

Hrs. Algebra 3-4  
Word Problems 7.1 - 7.2

Name Key  
Date \_\_\_\_\_ Period \_\_\_\_\_

Show all of your work. You must show the equations!!

1. A twenty-pound mixture of two kinds of candy sells for \$30.52. One kind of candy in the mixture sells for \$1.35 per pound. The other kind sells for \$1.79 per pound. How much of the cheaper priced candy is in the mixture?

12 lbs

2. How many liters of a 40% solution of acid must be combined with a 15% solution to obtain 30 liters of a 20% solution?

6 liters

3. A total of \$15,000 is invested in two corporate bonds that pay 7.25% and 9% simple interest. The annual income from both bonds is \$1,280. Determine how much is invested at 9%.

\$11,000

4. The perimeter of a rectangle is 91 feet and the length is 8 feet more than twice the width. Find the dimensions of the rectangle.

12.5 x 33 ft

5. If the total cost of running a business is given by the equation  $C = 450x + 1,000$  and the revenue is given by the equation  $R = 500x$ , find the sales necessary to break even.

$x = 20$

6. Suppose you are the manager of a shoe store. On Saturday night you are going over the receipts of the previous week's sales. Two hundred and forty pairs of tennis shoes were sold. One style sold for \$66.95 and the other sold for \$84.95. The total receipts were \$17,652. The cash register that was supposed to record the number of each type of shoe sold malfunctioned. Can you recover the information? If so, how many shoes of each type were sold?

152 of \$66.95 shoe  
88 of \$84.95 shoe

①  $x + y = 20$   
 $1.35x + 1.79y = 30.52$

$$\begin{cases} x + y = 20 \\ .44y = 3.52 \end{cases}$$

$y = 8$   
 $x = 20 - y = 12$

12 lbs

②  $x + y = 30$   
 $.4x + .15y = .2(30)$

$$\begin{cases} x + y = 30 \\ .4x + .15y = 6 \end{cases}$$

$-.25y = -6$

$y = 24$

x = 6 liters

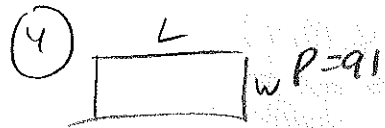
③  $x + y = 15000$   
 $.0725x + .09y = 1280$

$.0175y = 192.5$

$y = 11000$

$x = 4000$

y = 11,000



$$\begin{cases} 2L + 2W = 91 \\ L = 2W + 8 \end{cases}$$

$2(2w + 8) + 2w = 91$

$4w + 16 + 2w = 91$

$6w + 16 = 91$

$6w = 75$

$w = 12.5$

$L = 33$

12.5 x 33

⑤  $C = 450x + 1000$   
 $R = 500x$

$500x = 450x + 1000$

$50x = 1000$

x = 20

⑥  $x + y = 240$   
 $66.95x + 89.95y = 17,652$

$x + y = 240$

$18y = 1584$

$y = 88$

$x = 152$

152 of \$66.95  
 88 of \$89.95

**Math Analysis/Honors Algebra 3-4 7.3B- Application Worksheet** (This corresponds to 7.3B note examples)

**Problems** Print this or do these on a separate piece of paper.

You must, name the variables, show the system of equations and each step to solve.

Answer the problems using appropriate units.

1. The sum of three numbers is 26. Twice the first minus the second is 2 less than the third. The third is the second minus three times the first. Find the numbers.

$$\boxed{8, 21, -3}$$

2. On an 18-hole golf course, there are par-3 holes, par-4 holes, and par-5 holes. A golfer who shoots par on every hole has a total of 72. The sum of the number of par-3 holes and the number of par-5 holes is 8. How many of each type of hole are there on the golf course?

$$\boxed{\begin{array}{l} 4 \text{ par } 3 \\ 10 \text{ par } 4 \\ 4 \text{ par } 5 \end{array}}$$

