19) Question: Julie has set up a lemonade stand and is selling lemonade at 99 cents each and cookies at 49 cents each, to collect money for a good cause. On her first day, she sold a total of 150 cups of lemonade and cookies and collected $123.50. How many cups of lemonade did she sell on her first day?

A)   90   changed
B)   100
C)   110
D)   120
nw,ic

For speed, while solving something similar, only THINK the words in blue; WRITE only the words in other COLORS.

Solution:

Given   1)   Julie is selling lemonade at 99 cents each and cookies at 49 cents each.
*   2)   She sold a total of 150 cups of lemonade and cookies and collected $123.50.*
*   3)   How many cups of lemonade did she sell on her first day?   Solve / Find*

Road Map of Solution:

First   Step: Start with the assumption that Julie sold; l = number of cups of lemonade &
$$c = \text{number of cookies.}$$

Second Step: Using the assumption above and Given First Statement, we can write the following Word Equation,

Word   Eq: total money collected =   money from   lemonade + money from   cookies

Math   Eq: $123.50   = $0.99   × l   + $0.49   × c   . . . .   equation # 1

Third   Step: Using the assumption above and Given Second Statement, we can write the following Word Equation,

Word   Eq: total quantity sold = number of lemonade   + number of cookies

Math Eq:						
150	=		l	+	c	. . . . equation # 2
⇒ { 150} - l	=		{ l	+	c} - l	
⇒ 150 - l	=		l	+	c - l	
⇒ 150 - l	=		⊢	+	c - ⊢	
⇒ 150 - l	=				c	. . . . equation # 2b

Rewriting eq#1 and substituting the value of c from eq#2b, we get,

$123.50	=	$0.99	× l	+	$0.49	× c . . . . equation # 1
$123.50	=	$0.99	× l	+	$0.49	×(c)
$123.50	=	$0.99	× l	+	$0.49	×(150 - l)

$123.50	=	$0.99	× l	+	$0.49	× 150 - $0.49 × l

$123.50   = $0.99   × l   + $73.50   - $0.49× l

$123.50   = ($0.99 -$0.49) × l   + $73.50

$123.50   = ($0.50   )   × l   + $73.50

Insert comments here

{ $123.50}-$73.50 ={($0.50   )   × l   + $73.50} - $73.50

$123.50- $73.50 = ($0.50   )   × l   + ~~$73.50~~   - ~~$73.50~~

$50.00   = ($0.50   )   × l

Insert comments here

$\{\ \$50.00\} \times \left(\dfrac{1}{\$0.50}\right) = \{(\$0.50\ \ ) \times l\} \times \left(\dfrac{1}{\$0.50}\right)$