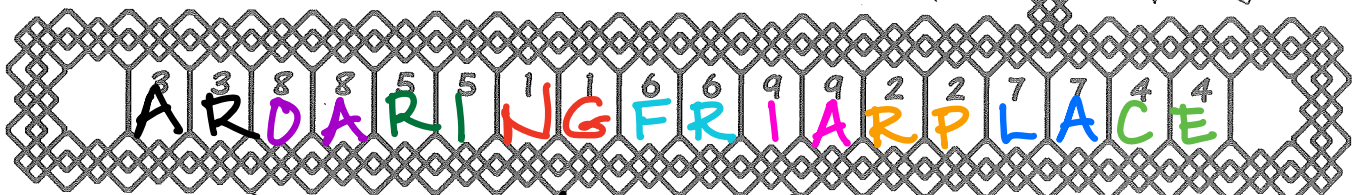


What Do You Get When You Cross a Monastery With a Lion?

Write the two letters for each correct answer in the two boxes with the exercise number.

- The sum of two numbers is 92. Their difference is 20. Find the numbers.
- The difference of two numbers is 16. The greater number is 5 less than 4 times the smaller number. Find the numbers.
- A 100-foot cable is cut into two pieces. The first piece is 18 ft longer than the second. How long is each piece?
- Three apples and four bananas cost \$4.85. Three apples and ten bananas cost \$8.75. Find the cost of an apple.
- Stilt scored 5 points less than twice the number scored by Dunk. Together they scored a total of 43 points. How many points were scored by each player?
- Bert's age plus twice Ernie's age is 30. Three times Bert's age plus 8 times Ernie's age is 108. How old are Bert and Ernie?
- The Rocket Coaster has 15 cars, some that hold 4 people and some that hold 6 people. There is room for 72 people altogether. How many 4-passenger cars are there? How many 6-passenger cars are there?
- Tickets to the Valentine Dance cost \$3 per person or \$5 per couple. If \$475 worth of tickets were sold and 180 people attended the dance, how many couples were there?
- Pi High School ordered 40 science books. The next week, the school ordered 30 algebra books. The bill for the first order was \$360 greater than the bill for the second order. The two bills together totaled \$3960. Find the price of an algebra book.

O F	14, 10
L A	9, 6
A R	59 ft, 41 ft
E N	\$0.82
I A	\$60
N G	56, 36
S O	25, 18
F R	12, 9
E D	62
T H	57 ft, 43 ft
R P	23, 7
E E	\$57
O A	65
R I	27, 16
S T	58, 38
C E	\$0.75
E A	8, 7



A ROARING FRIAR PLACE

What Do You Get When You Cross a Monastery With a Lion?

1. The sum of two numbers is 92. Their difference is 20.
Find the numbers.

Let $x =$ the first number
Let $y =$ the second number

$$\begin{array}{r}
 x + y = 92 \\
 + \quad x - y = 20 \\
 \hline
 2x = 112 \\
 \frac{2}{2} \quad \frac{2}{2} \\
 x = 56
 \end{array}$$

$$\begin{array}{r}
 x + y = 92 \\
 56 + y = 92 \\
 -56 \quad -56 \\
 \hline
 y = 36
 \end{array}$$

(56, 36)

The numbers are 36 and 56

2. The difference of two numbers is 16. The greater number is 5 less than 4 times the smaller number. Find the numbers.

Let $x =$ the greater number
Let $y =$ the smaller number

$$\begin{array}{r}
 x - y = 16 \\
 x = 4y - 5
 \end{array}$$

using substitution \rightarrow

$$\begin{array}{r}
 x - y = 16 \\
 x - 4y = -5 \\
 \hline
 3y = 21
 \end{array}$$

rewrite

$$\begin{array}{r}
 3y = 21 \\
 \frac{3}{3} \quad \frac{21}{3} \\
 y = 7
 \end{array}$$

$$\begin{array}{r}
 x - y = 16 \\
 4y - 5 - y = 16 \\
 3y - 5 = 16 \\
 \quad +5 \quad +5 \\
 \hline
 3y = 21 \\
 \frac{3}{3} \quad \frac{21}{3} \\
 y = 7
 \end{array}$$

$$\begin{array}{r}
 x - y = 16 \\
 x - 7 = 16 \\
 \quad +7 \quad +7 \\
 \hline
 x = 23
 \end{array}$$

The numbers are 7 and 23

using elimination \leftarrow

3. A 100-foot cable is cut into two pieces. The first piece is 18 ft longer than the second. How long is each piece?

Let x = length of 1st piece
 Let y = length of 2nd piece

elimination \swarrow

$$\begin{array}{r} x + y = 100 \\ x = y + 18 \end{array}$$

substitute \rightarrow

$$\begin{array}{r} x + y = 100 \\ x - y = 18 \\ \hline 2x = 118 \\ \frac{2x}{2} = \frac{118}{2} \\ x = 59 \end{array}$$

rewrite \swarrow

$$\begin{array}{r} x + y = 100 \\ y + 18 + y = 100 \\ 2y + 18 = 100 \\ \quad -18 \quad -18 \\ \hline 2y = 82 \\ \frac{2y}{2} = \frac{82}{2} \\ y = 41 \end{array}$$