3. In triangle  $ABC$ , the measure of angle  $B$  is three times the measure of angle  $A$ . The measure of angle  $C$  is  $30^\circ$  more than the measure of angle  $A$ . Find the angle measures.

$$\boxed{30^\circ - 90^\circ - 60^\circ}$$

A B C

4. A person receives \$212 per year in simple interest from three investments totaling \$2500. Part is invested at 7%, part at 8%, and part at 9%. There is \$1100 more invested at 9% than at 8%. Find the amount invested at each rate.

$$\boxed{\begin{array}{l} 7\% - \$400 \\ 8\% - \$500 \\ 9\% - \$1600 \end{array}}$$

5. Find numbers  $a$ ,  $b$ , and  $c$ , such that a quadratic function  $f(x) = ax^2 + bx + c$  fits the data points  $(1, 4)$ ,  $(-1, -2)$ , and  $(2, 13)$ . Write the equations for the function.

$$\boxed{f(x) = 2x^2 + 3x - 1}$$

7.3B-application worksheet

① 
$$\begin{cases} x + y + z = 26 \\ 2x - y - z = -2 \\ z = y - 3x \end{cases}$$

$$\begin{cases} x + y + z = 26 \\ -3y - 3z = -54 \\ -3x + y - z = 0 \end{cases}$$

$$\begin{cases} x + y + z = 26 \\ -3y - 3z = -54 \\ 4y + 2z = 78 \end{cases}$$

$$\begin{cases} x + y + z = 26 \\ -3y - 3z = -54 \\ -2z = 6 \end{cases}$$

$$\begin{aligned} z &= -3 \\ -3y - 3(-3) &= -54 \\ -3y + 9 &= -54 \\ -3y &= -63 \\ x - 21 &= 21 \\ x + 21 - 3 &= 26 \\ x &= 8 \end{aligned}$$

$(8, 21, -3)$

④ 
$$\begin{cases} x + y + z = 2500 \\ .07x + .08y + .09z = 212 \\ -y + z = 1100 \end{cases}$$

$$\begin{cases} x + y + z = 2500 \\ 7x + 8y + 9z = 21200 \\ -y + z = 1100 \end{cases}$$

$$\begin{cases} x + y + z = 2500 \\ y + 2z = 3700 \\ -y + z = 1100 \end{cases}$$

$$\begin{cases} x + y + z = 2500 \\ y + 2z = 3700 \\ 3z = 4800 \end{cases}$$

$z = 1600$

$y + 2(1600) = 3700 \Rightarrow y = 500$

$x + 500 + 1600 = 2500$

$x = 400 \quad (400, 500, 1600)$

② 
$$\begin{cases} x + y + z = 18 \\ 3x + 4y + 5z = 72 \\ x \quad \quad \quad z = 8 \end{cases}$$

$$\begin{cases} x + y + z = 18 \\ 3x + 4y + 5z = 72 \\ -y = -10 \end{cases}$$

$$\begin{cases} x + y + z = 18 \\ y + 2z = 18 \\ -y = -10 \end{cases}$$

$$\begin{aligned} y &= 10 \\ 10 + 2z &= 18 \\ 2z &= 8 \\ z &= 4 \end{aligned}$$

$$\begin{aligned} x + 10 + 4 &= 18 \\ x &= 4 \end{aligned}$$

$(4, 10, 4)$

③ 
$$\begin{cases} A + B + C = 180 \\ 3A - B = 0 \\ -A + C = 30 \end{cases}$$

$$\begin{cases} A + B + C = 180 \\ 3A - B = 0 \\ B + 2C = 210 \end{cases}$$

$$\begin{cases} A + B + C = 180 \\ -4B - 2C = -540 \\ B + 2C = 210 \end{cases}$$

$$\begin{cases} A + B + C = 180 \\ B + 2C = 210 \\ -4B - 3C = -540 \end{cases}$$

$$\begin{cases} A + B + C = 180 \\ B + 2C = 210 \\ 5C = 300 \end{cases}$$

$$\begin{aligned} B &= 3A \\ C &= A + 30 \end{aligned}$$

$$\begin{aligned} 5C &= 300 \\ C &= 60 \\ B + 2(60) &= 210 \end{aligned}$$

$$\begin{aligned} B &= 90 \\ A + 90 + 60 &= 180 \\ A &= 30 \end{aligned}$$

$(30, 90, 60)$

⑤ 
$$\begin{cases} a + b + c = 4 \\ a - b + c = -2 \\ 4a + 2b + c = 13 \end{cases}$$

