Math 9 – Unit 4: Word Problems

Name: Mr. Hagen

Lesson #4: Solving Word Problems involving Cost

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Learning Goal: We are learning to solve word problems involving cost.

To solve a word problem involving cost, we will use a chart instead of a "LET" statement.

a) Matthew has $0.85 in nickels and dimes. He has 2 more nickels than dimes. How many of each coin does he have?

coin	$	#	value
nickels	0.05	$x+2$	$\$0.05(x+2)$
dimes	0.1	x	$\$0.1(x)$

equation:

$0.05(x+2) + 0.1(x) = 0.85$

$0.05x + 0.1 + 0.1x = 0.85$ (−0.1, −0.1)

$0.15x = 0.75$ (÷0.15, ÷0.15)

$x = 5$

∴ Matthew has 5 dimes and 7 nickels.

0.50 0.35

b) A jar contains $18.50 in dimes and quarters. If there are 110 coins in the jar, determine the number of dimes and the number of quarters.

coin	$	#	value
dimes	0.1	x	$0.1(x)$
quarters	0.25	$110-x$	$0.25(110-x)$

Equation

$0.1x + 0.25(110-x) = 18.50$

$0.1x + 27.5 - 0.25x = 18.5$ (−27.5, −27.5)

$-0.15x = -9$ (÷−0.15, ÷−0.15)

$x = 60$

∴ There are 60 dimes and 50 quarters.

c) Tickets to a concert cost $9.00 for adults and $6.50 for students. A total of 950 people paid $7675.00 to attend. How many students attended the concert?

Tickets	$	#	Value
Adult	9.00	950−x	9(950−x)
Student	6.50	x	6.5(x)

Equation:

$9(950-x)+6.5(x)=7675$

$8550-9x+6.5x=7675$ (−8550)

$-2.5x=-875$ (÷ −2.5)

$x=350$

∴ 350 students attended the concert.

d) Timothy needed to do some Christmas shopping, so he took a hammer to his piggy bank and smashed it open. Timothy noticed that he has 4 times the amount of dimes than nickels, 8 more quarters than nickels, half the number of toonies than nickels, and twice the number of loonies as quarters. Timothy counted a total of $55. How many of each coin does he have? (After doing this, Timothy added "Piggy Bank" to his Christmas list).

Coin	$	#	Value
nickels	0.05	x	0.05(x)
dimes	0.1	4x	0.1(4x)
quarters	0.25	x+8	0.25(x+8)
loonies	1	2(x+8)	2(x+8)
toonies	2	$\frac{x}{2}$	$2\left(\frac{x}{2}\right)$

Equation:

$0.05x+0.1(4x)+0.25(x+8)+2(x+8)+x=55$

$0.05x+0.4x+0.25x+2+2x+16+x=55$ (−2, −16, −18)

$3.7x=37$ (÷ 3.7)

$x=10$

∴ Timothy has 10 nickels
40 dimes
18 quarters
36 loonies
5 twonies or toonies

Success Criteria:

- I can write the value of common coins as a decimal (Quarter = 0.25, etc...)
- I can set up a chart to represent the given information and unknowns