

Systems of Equations

(Word Problems)

Solving systems of equations can be done a few ways such as **graphically**, **substitution** or **elimination**. When solving a word problem it is unnecessary to use a graph since we can always **substitute** or **eliminate**. For the following word problems **first write a system of linear equations** using the information given. After you have written the system, use either **substitution** or **elimination** and solve your system. Be sure that when you are completed your answer seems reasonable and makes sense according to the problem.

1. *Sophia* and her *brother* combined to read a total of 40 books over the summer. *Sophia* read four times as many books as her brother. How many books did each person read?
2. The sum of *Emma's* age and her *sister's* age is 41 years. *Emma* is 11 years older than her sister. What is *Emma's* age, and what is her sister's age?
3. The school that *Stefan* goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

4. The state fair is a popular field trip destination.
This year the senior class at High School A and the senior class at High School B both planned trips there.
The senior class at High School A rented and filled 8 vans and 8 buses with 240 students.
High School B rented and filled 4 vans and 1 bus with 54 students.
Every van had the same number of students in it as did the buses.
Find the number of students in each van and in each bus.
5. Noah has a total of 47 video games. He only buys *action* games and *sports* games.
He has 21 more action games than sports games.
How many action games and how many sports games does he have?
6. Rob has 40 coins, all dimes and quarters, worth \$7.60. How many dimes and how many quarters does he have?
7. Matt and Ming are selling fruit for a school fundraiser.
Customers can buy small boxes of oranges and large boxes of oranges.
Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of \$203.
Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of \$220.
Find the cost each of one small box of oranges and one large box of oranges.

8. There are 13 animals in the barn. Some are chickens and some are pigs. There are 40 legs in all. How many of each animal are there?

It is important to know how many legs a pig has and how many legs a chicken has.

9. The perimeter of a rectangle is 128 cm. The *length* of the rectangle is three times longer than the *width*. What is the length and width of the rectangle? Draw a picture and label the rectangle first.

10. At the "Great Hair Barber Shop" Nita and Joe do a total of 95 haircuts each week.

If Nita does 16 fewer than twice as many as Joe, how many haircuts does each person do?