

7.6

p 356 Coin

Ex 4  2 dimes  
 3 quarters

$$\text{Value cents} \quad 25(3) + 10(2) = 95¢$$

$$\text{\$} \quad .25(3) + .10(2) = \text{\$.95}$$

$$\text{\# coins} \quad q + d = 5$$

$$3 + 2 = 5$$

Ex 4. 250 coins      Value  
 dimes and quarters      \$39.25

d = # dimes

q = # quarters

$$\text{\# coins} \quad d + q = 250 \quad \begin{array}{l} \text{Multiply by} \\ -10 \end{array}$$

$$\text{Value} \quad .10d + .25q = 39.25 \quad \begin{array}{l} \text{Multiply} \\ \text{by } 100 \\ \text{clear out} \\ \text{decimals} \end{array}$$

$$\text{Elimination} \quad 10d + 25q = 3925$$

$$+ \quad -10d + 10q = -2500$$

$$\hline 15q = 1425$$

$$\frac{15q}{15} = \frac{1425}{15}$$

$$q = 95$$

$$d = 155$$

95 quarters  
 155 dimes

$$\begin{array}{r} 95 \\ 15 \overline{)1425} \\ \underline{135} \\ 75 \end{array}$$

$$\begin{array}{r} 250 \\ -95 \\ \hline 155 \end{array}$$

p358  
 8. n nickels  
 q quarters  
 #  $n + q = 20$   
 value  $.05n + .25q = 2.60$

$$n + q = 20$$

$$n = -q + 20$$

$$.05(-q + 20) + .25q = 2.60$$

$$-.05q + 1 + .25q = 2.60$$

$$.2q + 1 = 2.60 - 1$$

$$.2q = 1.60$$

$$\frac{.2q}{.2} = \frac{1.60}{.2}$$

$$q = 8 \quad 8 \text{ quarters}$$

p399  
 p = pennies  
 n = nickels  
 16.  $p + n = 1140$   
 $.01p + .05n = 17$

Substitution	Elimination
$p + n = 1140$	$.01 \cdot p + n = 1140$
$p = -n + 1140$	$.01p + .01n = 11.40$
	$-.01p + .05n = 17.00$
$p + 5n = 1700$	$-.04n = -5.60$
$-n + 1140 + 5n = 1700$	$-.04 \quad -.04$
$4n = 560$	$n = 140$
$n = 140$	140 nickels

11.  
 p358  
 q quarters  
 d dimes

$$6d = q$$

$$.25q + .10d = 28.80$$

$$.25(6d) + .10d = 28.80$$

$$1.50d + .10d = 28.80$$

$$1.60d = 28.80$$

$$\frac{1.60d}{1.60} = \frac{28.80}{1.60}$$

$$d = 18$$

$$\begin{array}{r} 416 \\ 18 \\ \hline 128 \\ 18 \\ \hline 288 \end{array}$$

$$\begin{array}{r} 18 \\ \times 6 \\ \hline 108 \end{array}$$

18 dimes  
 108 quarters

## Mixture

p356  
Example 5

Amount  $x + y = 60$

Concentration  $.015x + .04y = .025(60)$

% (Amount)  $.015x + .04y = 1.5$

Substitution  $15x + 40y = 1500$

$$\frac{.025 \cdot 60}{1.500}$$

Substitution

$$x + y = 60$$

$$y = -x + 60$$

Distribute

$$15x + 40(-x + 60) = 1500$$

Combine like terms

$$15x + -40x + 2400 = 1500$$

$$-25x + 2400 = 1500$$

$$\frac{-25x}{-25} = \frac{900}{-25}$$

$$x = 36$$

$$y = \frac{60}{-36} = 24$$

36 oz of 1.5% solution

24 oz of 4% solution

18  
p 359



y oz  
of 10%

x oz  
of 20%



Amount  
# of oz  
Concentration  
of salt

$$x + y = 45$$

$$.2x + .1y = .14(45)$$

$$.2x + .1y = 6.3$$

$$\begin{array}{r} .14 \\ \times 45 \\ \hline 70 \\ 56 \\ \hline 6.30 \end{array}$$