

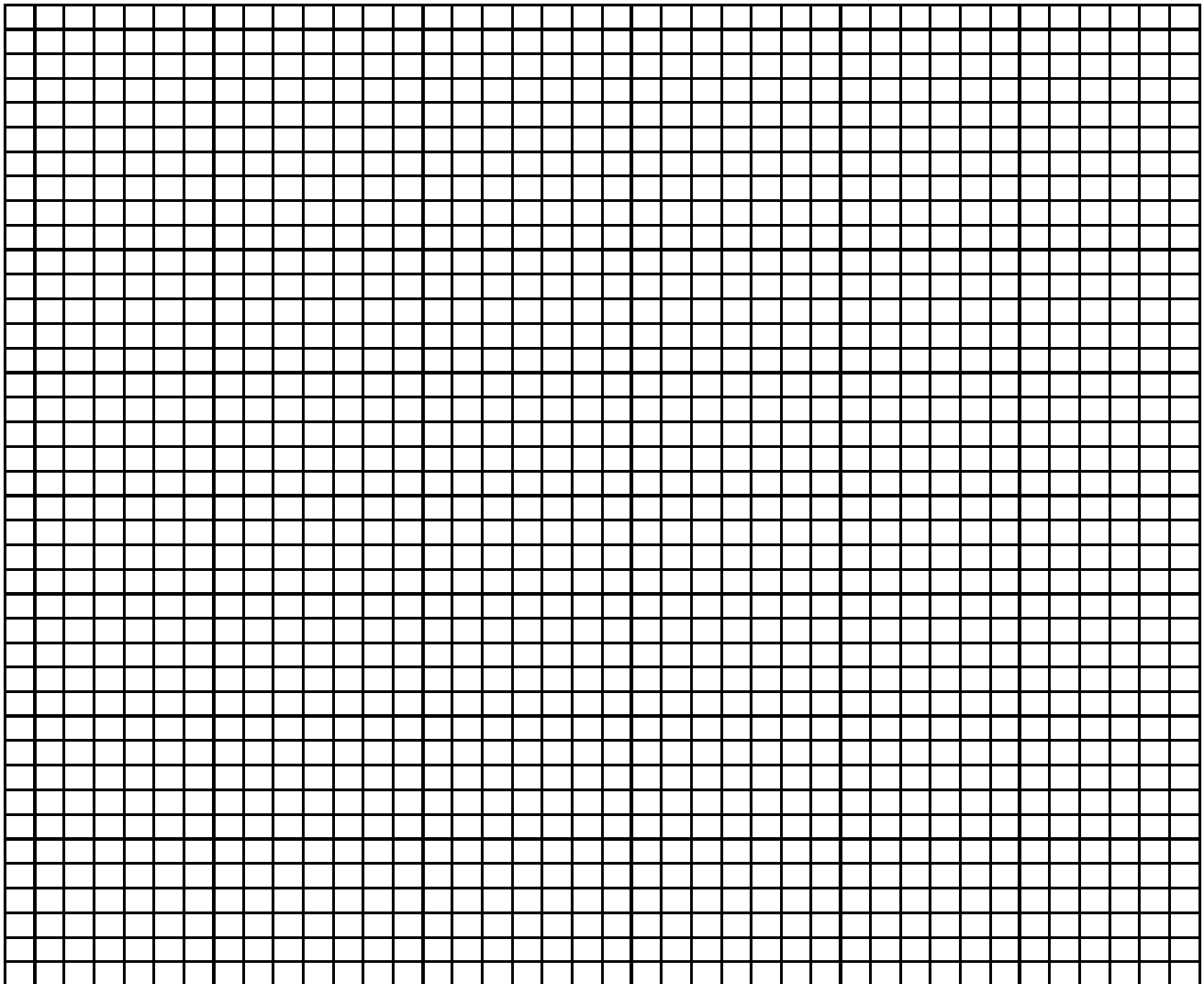
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**Solving Systems of Linear Equations by Graphing**

Brandon and Rayna are driving on the same road to a sushi restaurant. Rayna starts from her home, which is 5 miles closer to the restaurant than Brandon's starting location. Rayna drives at a speed of 50 mph, while Brandon drives at a speed of 65 mph.

