MAT 111 Section 1.4 ; 11, 21, 27, 31, 35, 39 (p. 137)

(11) $P = \$20,000$

CD's $= x$

Bonds $= x + 2000$

$x + (x + 2000) = 20,000$

$2x + 2000 = 20,000$

$2x = 20,000 - 2,000$

$2x = 18,000$

$x = 9,000$

CD's : $\$9,000$

Bonds : $9,000 + 2,000 = \$11,000$

(21)

Final Exam : $2x$

$$\frac{(2x + 80 + 83 + 71 + 61 + 95)}{7} = 80$$

$$\frac{2x + 390}{7} = 80$$

$$2x = 560 - 390$$

$$2x = 170$$

$$x = 85$$

(27)

	Principal	Rate	Time	INTEREST
Bonds	x	0.15	1	$x(.15)(1) = 0.15x$
CD's	$50,000 - x$	0.07	1	$(50,000-x)(0.07)(1) = 0.07(50,000-x)$
Total	50,000			6000

$$I_{BONDS} + I_{CD's} = I_{total}$$

$$0.15x + 0.07(50,000 - x) = 6000$$
$$0.15x + 3500 - 0.07x = 6000$$
$$0.08x + 3500 = 6000$$
$$0.08x = 2500$$
$$x = \frac{2,500}{0.08} = \$31,250 \text{ : Bonds}$$

CD's : $\$50,000 - \$31,250 = \$18,750$

(31)

	Cost/lb	lbs	Revenue
Earl Gray	\$5/lb	x	$5x$
Orange Pekoe	\$3/lb	$100 - x$	$3(100-x)$
Total	(4.5¢/lb)	100	$4.5(100)$

$$R_{EG} + R_{OP} = R_T$$

$$5x + 3(100 - x) = 4.5(100)$$
$$5x + 300 - 3x = 450$$
$$2x = 150$$
$$x = 75$$

Earl Gray : 75 lbs

Orange Pekoe : 25 lbs

(35)

	% H_2O	oz.	Pure H_2O
H_2O	100%	x	$1(x) = x$
40% M	60%	20	$0.6(20) = 12$
30% M	(70%)	$x+20$	$0.7(x+20) = 0.7x + 14$

$$x + 12 = 0.7x + 14$$

$$0.3x = 2$$

$$x = \frac{2}{0.3} \approx 6.67$$

≈ 6.67 oz of H_2O

(39)

v : velocity of the stream

	Velocity (mph)	time (min.)		Distance = vt
Upstream	$16 - v$	20 min	$= \frac{20}{60} = \frac{1}{3}$ hr	$(16-v)\frac{1}{3}$
downstream	$16 + v$	15 min	$= \frac{15}{60} = \frac{1}{4}$ hr	$(16+v)\frac{1}{4}$

$$D_u = D_d$$

$$\frac{16-v}{3} = \frac{16+v}{4}$$

$$4(16-v) = 3(16+v)$$

$$64 - 4v = 48 + 3v$$

$$16 = 7v$$

$$v \approx 2.29 \text{ mph}$$