The pieces are 41 and 59 feet long.

$$\begin{array}{r} x + y = 100 \\ 59 + y = 100 \\ -59 \quad -59 \\ \hline y = 41 \end{array}$$

$$\begin{array}{r} x + y = 100 \\ x + 41 = 100 \\ \quad -41 \quad -41 \\ \hline x = 59 \end{array}$$

4. Three apples and four bananas cost \$4.85. Three apples and ten bananas cost \$8.75. Find the cost of an apple.

x = cost of an apple
 y = cost of a banana

$$\begin{array}{r} 3x + 4y = 4.85 \\ - 3x + 10y = 8.75 \\ \hline -6y = -3.9 \\ \quad -6 \quad -6 \\ \hline y = 0.65 \end{array}$$

$$\begin{array}{r} 3x + 4y = 4.85 \\ 3x + 4(0.65) = 4.85 \\ 3x + 2.6 = 4.85 \\ \quad -2.6 \quad -2.6 \\ \hline 3x = 2.25 \\ \quad 3 \quad 3 \\ \hline x = 0.75 \end{array}$$

An apple costs \$0.75.

5. Stilt scored 5 points less than twice the number scored by Dunk. Together they scored a total of 43 points. How many points were scored by each player?

$x = \# \text{ of points Stilt scored}$
 $y = \# \text{ of points Dunk scored}$

$$x = 2y - 5$$

$$x + y = 43$$

$$2y - 5 + y = 43$$

$$3y - 5 = 43$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \end{array}$$

$$\frac{3y}{3} = \frac{48}{3}$$

$$y = 16$$

$$x + y = 43$$

$$x + 16 = 43$$

$$\begin{array}{r} -16 \quad -16 \\ \hline \end{array}$$

$$x = 27$$

Stilt scored 27 pts.
 Dunk scored 16 pts.

6. Bert's age plus twice Ernie's age is 30. Three times Bert's age plus 8 times Ernie's age is 108. How old are Bert and Ernie?

$x = \text{Bert's age}$

$y = \text{Ernie's age}$

$$-3[x + 2y = 30]$$

$$3x + 8y = 108$$

$$\begin{array}{r} \rightarrow -3x - 6y = -90 \\ + 3x + 8y = 108 \\ \hline \end{array}$$

$$\frac{2y}{2} = \frac{18}{2}$$

$$y = 9$$

$$x + 2y = 30$$

$$x + 2(9) = 30$$

$$x + 18 = 30$$

$$\begin{array}{r} -18 \quad -18 \\ \hline \end{array}$$

$$x = 12$$

Bert is 12
 Ernie is 9

7. The Rocket Coaster has 15 cars, some that hold 4 people and some that hold 6 people. There is room for 72 people altogether. How many 4-passenger cars are there? How many 6-passenger cars are there?

$x = \#$ of 4 passenger cars

$y = \#$ of 6 passenger cars

$$\begin{array}{r} -4[x+y=15] \rightarrow -4x-4y=-60 \\ \quad 4x+6y=72 \\ \hline \end{array}$$

$$\begin{array}{r} 2y=12 \\ \frac{2y}{2}=\frac{12}{2} \\ y=6 \end{array}$$

9 4-passenger cars
6 6-passenger cars

$$\begin{array}{r} x+y=15 \\ x+6=15 \\ \underline{-6-6} \\ x=9 \end{array}$$

8. Tickets to the Valentine Dance cost \$3 per person or \$5 per couple. If \$475 worth of tickets were sold and 180 people attended the dance, how many couples were there?

$x = \#$ of couples

$y = \#$ of singles

$$\begin{array}{r} 3[2x+y=180] \rightarrow 6x+3y=540 \\ \quad 5x+3y=475 \\ \hline \end{array}$$

$$x=65$$

There were
65 couples.

$$\begin{array}{r} 2x+y=180 \\ 2(65)+y=180 \\ 130+y=180 \\ \underline{-130-130} \\ y=50 \end{array}$$

9. Pi High School ordered 40 science books. The next week, the school ordered 30 algebra books. The bill for the first order was \$360 greater than the bill for the second order. The two bills together totaled \$3960. Find the price of an algebra book.

x = price of Science book
 y = Price of Algebra book

$$\begin{array}{r} 40x - 30y = 360 \\ + \quad 40x + 30y = 3960 \\ \hline 80x = 4320 \\ \frac{80}{80} \quad \frac{80}{80} \\ x = 54 \end{array}$$

An Algebra book costs \$60

$$\begin{array}{r} 40x + 30y = 3960 \\ 40(54) + 30y = 3960 \\ 2160 + 30y = 3960 \\ - 2160 \quad \quad - 2160 \\ \hline 30y = 1800 \\ \frac{30}{30} \quad \frac{1800}{30} \\ y = 60 \end{array}$$