

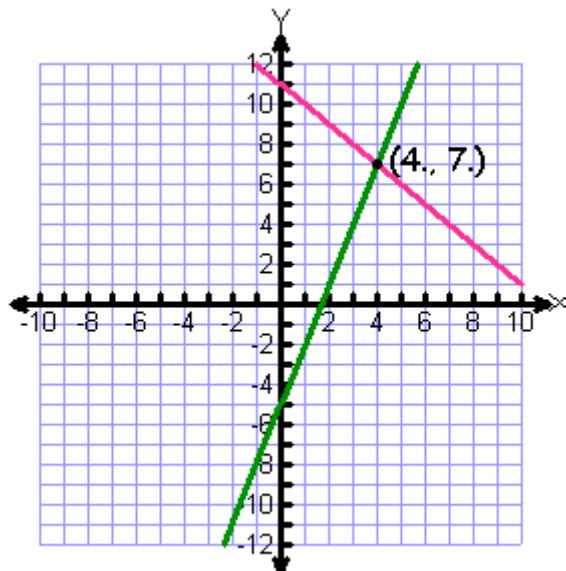
Lesson #17
Using Systems of
Equations
to Solve Problems

A set of two or more equations with the same variables is called a system of equations. The solution set of a system consists of all ordered pairs that satisfy all of the equations in the system.

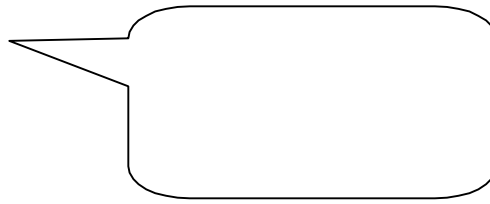
$$\begin{aligned}x + y &= 11 \\ 3x - y &= 5\end{aligned}$$

(4,7) is a solution to the system.

$x + y = 11$	$3x - y = 5$
$4 + 7 = 11$	$3(4) - 7 = 5$
$11 = 11$	$5 = 5$

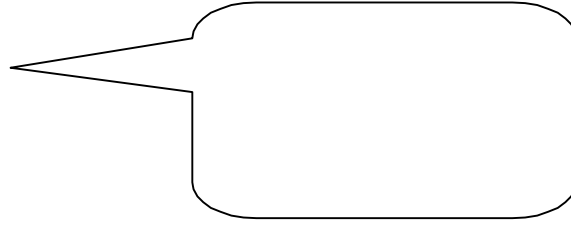


1. Perimeter of a Rectangle



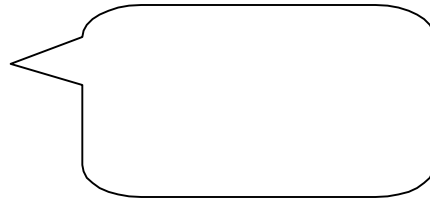
The perimeter of a rectangle is 44 cm. The length is 2 cm more than three times the width. Find the dimensions of the rectangle.

2. Number of Items



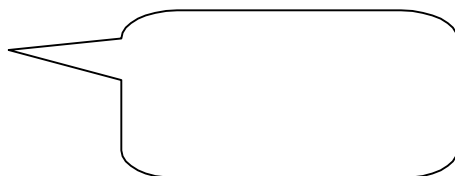
Lindsey and Jessica have 48 words to spell in the spelling bee. As an incentive, Mrs. Brooks offers them \$10 for each word they spell correctly if they pay her \$6 for each word they spell incorrectly. If they made \$192, how many words did they spell correctly?

