

6.4 Word Problems from Digits (Homework "G")

#8
✓ 6.4.8

☰ Question Help

Swimming Pool On a certain hot summer's day, 481 people used the public swimming pool. The daily prices are \$1.50 for children and \$2.25 for adults. The receipts for admision totaled \$933.75. How many children and how many adults swam at the public pool that day?

There were children at the public pool.

There were adults at the public pool.

#10
✓ 6.4.14

☰ Question Help

Farmer Brown planted corn and wheat on his 370 acres of land. The cost of planting and harvesting corn (which includes seed, planting, fertilizer, machinery, labor, and other costs) is \$280 per acre. The cost of planting and harvesting wheat is \$135 per acre. If Farmer Brown's total cost was \$84,750, how many more acres of corn than wheat did the farmer plant?

Farmer Brown planted more acres of corn than wheat.

6.4.15

Question Help

Challenge Solve the system of equations by the substitution method. Then use the solution to evaluate the expression $2x(-7+y)$.

$$3x + y + 5 = 6 + 6y - x$$

$$3x = y + 17 - 2x$$

The value of the expression is .

(Simplify your answer.)

#12 6.4.16

Question Help

Challenge The members of the city cultural center have decided to put on a play once a night for a week. Their auditorium holds 600 people. By selling tickets, the members would like to raise \$3,300 every night to cover all expenses. Let d represent the number of adult tickets sold at \$7.50. Let s represent the number of student tickets sold at \$4.50 each. If all 600 seats are filled for a performance, how many of each type of ticket must have been sold for the members to raise exactly \$3,300? At one performance there were two times as many student tickets sold as adult tickets. If there were 360 tickets sold at that performance, how much below the goal of \$3,300 did ticket sales fall?

The members sold adult tickets and student tickets.

If there were 360 tickets sold, the ticket sales fall \$ below the goal of \$3,300.

Answers & Work

8) Quantity $481 = c + a$
Cost $933.75 = 1.50c + 2.25a$

Rewrite $481 = c + a$

$$-c \quad -c$$

$$481 - c = a$$

Substitute $933.75 = 1.50c + 2.25a$

Solve for "c" $933.75 = 1.50c + 2.25(481 - c)$

$$933.75 = 1.50c + 1082.25 - 2.25c$$

$$933.75 = -0.75c + 1082.25$$

$$-1082.25$$

$$-1082.25$$

$$-148.50 = -0.75c$$

$$-0.75$$

$$198 = c$$

Substitute &
Solve for "a"

$$481 - c = a$$

$$481 - (198) = a$$

$$283 = a$$

* Check *

198 children & 283 adults

10) Quantity
Cost

$$\begin{array}{l} C + W = 370 \\ 280C + 135W = 84,750 \end{array}$$

Rewrite

$$\begin{array}{l} C + W = 370 \\ -W \quad -W \\ \hline C = 370 - W \end{array}$$

Substitute &
solve for "W"

$$\begin{array}{r} 280C + 135W = 84,750 \\ 280(370 - W) + 135W = 84,750 \\ 103,600 - 280W + 135W = 84,750 \\ 103,600 - 145W = 84,750 \\ -103,600 \quad -103,600 \\ \hline -145W = -18,850 \\ -145 \quad -145 \\ \hline W = 130 \end{array}$$

Substitute &
solve for "C"

$$\begin{array}{l} C = 370 - W \\ C = 370 - 130 \\ \hline C = 240 \end{array}$$

There is 110 more acres of corn
than wheat ($240 - 130 = 110$).

Equation #1

11) $3x + y + 5 = 6 + 6y - x$
 -5 -5

Combine
like
terms

$$3x + y = 1 + 6y - x$$

$$4x + y = 1 + 6y$$
$$-y \quad -y$$
$$4x = 1 + 5y$$

* Look @ the system
 & solve for a variable

* Solve for y

Equation #2

$$3x = y + 17 - 2x$$
$$+2x \quad +2x$$

$$5x = y + 17$$

$$5x = y + 17$$
$$-17 \quad -17$$

$$5x - 17 = y$$

* Use substitution
to solve for the
system

$$4x = 1 + 5y$$
$$5x - 17 = y$$

$$4x = 1 + 5(5x - 17)$$

$$4x = 1 + 25x - 85$$

$$4x = -84 + 25x$$

$$-25x \quad -25x$$

$$-21x = -84$$

$$-21 \quad -21$$

$$x = 4$$

$$5x - 17 = y$$

$$5(4) - 17 = y$$

$$y = 3$$

$$x = 4, y = 3$$

* Now use your
values of "x"
& "y" & solve
the expression

$$\begin{aligned} & 2x(-7+y) \\ & 2(4)(-7+3) \\ & 2(4)(-4) \\ & 8(-4) \\ & \underline{\underline{-32}} \end{aligned}$$

(12)

Goal

cost

$$\$3300 = 7.50d + 4.50s$$

quantity

$$600 = d + s$$

Rewrite

$$600 = d + s$$

$$-d - d$$

$$600 - d = s$$

Substitute &

$$3300 = 7.50d + 4.50s$$

Solve for "s"

$$3300 = 7.50d + 4.50(600 - d)$$

$$3300 = 7.50d + 2700 - 4.50d$$

$$3300 = 3d + 2700$$

$$-2700$$

$$-2700$$

$$600 = 3d$$

3

$$d = 200$$

Substitute &

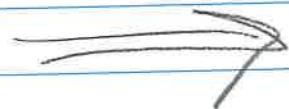
$$600 - d = s$$

Solve for "s"

$$600 - 200 = s$$

$$400 = s$$

The goal is to have 200 adult tickets sold & 400 student tickets sold.



@ 1st
performance

Total # of tickets $\Rightarrow 360 = s + d$

Equation showing

How many more

Students than adults

$2d = s$

Substitute
to solve for
"d"

$$360 = s + d$$

$$360 = 2d + d$$

$$360 = 3d$$

$$\overset{3}{120 = d}$$

Substitute
to solve for
"s"

$$2d = s$$

$$2(120) = s$$

$$240 = s$$

Find total
Cost

$$C = 7.50d + 4.50s$$

$$C = 7.50(120) + 4.50(240)$$

$$C = 900 + 1080$$

$$C = \$1980$$

Goal - (Cost of 1st
performance) = how much \$
Short of Goal

$$\$3300 - 1980 = \underline{\underline{\$1320}}$$