Lesson 4-12 → System Word Problems with Standard Form Equations

Some Scenarios set up for $\boxed{ax+by=c}$

Alice buys 2 cheese pizzas and 5 works pizzas for $165

x = cheese y = works

$2x+5y=165$

Bob buys 1 cheese pizza and 2 works pizzas for $70

x = cheese y = works

$x+2y=70$

both are linear equations

they have a different balance of X's ay y's, which means they have different slopes

linear equations with different slopes cross once

But how are we going to use substitution to solve?

find easiest way possible to re-write EITHER equation as $x=$ or $y=$

$2x+5y=165$

$x+2y=70$

$-2y \quad -2y$

$x=70-2y$

$2(70-2y)+5y=165$

$140-4y+5y=165$

$140+y=165$

$-140 \quad -140$

$y=25$ works

$x+2y=70$

$x+2(25)=70$

$x+50=70$

$x=20$ cheese