$$\begin{cases} a + b + c = 4 \\ -2b = -6 \\ 4a + 2b + c = 13 \end{cases}$$

$$\begin{cases} a + b + c = 4 \\ 4a + 2b + c = 13 \\ -2b = -6 \end{cases}$$

$$\begin{cases} a + b + c = 4 \\ -2b - 3c = -3 \\ -2b = -6 \end{cases}$$

$$\begin{aligned} b &= 3 \\ -2(3) - 3c &= -3 \\ -3c &= 3 \\ c &= -1 \end{aligned}$$

$$\begin{aligned} a + 3 - 1 &= 4 \\ a + 2 &= 4 \\ a &= 2 \end{aligned}$$

$f(x) = 2x^2 + 3x - 1$

*Show all of your work. You must show the equations!!*

1. A twenty-pound mixture of two kinds of candy sells for \$30.52. One kind of candy in the mixture sells for \$1.35 per pound. The other kind sells for \$1.79 per pound. How much of the cheaper priced candy is in the mixture?
  
2. How many liters of a 40% solution of acid must be combined with a 15% solution to obtain 30 liters of a 20% solution?
  
3. A total of \$15,000 is invested in two corporate bonds that pay 7.25% and 9% simple interest. The annual income from both bonds is \$1,280. Determine how much is invested at 9%.
  
4. The perimeter of a rectangle is 91 feet and the length is 8 feet more than twice the width. Find the dimensions of the rectangle.
  
5. If the total cost of running a business is given by the equation  $C = 450x + 1,000$  and the revenue is given by the equation  $R = 500x$ , find the sales necessary to break even.
  
6. Suppose you are the manager of a shoe store. On Saturday night you are going over the receipts of the previous week's sales. Two hundred and forty pairs of tennis shoes were sold. One style sold for \$66.95 and the other sold for \$84.95. The total receipts were \$17,652. The cash register that was supposed to record the number of each type of shoe sold malfunctioned. Can you recover the information? If so, how many shoes of each type were sold?

**Math Analysis/Honors Algebra 3-4 7.3B- Application Worksheet** (This corresponds to 7.3B note examples)

**Problems** Print this or do these on a separate piece of paper.

**You must, name the variables, show the system of equations and each step to solve.**

**Answer the problems using appropriate units.**

1. The sum of three numbers is 26. Twice the first minus the second is 2 less than the third. The third is the second minus three times the first. Find the numbers.
  
2. On an 18-hole golf course, there are par-3 holes, par-4 holes, and par-5 holes. A golfer who shoots par on every hole has a total of 72. The sum of the number of par-3 holes and the number of par-5 holes is 8. How many of each type of hole are there on the golf course?
  
3. In triangle  $ABC$ , the measure of angle  $B$  is three times the measure of angle  $A$ . The measure of angle  $C$  is  $30^\circ$  more than the measure of angle  $A$ . Find the angle measures.
  
4. A person receives \$212 per year in simple interest from three investments totaling \$2500. Part is invested at 7%, part at 8%, and part at 9%. There is \$1100 more invested at 9% than at 8%. Find the amount invested at each rate.
  
5. Find numbers  $a$ ,  $b$ , and  $c$ , such that a quadratic function  $f(x) = ax^2 + bx + c$  fits the data points  $(1, 4)$ ,  $(-1, -2)$ , and  $(2, 13)$ . Write the equations for the function.