2.4 (27) $[0.06x + 0.08(100 - x) = 6.50]\,100$

$6x + 8(100 - x) = 650$

$6x + 800 - 8x = 650$

$-2x + 800 = 650$

$-800 \quad -800$

$\frac{-2x}{-2} = \frac{-150}{-2}$

$x = 75$

(53) $[0.2x + 0.5(12 - x) = 3.6]10$

$2x + 5(12 - x) = 36$

$2x + 60 - 5x = 36$

$-3x + 60 = 36$

$-60 \quad -60$

$\frac{-3x}{-3} = \frac{-24}{-3}$

$x = 8$

2.5 Formulas (Literal Equations)

$$P = 2w + 2l$$

(ex) $A = l \cdot w$ Area $64\ ft^2$

$l = 10\ ft$

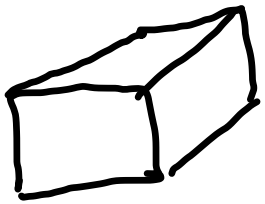
Find the width

$$\frac{64}{10} = \frac{10w}{10}$$

$$6.4 = w$$

The width is 6.4 feet.

$V = l \cdot h \cdot w$



Solve for h

$$\frac{V}{lw} = \frac{lwh}{lw}$$

$$\frac{V}{lw} = h$$

We learned in Physics

$9(C) = \frac{5}{9_1}(F - 32)^1$ Solve for F

$9C = 5F - 160$

$+160 \qquad +160$

$\frac{9C + 160}{5} = \frac{5F}{5}$

$\frac{9}{5}C + 32 = F$

today it is 20°

stick in for C

$\frac{9}{5_1}(20^4) + 32 = F$

$36 + 32 = F$

$68^\circ = F$

$$F = \frac{9}{5}C + 32$$

$$F = \frac{9}{5}(2) + 32$$

$$F = \frac{18}{5} + 32$$

$$F = 3.6 + 32$$

$$F = 35.6^\circ$$

$$T = 2^\circ$$

$$T = 55^\circ$$

$$F = \frac{9}{5}(55) + 32$$

$$F = 99 + 32$$

$$F = 131^\circ$$

example: age problems

Tim is 5 years older than JoAnn. Six years from now the sum of their ages will be 79. How old are they now?

① let x = JoAnne's age now

$x+5$ = Tim's age "

	Now	6 yrs from now	
Tim	$x+5$	$(x+5)+6$	42
JoAnn	x	$x+6$	37
		79	79

② $(x+11)+(x+6)=79$

$2x+17=79$

$-17 \quad -17$

$\frac{2x}{2}=\frac{62}{2}$

③ $x=31$

$x+5=36$

④ So, JoAnn is 31 years old and Tim is 36.

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let x = Dan's age now

$x+9$ = Cary's age now

	Now	In 7 years
Dan	x	$x+7$
Cary	$x+9$	$(x+9)+7$
		93

$$x+7+x+16=93$$

$$2x+23=93$$

$$-23 \quad -23$$

$$\frac{2x}{2}=\frac{70}{2}$$

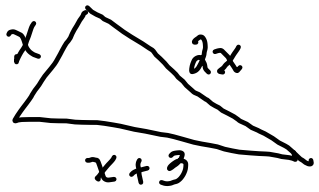
$$x=35$$

$$x+9=44$$

So Dan is now 35 years old and Cary is 44.

Geometric Problems

(ex) One side of a triangle is twice the shortest side. The 3rd side is 3 feet more than the shortest. The perimeter is 19 feet. Find all three sides.



P = 19 feet

let x = the length of the shortest side

2x = length of 2nd side

x+3 = length of 3rd side

$19 = x + 3 + 2x + x$

$19 = 4x + 3$

$-3 \quad -3$

$\frac{16}{4} = \frac{4x}{4}$

$4 = x$

$x + 3 = 7$

$2x = 8$

The sides are 4 feet, 7 feet and 8 feet.

Coin Problems

(#42) $3.90 or 390¢

128

let x = The number of dimes

$x+3$ = The # of nickels

$x+7$ = The # of quarters

	#	value	total worth
dimes	x	10	$10x$
nickels	$x+3$	5	$5(x+3)$
quarters	$x+7$	25	$25(x+7)$
total			390

$$10x + 5(x+3) + 25(x+7) = 390$$

$$10x + 5x + 15 + 25x + 175 = 390$$

$$40x + 190 = 390$$

$$-190 \quad -190$$

$$\frac{40x}{40} = \frac{200}{40}$$

$x = 5$

$x+3 = 8$

$x+7 = 12$

So, she had 5 dimes, 8 nickels and 12 quarters.

2.7 (EX)

$2000 at 5% interest

$.05(2000) = 100$

let x = The amount invested at 11%

$x + 4000$ = The amt invested at 12%

total interest = $940

	amt	rate	total interest
at 11%	x	.11	$.11(x)$
at 12%	$x+4000$	.12	$.12(x+4000)$
total			940

$$[.11(x) + .12(x+4000) = 940.]\,100$$

$$11x + 12(x+4000) = 94000$$

$$11x + 12x + 48000 = 94000$$

$$23x + 48000 = 94000$$

$$-48000 \quad -48000$$

$$\frac{23x}{23} = \frac{46000}{23}$$

$$x = 2000$$

$$x + 4000 = 6000$$

So, I invested $2000 at 11% and $6000 at 12%.