(a) Write a system of linear equations that describes the situation.

(b) Solve the system by graphing. (Note: You may use the graph paper below or a graphing calculator.)



**Solving Systems of Linear Equations by Substitution & Elimination**

A sushi restaurant offers the following combination platters:

1 Philadelphia roll + 1 Dragon roll	\$8.35
3 Philadelphia rolls + 2 Dragon rolls	\$19.55

(a) Write a system of linear equations that describes the situation.

(b) Solve the system using the substitution method. How much does 1 Philadelphia roll cost? How much does 1 Dragon roll cost?

(c) Check your solution by solving the system using the elimination method.

## Analyzing a Solution to a System of Linear Equations

Examine the following problem and solution. Find and correct any mistakes in the solution.

### PROBLEM

A person paddles a canoe 24 miles downstream in 2 hours. The return trip takes 3 hours. What is the paddling speed? What is the speed of the current?

### SOLUTION

$x$  is the paddling speed  
 $y$  is the speed of the current

$x + y$  is the speed going downstream  
 $x - y$  is the speed going upstream

	Speed (miles per hour)	Time (hours)	Distance (miles)	Speed x Time = Distance
Downstream	$x+y$	2	24	$2(x+y)=24$ $2x+2y=24$
Upstream	$x-y$	3	24	$3(x-y)=24$ $3x-3y=24$

*Downstream*

$$2x + 2y = 24$$

$$3(2x + 2y = 24)$$

$$6x + 2y = 24$$

*Upstream*

$$3x - 3y = 24$$

$$2(3x - 3y = 24)$$

$$6x - 3y = 24$$

$$\begin{array}{r} 6x + 2y = 24 \\ -(6x - 3y = 24) \longrightarrow \\ \hline 5y = 0 \\ y = 0 \end{array}$$

$$2x + 2(0) = 24$$

$$x = 12$$

The paddling speed is 12 miles per hour. The speed of the current is 0 miles per hour.

# Systems of Linear Equations

# Algebra for Students.

Guided Practice Worksheet

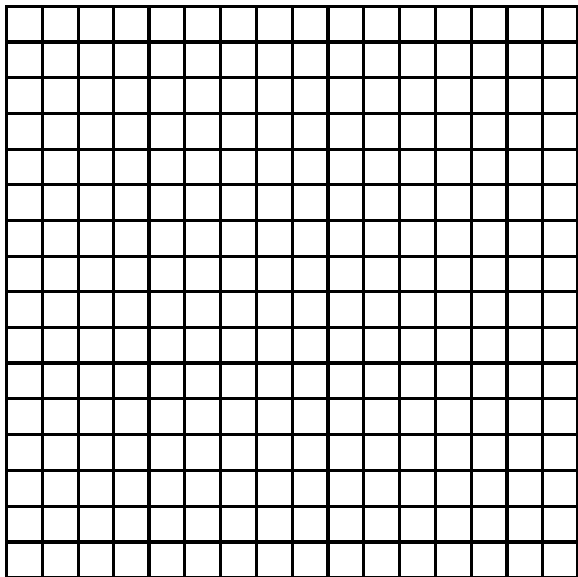
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## Understanding Solutions to Systems of Linear Equations

1. The corner store is having a sale on flip-flops and sunscreen. Two bottles of sunscreen and one pair of flip-flops cost \$24, while four bottles of sunscreen and two pairs of flip-flops cost \$48.

(a) Write a system of linear equations that describes the situation.

(b) Solve the system by substitution or elimination and by graphing. Can you determine the cost of one bottle of sunscreen or one pair of flip-flops? Explain your answer.



2. At a nearby store, 3 pens and 2 notebooks cost \$12. With a coupon, the same items cost \$10.

(a) Write a system of linear equations that describes the situation.

(b) Solve the system by substitution or elimination and by graphing. Can you determine the cost of one pen or one notebook? Explain your answer.