3. Combination of Items

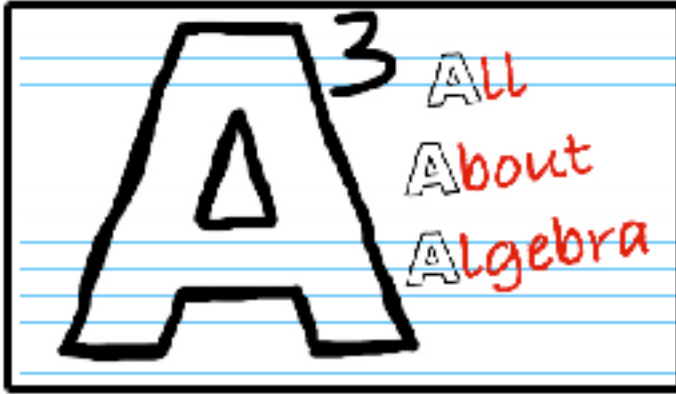


For Kagy's birthday party, her mother bought 5 cakes and 3 piñatas for \$147. Later that day she found out that Kagy had invited her entire algebra class so her mother ran out and bought 2 more cakes and 1 more piñata for \$54. How much did she pay for each cake and each piñata?

4. Investment Problem



Leigh invested a total of \$10,000 in two funds paying 5% and 7% annual interest. The combined annual interest is \$644. How much of the \$10,000 is invested in each fund?



Just For Fun!

Pizza Party!

Mrs. Bringhurst's homeroom class can order up to \$90 of free pizzas as a reward for selling the most magazines during the magazine drive. They need to order at least 6 large pizzas in order to serve the entire class. If a pepperoni pizza costs \$9 and a supreme pizza costs \$12, how many of each type can they order? List two possible solutions.

$$x + y \geq 6$$

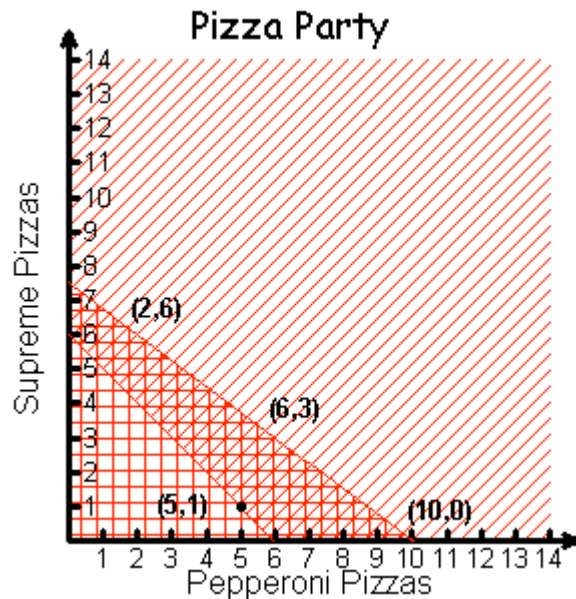
$$y \geq -x + 6$$

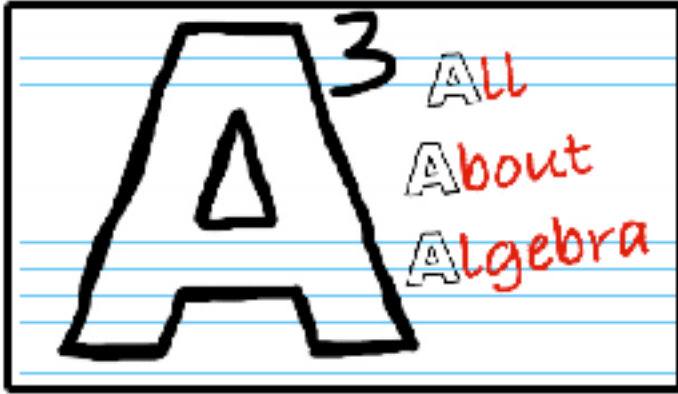
$$9x + 12y \leq 90$$

$$y \leq -\frac{3}{4}x + 7.5$$

\therefore Mrs. Bringhurst's class could order 6 pepperoni pizzas and 3 supreme pizzas. They could also order 10 pepperoni pizzas and 0 supreme pizzas.

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Just For Fun!

The Lion King

On a Saturday afternoon, the Johnson and Logan families decided to go see the Lion King together. The Johnson family, two adults and four children, can afford to spend \$30 from their entertainment budget this weekend for the movie tickets. The Logan family, two adults and two children, can afford to spend \$21.50. Different theaters around town charge different amounts for adult and child tickets. What price can the Johnsons and the Logans afford to pay for each adult and child ticket.