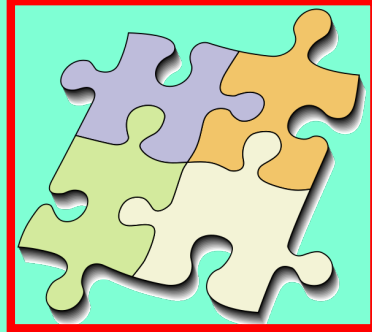


**Math 107**  
**Fall 2017**  
**Lecture 11**



## Coin / Money Problems

Lisa has \$1.15 in nickels & Dimes.

The number of dimes is 7 more than the number of nickels.

How many of each?

cents

$$5x + 10(x+7) = 115$$

Coins	worth	How many	Value
Nickels	5¢	$x$	$5x$
Dime	10¢	$x+7$	$10(x+7)$

$$5x + 10x + 70 = 115$$

$$15x + 70 = 115$$

$$15x = 115 - 70$$

$$15x = 45$$

$$x = \frac{45}{15}$$

$$x = 3$$

How many of each?

$x \rightarrow$  Nickels

$x+7 \rightarrow$  Dimes

3 Nickels  
&  
10 Dimes

Joe has \$1.35 in Quarters and dimes.

The number of dimes is 1 fewer than twice the # of quarters. How many dimes?

Coins	worth	How many?	Value
Quarters	25¢	$x$	$25x$
Dimes	10¢	$2x - 1$	$10(2x - 1)$

$$25x + 10(2x - 1) = 135$$

Distribute  
&  
Simplify

$$25x + 20x \overset{\text{cloud}}{-10} = 135$$

$$45x = 135 + 10$$

$$45x = 145$$

$$x = \frac{145}{45} \quad x = 3.22\ldots$$

Answer has to be a whole #

It HAS NO Solution.

Maria has \$2.

Nickels, Dimes, and Quarters.

# of nickels is twice # of dimes.

# of Quarters is 1 fewer than # of dimes.

How many of each?	Coins	worth	How many?	Value
	Dimes	10¢	$x$	$10x$
	Nickels	5¢	$2x$	$5(2x)$
	Quarters	25¢	$x-1$	$25(x-1)$

$$10x + 5(2x) + 25(x-1) = 200 \text{ cents}$$

$$10x + 10x + 25x - 25 = 200$$

$$45x - 25 = 200$$

$$45x = 200 + 25$$

$$45x = 225$$

$$x = \frac{225}{45}$$

$$\Rightarrow \boxed{x = 5}$$

5 Dimes, 10 Nickels, and 4 Quarters

John paid \$5.17 to buy two different type of stamps. one @ 22¢/each, and the other one @ 35¢/each.

The number of expensive stamp was 1 fewer than twice the cheaper stamp.

How many of each?

Stamps	Worth	How many?	Value
Expensive	35¢	$2x-1$	$35(2x-1)$
Cheap	22¢	$x$	$22x$

$$35(2x-1) + 22x = 517$$

$$35(2x-1) + 22x = 517$$

$$70x - 35 + 22x = 517$$

$$92x - 35 = 517$$

$$92x = 517 + 35$$

$$92x = 552$$

$$\boxed{x=6}$$

How many of  
each

$$x \rightarrow \text{cheap} \Rightarrow 6$$

$$2x-1 \rightarrow \text{Expensive} \Rightarrow 11$$

6 Cheap Stamp  
£

11 Expensive Stamp.

Ana paid \$118 for some wedding pictures.

Small pictures  $\rightarrow$  \$6/each

Large pictures  $\rightarrow$  \$8/each

# of Small pictures was 3 more than twice the # of large pictures.

How many of each?

$$6(2x+3) + 8x = 118$$

$$12x + 18 + 8x = 118$$

Pictures	Cost	How many?	Value
Small	\$6	$2x+3$	$6(2x+3)$
Large	\$8	$x$	$8x$

$$20x = 118 - 18$$

$$20x = 100$$

$$x = 5$$

5 large  
&  
13 Small

Moe has 40¢.

He has 12 Coins

He only has Nickels & Pennies.

How many of each?

		Coin	worth	How many?	Value
Nickel	Pennies	Nickels	5¢	$x$	$5x$
1	$11 = 12 - 1$	Pennies	1¢	$12 - x$	$1(12 - x)$
3	$9 = 12 - 3$				
5	$7 = 12 - 5$				

$$5x + 1(12 - x) = 40$$

$$5x + 12 - x = 40$$

$$4x = 40 - 12$$

$$4x = 28$$

$$x = 7$$

7 Nickels  
&  
5 Pennies