

Chapter 1 Homework

- 1.1 #1-137 odd  
 1.2 #97-113 odd  
 1.3 #30-57 odd; 97-105 odd; and study properties!  
 1.4 #1-31 odd

Chapter 2 Homework

- 2.1 #39-77 odd }  
 2.2 #7-27 odd }  
 2.3 #7-25 odd }  
 2.4 #5,7,11,17,19,23,27 }  
 2.5 #35-71 odd }  
 2.6 #33-69 odd }

} ch 1 due

} Today!

Test #1 - Tues. 9/1?

21. Translate into a variable expression. Do not simplify.

"the difference between a number and the total of twelve and the square of the number"

$$x - (12 + x^2)$$

22. Simplify:  $4x - 2[x - 4(y - 2[5y + 3])]$ 

$$4x - 2[x - 4(y - 10y - 6)]$$

$$4x - 2[x + 36y + 24]$$

$$4x - 2x - 72y - 48 = 2x - 72y - 48$$

23. Solve for x:  $\frac{1}{3}(x - 7) + 5 = (6x + 4) \cdot 3$ 

$$x - 7 + 15 = 18x + 12$$

$$-7 + 15 - 12 = 18x - x$$

$$-4 = 17x$$

$$\frac{-4}{17} = x$$

conditional

18. Two jet skiers leave the same dock at the same time and travel in opposite directions. One skier is traveling 14 mph slower than the other skier. In half an hour the skiers are 48 miles apart. Find the rate of the slower skier.

rate · time = distance

Skier	Rate	Time	Distance
Slower	$x$	$\frac{1}{2}$	$x \cdot \frac{1}{2}$
Faster	$x + 14$	$\frac{1}{2}$	$(x + 14) \cdot \frac{1}{2}$



$$2 \cdot \left( x \cdot \frac{1}{2} + (x + 14) \cdot \frac{1}{2} \right) = 48 \cdot 2$$

$$x + x + 14 = 96$$

$$2x = 82$$

$$x = \boxed{41 \text{ mph}}$$

26. A plane leaves an airport at 3 p.m. At 4 p.m. another plane leaves the same airport traveling in the same direction at a speed 150 mph faster than that of the first plane. Four hours after the first plane takes off, the second plane is 250 mi ahead of the first plane. How far did the second plane travel?

$$r \cdot t = d$$

$$r = \frac{d}{t}$$

Plane	Rate	Time	Distance
1	$\frac{x-250}{4}$	4	$x-250$
2	$\frac{x}{3}$	3	$x$

$$\left( \frac{x-250}{4} + 150 \right) \cdot 12 = \left( \frac{x}{3} \right) \cdot 12$$

$$3(x-250) + 150(12) = 4x$$

$$3x - 750 + 1800 = 4x$$

$$\boxed{1050 \text{ Miles}} = x$$

$$a > b$$

$$a = b + c$$

$$\frac{10 > 8}{10 = 8 + 2}$$

2.4 Problems Involving Percent

Important formulas:

$$\begin{array}{l} \text{principal} \\ \text{(original investment \$)} \end{array} \times \begin{array}{l} x \\ \end{array} = \begin{array}{l} \text{interest rate} \\ \text{(\% written as decimal)} \end{array} = \begin{array}{l} \text{interest earned} \\ \text{(\$)} \end{array}$$

$$\begin{array}{l} \text{amt of solution} \\ \text{(volume of water mixed} \\ \text{with dissolved substance)} \end{array} \times \begin{array}{l} x \\ \end{array} = \begin{array}{l} \% \text{ concentration} \\ \text{(portion of solution} \\ \text{that is the dissolved} \\ \text{substance)} \end{array} = \begin{array}{l} \text{amt of substance} \\ \text{(volume of just} \\ \text{dissolved substance)} \end{array}$$

6. Two investments earn an annual income of \$465. One investment is a 5.5% tax-free annual simple interest account, and the other is a 4.5% annual simple interest certificate of deposit. The total amount invested is \$9600. How much is invested in each account?

type of account	interest rate	original investment (principal)	income earned
5.5%	0.055	X	0.055x
4.5%	0.045	9600 - X	0.045(9600 - X)

$$\underbrace{(0.055x + 0.045(9600 - x))}_{1000} = (465) \cdot 1000$$

$$55x + 45(9600) - 45x = 465000$$

$$\frac{10x}{10} = \frac{465000 - 45(9600)}{10}$$

a(b·c)

$$x = 46500 - 45(960)$$

$$x = \begin{array}{l} \$3300 \text{ in } 5.5\% \text{ acct} \\ \$6300 \text{ in } 4.5\% \text{ acct} \end{array}$$

18. A chemist mixed 100 ml of an 8% saline solution with 60 ml of a 5% saline solution. Find the percent concentration of the resulting mixture.

type	amt of solution	% concentration	amt. of substance
8%	100 mL	0.08	100 (0.08)
5%	60 mL	0.05	60 (0.05)
Mixture	160 mL	X	160X

$$100(0.08) + 60(0.05) = 160X$$

$$8 + 3 = 160X$$

$$\frac{11}{160} = X$$

$$\frac{11}{160} = 0.06875$$

6.92%

26. How much water must be evaporated from 10 gal of a 12% sugar solution in order to obtain a 15% sugar solution?

thing	amt of solution	% concentration	amt of substance
12%	10 gal	0.12	10 (0.12)
water	X	0	0
15%	10 - X	0.15	(10 - X) · 0.15

$$10(0.12) = (10 - X)(0.15)$$

$$1.2 = 1.5 - 0.15X$$

$$0.15X = 0.3$$

$$15X = 30$$

$$X = \frac{30}{15} = 2 \text{ gallons of water}$$

A cashier has \$730 in twenty-dollar bills and five-dollar bills. In all, the cashier has 68 bills. How many twenty-dollar bills does the cashier have?

type of bill	# of bills	worth of a bill	total value
\$20	$x$	20	$20x$
\$5	$68 - x$	5	$5(68 - x)$

$$20x + 5(68 - x) = 730$$

$$x = 26 \text{ \$20 bills}$$

### 2.5 Inequalities in One Variable

10.  $5x + 2 \geq 4x - 1$

$$5x - 4x \geq -1 - 2$$

$$\{x \mid x \geq -3\}$$



$$[-3, \infty)$$

$$26. 2 - 5(x + 1) \geq 3(x - 1) - 8$$

$$2 - 5x - 5 \geq 3x - 3 - 8$$

$$-3 - 5x \geq 3x - 11$$

$$-3 + 11 \geq 3x + 5x$$

$$8 \geq 8x$$

$$\left\{ x \mid \begin{array}{l} 1 \geq x \\ x \leq 1 \end{array} \right\} \quad (-\infty, 1]$$