Algebra I

pg. 127

1) 12 students

3) 22 nickels

5) 50 programs

7) 14 quarters

9) $44

11) plumber, $25.50/hr; apprentice, $21/hr

13) 7 quarters

---

1) Thirty students bought pennants for the football game. Plain pennants cost $4 each and fancy ones cost $8 each. If the total bill was $168, how many students bought the fancy pennants?

Let x = # Fancy
30 − x = plain

	number	× cost	= total
Fancy	x (12 pennants)	8	8x
plain	30 − x	4	4(30 − x)
			+ 168

$8x + 4(30 - x) = 168$
$8x + 120 - 4x = 168$
$4x + 120 - 120 = 168 - 120$
$\frac{4x}{4} = \frac{48}{4}$
$x = 12$
{12}

---

5) Hans paid $1.50 each for programs to the game. He sold all but 20 of them for $3 each and made a profit of $15. How many programs did he buy?

Profit = Sold − Bought
Let x = # bought
x − 20 = # sold

	number	× cost	= total
Sold	x − 20	3	3(x − 20)
Bought	50 programs x	1.50	−1.5x
			15

$3(x - 20) - 1.5x = 15$
$3x - 60 - 1.5x = 15$
$1.5x - 60 + 60 = 15 + 60$
$\frac{1.5x}{1.5} = \frac{75}{1.5}$
$x = 50$
{50}

---

11) A plumber makes $4.50 per hour more than his apprentice. During an 8-hour day, their combined earnings total $372. How much does each make per hour?

	wage	× hours	= total
plumber	4.5 + x	8	8(4.5 + x)
apprentice	x	8	8x
			+ 372

Let x = apprentice's wage
4.50 + x = plumber's

$8(4.5 + x) + 8x = 372$

---

13) Warren has 40 coins (all dimes, nickels, quarters) worth $4.05. He has 7 more nickels than dimes. How many quarters does Warren have?

Let x = # dimes
x + 7 = # nickels

	num	× value	= total
dimes	x	10	10x
nickels	x + 7	5	5(x + 7)
quarters	33 − 2x	25	25(33 − 2x)
	40 − x − (x + 7)		+ 405
	40 − x − x − 7		

$10x + 5(x + 7) + 25(33 - 2x) = 405$