

Solving An Application Problems

1. Define variables
2. Write as a system of equations
3. Solve showing all steps
4. State your solution (in words!)

Setting Up Application Problems

1. Define

Found in the
question.
What you are looking for

2. Write as a

Based on 2 diff Totals

Example 1: Work Schedule

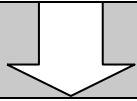
You worked 18 hours last week and earned a total of \$124 before taxes. Your job as a lifeguard pays \$8 per hour, and your job as a cashier pays \$6 per hour. How many hours did you work at each job?

x = hours as lifeguard

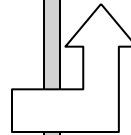
y = hours as cashier

$$\begin{aligned}x + y &= 18 \\8x + 6y &= 124\end{aligned}$$

Define variables:

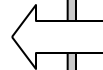


System of equations:



Solve

State your solution(s):



Example 2: Math Test

A math test is to have 20 questions. The test format uses multiple choice worth 5 points each and problem solving worth 6 points each. The test has a total of 100 points. Write a system to determine how many of each type of question are used.

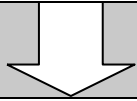
$$x = \text{MC ?'s}$$

$$y = \text{Problem solving ?'s}$$

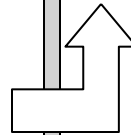
$$x + y = 20$$

$$5x + 6y = 100$$

Define variables:

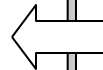


System of equations:



Solve

State your solution(s):



Example 3: Hair Salon

A hair salon receives a shipment of 84 bottles of hair conditioner to use and sell to customers. The two types of conditioners received are Type A, which is used for regular hair, and Type B, which is used for dry hair. Type A costs \$6.50 per bottle and Type B costs \$8.25 per bottle. The hair salon's invoice for the conditioner is \$588. How many of each type are in the shipment?

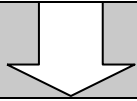
x = # Type A bottles

y = # Type B bottles

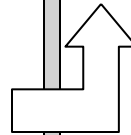
$$x + y = 84$$

$$6.5x + 8.25y = 588$$

Define variables:

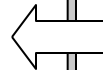


System of equations:



Solve

State your solution(s):



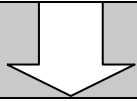
Example 4 : Solve - Ticket Sales

You sell tickets for admission to your school play and collect a total of \$104. Admission prices are \$6 for adults and \$4 for children. You sold 21 tickets. How many adult tickets and how many children tickets did you sell?

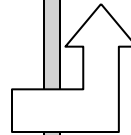
$$\begin{aligned}x + y &= 21 \\6x + 4y &= 104\end{aligned}$$

**10 adult tickets and
11 children tickets**

Define variables:

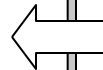


System of equations:



Solve

State your solution(s):



Example 5 : Solve – Pizza Hut

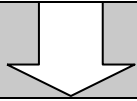
Casey orders 3 pizzas and 2 orders of breadsticks for a total of \$29.50. Rachel orders 2 pizzas and 3 orders of breadsticks for a total of \$23. How much does pizza cost?

$$3x + 2y = 29.50$$

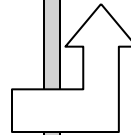
$$2x + 3y = 23$$

\$8.50 for pizza

Define variables:

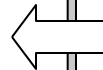


System of equations:

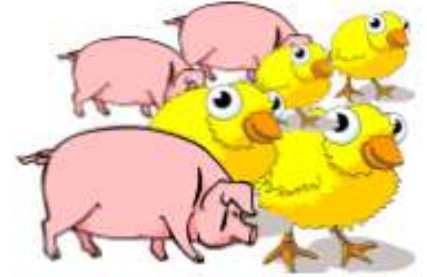
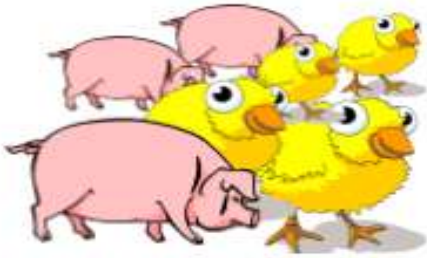


Solve

State your solution(s):



Closing



Chickens and Pigs

A farmer saw some chickens and pigs in a field. He counted 60 heads and 176 legs. Find out exactly how many chickens and how many pigs he saw.

Warm up

Solve the given system by substitution:

$$1) \quad y = 2x - 7$$

$$3x + 3y = -3$$

$$(2, -3)$$

Solve the given system by elimination:

$$2) \quad -3x + 4y = -4$$

$$3x - 6y = 6$$

$$(0, -1)$$

What is the Best Method for the following?

1. $y = 4x - 3$
 $5x - 2y = 6$

2. $4x - 5y = 13$
 $2x + 5y = 5$

3. $y = \frac{1}{2}x + 3$
 $y = -2x - 2$

What is the Best Method for the following?

4. $y = \frac{2}{3}x - 2$

$$y = -x + 3$$

5. $3x - 2y = 6$
 $y = 2x - 4$

6. $x + y = 4$
 $2x + 3y = 7$