

If all the cows and chickens in a pasture have 35 heads and 110 legs, how can you use a system of equations to help you find the number of cows in the pasture?

In this lesson you will learn how a system of linear equations can help you model a real-life situation by analyzing a problem.

Let's Review

system of equations:

$$\begin{cases} y = \frac{1}{2}x + 2 \\ y = -x - 1 \end{cases}$$

Two equations
Two variables

A Common Misunderstanding

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



$$\begin{cases} y = \frac{1}{2}x + 2 \\ y = -x - 1 \end{cases}$$



Let's Review

solution (of a system) : a set of values that makes both equations in the system true at the same time.

$$\begin{cases} y = \frac{1}{2}x + 2 \\ y = -x - 1 \end{cases}$$

SOLUTION: (-2,
1)

Check:

$$y = \frac{1}{2}x + 2$$

$$(1) = \frac{1}{2}(-2) + 2$$

$$1 = -1 + 2$$

$$1 = 1$$

TRUE!

Check:

$$y = -x - 1$$

$$(1) = -(-2) - 1$$

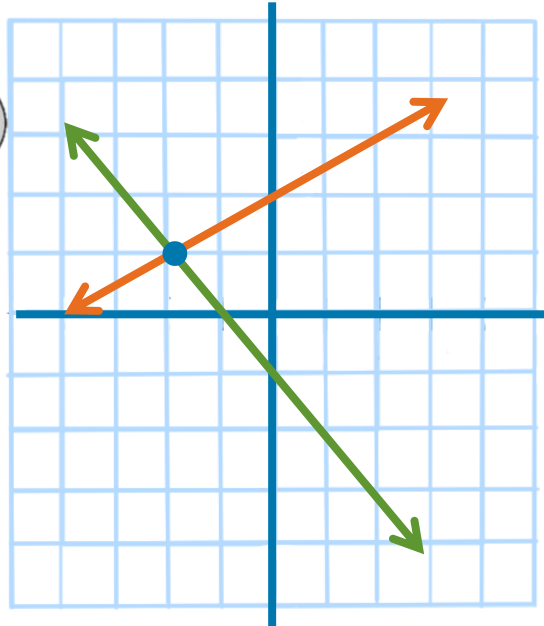
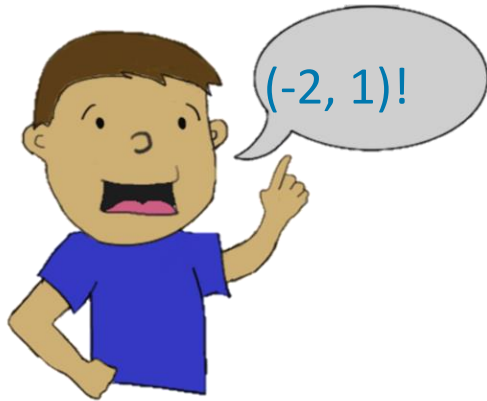
$$1 = 2 - 1$$

$$1 = 1$$

TRUE!

Let's Review

We know that we can sometimes find the solution to a linear system by graphing.



$$\begin{cases} y = \frac{1}{2}x + 2 \\ y = -x - 1 \end{cases}$$

Core Lesson

If all the cows and chickens in a pasture have 35 heads and 110 legs, how many cows are in the pasture?

I have two equations with the same two unknowns...I can model this with a system of equations!

Core Lesson

If all the cows and chickens in a pasture have 35 heads and 110 legs, how many cows are in the pasture?

x = the number of cows

y = the number of chickens

“What unknown values will I need to find for this system?”

Core Lesson

If all the cows and chickens in a pasture have 35 heads and 110 legs, how many cows are in the pasture?

One equation is about heads.

The other is about the number of legs the animals have.

Core Lesson

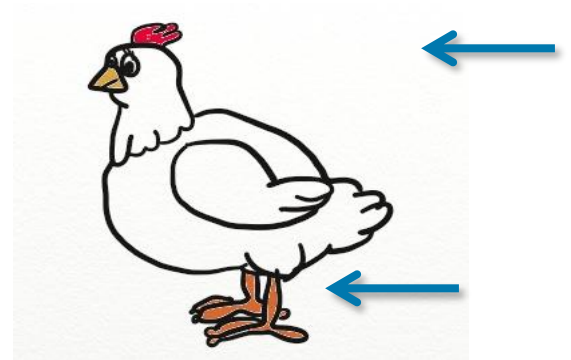
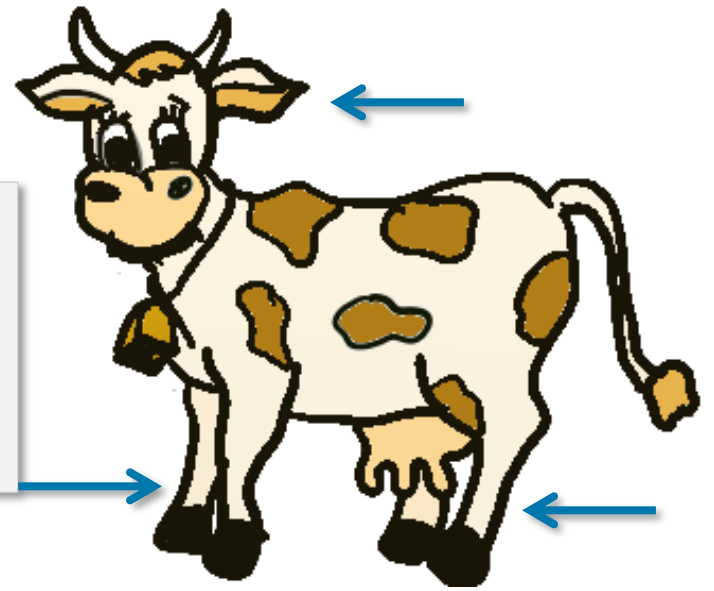
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“And” is usually an important math word...and how can I use these numbers?

Core Lesson

If all the cows and chickens in a pasture have 35 heads and 110 legs, how many cows are in the pasture?

$$\begin{cases} x + y = 35 \\ 4x + 2y = 110 \end{cases}$$



1. Identify the unknowns and define your variables.
2. Separate types of information to know what the equations will describe.
3. Find the numbers and operations to connect to the unknown values, and write your system of equations.

In this lesson you learned how a system of linear equations can help you model a real-life situation by analyzing a problem.