

YOU'LL NOT SINK MY BATTLESHIP!

The following equations represent the three *enemy scouting lanes*.

Enemy Scouting Lane A: $x - y = -6$

Enemy Scouting Lane B: $2x - y = 10$

Enemy Scouting Lane C: $x - 3y = -3$

The following equations represent each group's assigned *battleship course*.

Battleship Course Group #1: $3x + 2y = 36$

Battleship Course Group #2: $x + 2y = -3$

Battleship Course Group #3: $3x - y = 12$

Battleship Course Group #4: $3x + 4y = 24$

Battleship Course Group #5: $2x + 3y = -12$

Battleship Course Group #6: $5x + y = -3$

Battleship Course Group #7: $4x - y = -12$

YOU'LL NOT SINK MY BATTLESHIP!

Data Sheet

Group #: _____ Battleship Course Equation: _____

Convert each of the Enemy Scouting Lane Equations to Slope-Intercept Form.

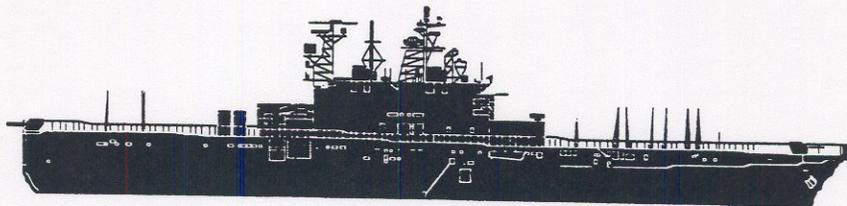
Enemy Scouting Lane A: $x - y = -6$ _____

Enemy Scouting Lane B: $2x - y = 10$ _____

Enemy Scouting Lane C: $x - 3y = -3$ _____

Determine the coordinate point at which your battleship will cross the path of each of the enemy scouting vessels.

<u>Enemy Scouting Vessel</u>	<u>Coordinate of Intersection</u>
1	_____
2	_____
3	_____



YOU'LL NOT SINK MY BATTLESHIP!

Data Sheet

Scouting Lane Equation: _____

Convert each of the Battleship Course Equations to Slope-Intercept Form.

Battleship Course #1: $3x + 2y = 36$ _____

Battleship Course #2: $x + 2y = -3$ _____

Battleship Course #3: $3x - y = 12$ _____

Battleship Course #4: $3x + 4y = 24$ _____

Battleship Course #5: $2x + 3y = -12$ _____

Battleship Course #6: $5x + y = -3$ _____

Battleship Course #7: $4x - y = -12$ _____

Determine the coordinate point at which your scouting vessel will cross the path of each of the battleships.

<u>Battleship #</u>	<u>Coordinate of Intersection</u>	<u>Battleship #</u>	<u>Coordinate of Intersection</u>
1	_____	5	_____
2	_____	6	_____
3	_____	7	_____
4	_____		

HOW MANY PIGS???

- Focus:** Formulation and solution of systems of linear equations.
- Objective:** **Algebra I TEKS, Linear Functions #8**
The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situations.
- Terms:** Systems of linear equations
- Set-Up:** Participants should be seated at tables in groups of 3-4.
- Materials:** Transparencies #55-56, algebra blocks
- Prerequisites:** Linear equation solution strategies
- Procedure:** **Transparency #55: Farmer Brown's Barnyard**

Cover the bottom portion of the transparency. Introduce a very familiar problem. Allow participants to determine several possible solutions.

# Pigs	# Chickens	# Pig Legs	# Chick. Legs	Total Legs
1	9	4	18	22
2	7	8	14	22
3	5	12	10	22
4	3	16	6	22
5	1	20	2	22

Ask for an equation to describe the situation. ($4x + 2y = 22$)
Ask participants to describe what that would look like with algebra blocks.

Uncover the bottom part of the transparency. For each possible solution, demonstrate with algebra blocks that the solution works. For example, if $x = 1$ and $y = 9$, replace the x pieces with 1 unit and the y pieces with 9 units. Check for equality.

Transparency #56: How Many Pigs?

Introduce the problem situation. Ask for two linear equations. ($4x + 2y = 22$ and $y = x + 7$). Use the substitution method by replacing each y piece in the $4x + 2y = 22$ equation with an x piece and 7 unit pieces. Simplify the equation ($6x + 10 = 22$). Solve ($x = 2$). Return to one of the original equations (i.e., $y = x + 7$) and replace the x piece with 2 unit pieces. Simplify ($y = 9$).

Emphasize Algebra I TEKS, Linear Functions #8

- 8.a. The student analyzes situations and formulates systems of linear equations to solve problems.
- 8.b. The student investigates solving systems of linear equations using concrete models, graphs, tables, and algebraic methods and solves using a method of the student's choice.

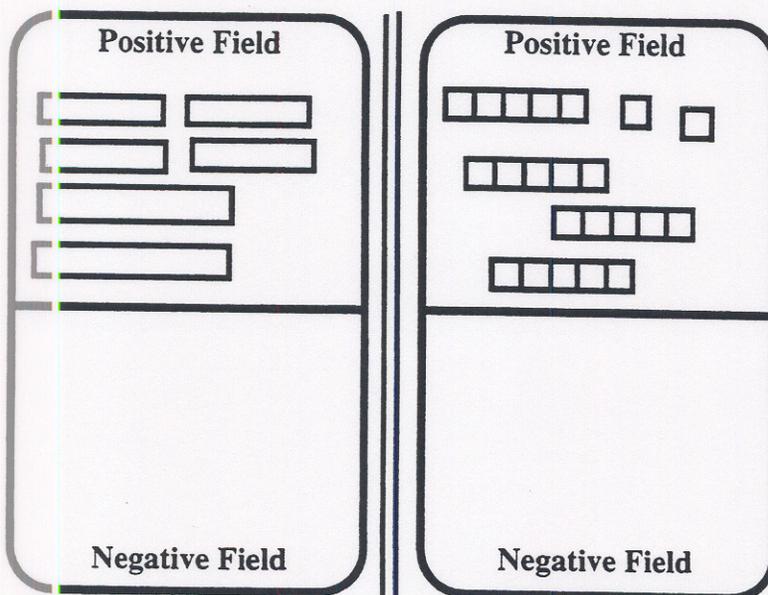
FARMER BROWN'S BARNYARD

Farmer Brown looked out at his barnyard and saw a total of 22 legs. Some of the animals were pigs and some were chickens. How many pigs were in the barnyard?

Let $x = \#$ pigs each with 4 legs

Let $y = \#$ chickens each with 2 legs

We know $4x + 2y = 22$.



How many pigs might there be?