

# CHAPTER 1 REVIEW SOLUTIONS

1.

	r	t	D
A	45	x	45x
M	75	x-2	75(x-2)

$$45x = 75x - 150$$

$$-30x = -150$$

$$\boxed{x = 5 \text{ hours}}$$

2.

	Amt Sol	Pure Sugar
30%	x	.3x
Water 0%	12	0
6%	x+12	.06(x+12)

$$.3x = .06(x+12)$$

$$.3x = .06x + .72$$

$$.24x = .72$$

$$\boxed{x = 3L}$$

3.

	r	t	D
N	x	3.9	3.9x
S	x+30.5	.8	.8(x+30.5)

$$3.9x + .8(x+30.5) = 245.3$$

$$\boxed{x = 47 \text{ km/h}}$$

4.

P	r	t <sup>int</sup>	I
x	.015	1	.015x
48,000-x	.0325	1	.0325(48,000-x)
total			275

$$.015x + .0325(48,000-x) = 275$$

$$1560 - .0175x = 275$$

$$\$16285.71 @ 1.5\% \quad 31714.29 @ 3.25\%$$

5.  $r = \sqrt{90-r}$   $\boxed{r = 9}$

$$r^2 = 90-r$$

$$r^2 + r - 90 = 0$$

$$(r+10)(r-9) = 0$$

$$r = -10 \quad r = 9 \quad \text{CHECK: } -10 \stackrel{?}{=} \sqrt{90+10} \text{ No}$$

$$9 = \sqrt{90-9} \text{ Yes}$$

6.  $\sqrt{3x} + 3 = \sqrt{9-5x}$   $\boxed{x = 0}$

$$3x + 6\sqrt{3x} + 9 = 9 - 5x$$

$$6\sqrt{3x} = -8x$$

$$36(3x) = 64x^2$$

$$108x = 64x^2$$

$$0 = 64x^2 - 108x$$

$$4x(16x - 27)$$

$$x = 0 \quad x = \frac{27}{16}$$

$$\text{CHECK } \sqrt{0} + 3 \stackrel{?}{=} \sqrt{9-0} \text{ Yes}$$

$$\sqrt{\frac{81}{16}} + 3 \stackrel{?}{=} \sqrt{\frac{9}{16}} \text{ No}$$

7.  $D = 16 - 4(10)(3)$

$$16 - 120$$

$$\boxed{= -104 \text{ 2 imag. solutions}}$$

8.  $D = 81 - 4(10)(-7)$

$$\boxed{= 361 \text{ 2 real solutions}}$$

9.  $7x^2 + 60x + 32 = 0$

$$(7x+4)(x+8) = 0$$

$$\boxed{x = -\frac{4}{7} \quad x = -8}$$



$$20) \frac{x+2}{x(x+5)} = \frac{6(x+5)-1}{x(x+5)} \quad \begin{array}{l} x \neq 0 \\ x \neq -5 \end{array}$$

$$x+2 = 6x+30-1$$

$$-27 = 5x$$

$$\boxed{\frac{-27}{5} = x}$$

$$21) \frac{1}{n} = \frac{n+n^2+5n+6}{n} \quad n \neq 0$$

$$1 = n^2+6n+6$$

$$0 = n^2+6n+5$$

$$(n+1)(n+5)$$

$$\boxed{n=-1 \quad n=-5}$$

22.	$\frac{D}{x}$	$\frac{r}{.12}$	$\frac{t}{1}$	$\frac{I}{.12x}$
	$90,000-x$	$.115$	$1$	$.115(90,000-x)$

total: 10,525

$$.12x + .115(90,000-x) = 10,525$$

$$\boxed{55,000 @ 11.5\% \quad 35,000 @ 12\%}$$

$$23 \quad 750 = 220t - 16t^2$$

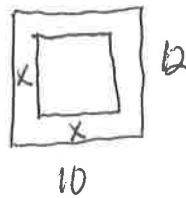
$$16t^2 - 220t + 750 = 0$$

$$2(8t^2 - 110t + 375) = 0$$

$$t = \frac{110 \pm \sqrt{(-110)^2 - 4(8)(375)}}{16}^{100}$$

$\approx 6.25$  seconds &  
7.5 seconds

$$24. \quad A = (10-2x)(12-2x) + 21$$



$$120 = (10-2x)(12-2x) + 21$$

$$0 = 4x^2 - 44x + 21$$

$$\boxed{x = \frac{1}{2} \text{ foot}}$$

25.

$$x^2 + (x+7)^2 = (x+1)^2$$

$$x^2 + x^2 + 14x + 49 = x^2 + 2x + 1$$

$$x^2 + 12x + 48 = 0$$

$$(x-12)(x-4) \quad x = 12, 4$$

$$\boxed{5 \text{ in}, 12 \text{ in}, 13 \text{ in}}$$