


# Algebra 1

Solve Linear Systems by Adding and Subtracting and by Substitution



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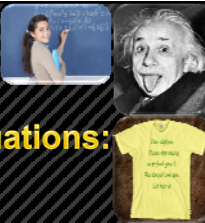
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## Systems of Equations

### Solving Systems of Equations:

- 1) By Graphing
- 2) By Substitution
- 3) By Addition or Subtraction

Overview




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Tickets at the theater were \$8.00 for adults, and \$4.00 for children. Last Saturday, 210 tickets were sold, and the total ticket sales were \$1,440.00. How many adult tickets and how many children's tickets were sold?

**a = number of adult tickets**  
**c = number of child tickets**

$$a + c = 210$$

$$8a + 4c = 1440$$


Systems of Equations

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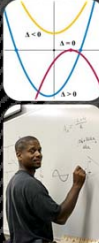


$2x + y = 12$   
 $y = 12 - 2x$

$3x - 2y = 25$   
 $3x - 2(12 - 2x) = 25$   
 $3x - 24 + 4x = 25$   
 $7x = 49$   
 $x = 7$

$y = 12 - 2(7)$   
 $y = 12 - 14$   
 $y = -2$

Solve this System of Equations Using Substitution:  
 $2x + y = 12$   
 $3x - 2y = 25$



You Try!

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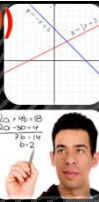

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$a + c = 210$   
 $8a + 4c = 1440$

$8a + 8c = 1680$   
 $8a + 4c = 1440$   
 $-(8a + 8c) \quad -(1680)$   
 $-4c = -240$   
 $c = 60$

$8a + 4c = 1440$   
 $8a + 4(60) = 1440$   
 $8a + 240 = 1440$   
 $8a = 1200$   
 $a = 150$

Solve Linear Systems by Addition or Subtraction

You Try!

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$y = mx + b$

$x - 2y = 12$   
 $3x + 2y = 28$

Solve this System of Equations Using Addition or Subtraction:



You Try!

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$x - 2y = 12$   
 $3x + 2y = 28$ 

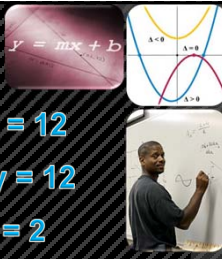
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 $4x = 40$   
 $x = 10$

$x - 2y = 12$   
 $10 - 2y = 12$   
 $-2y = 2$   
 $y = -1$

**Solve this System of Equations Using Addition or Subtraction:**  
 $x - 2y = 12$   
 $3x + 2y = 28$

*You Try*



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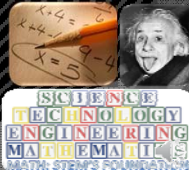
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