



Linear System Sleuths

► **Materials:**

- Game cards
- Pencil
- Answer sheets

► **Directions:**

Students play as a group and then form different teams of three, which are randomly decided from the game cards each round. Each student needs a two-sided answer sheet. Sort the cards by letter ahead of time and only use as many cards as there are students. If the number of students is not divisible by three, one or two students should check solutions that round.

Students randomly draw a game card from the original stack and find their match by group letter. The team members then solve the system of equations by the method provided on one of the cards. Students show their work and record their solution in the appropriate box on their answer sheet.

If the answer is correct, each team member earns two points. Once a system is solved, the cards are shuffled and the students draw again. The game continues until the student answer sheet is complete, or time is called.

► **Who Wins?**

The student(s) with the highest number of points wins.

► **Tip:**

Ensure students are using the proper method to solve each system.

► **Discuss:**

Discuss why the given method may have been chosen to solve the system of linear equations in each group.

Group A

Graphing



Group B

Graphing



Group C

Graphing



Group D

Graphing



Group E

Substitution



Group F

Substitution



Group G

Substitution



Group H

Substitution



Group I

Substitution



Group J

Substitution



Group K

Elimination



Group L

Elimination



Group M

Elimination



Group N

Elimination



Group O

Elimination



Group P

Elimination



Group A

$$y = -2x - 6$$



Group A

$$\frac{1}{2}x - y = -4$$



Group B


$$5x + y = 6$$




Group B

$$-x + 2y = -10$$

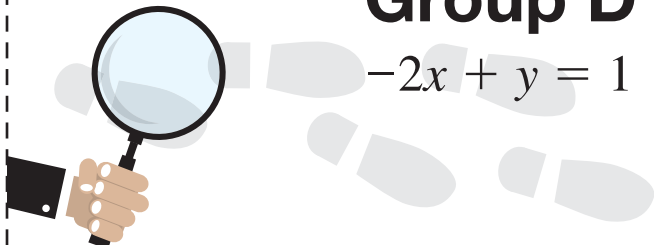




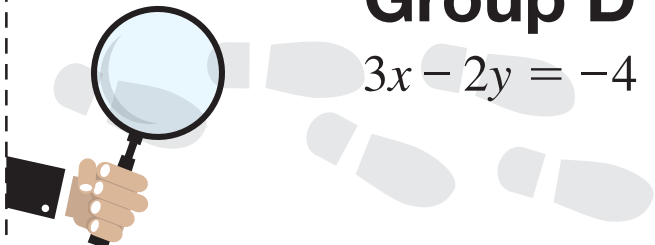
Group C
 $3x - y = -6$




Group C
 $2x + y = 1$



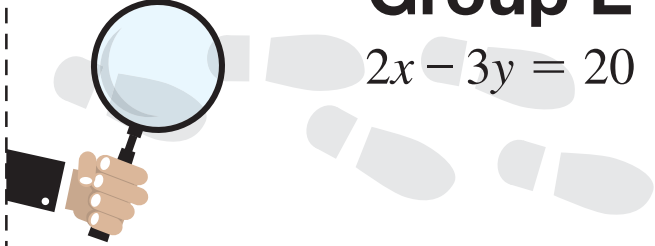
Group D
 $-2x + y = 1$



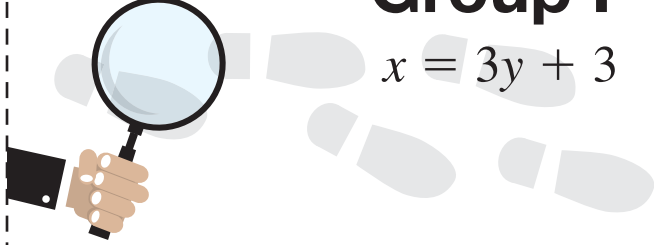
Group D
 $3x - 2y = -4$



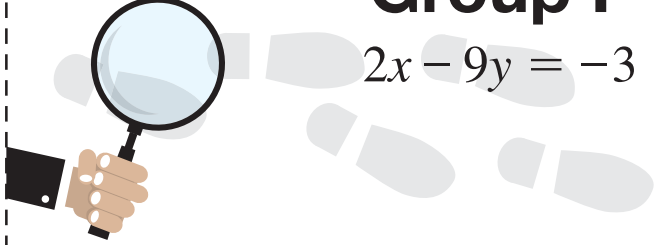
Group E
 $y = 2x$



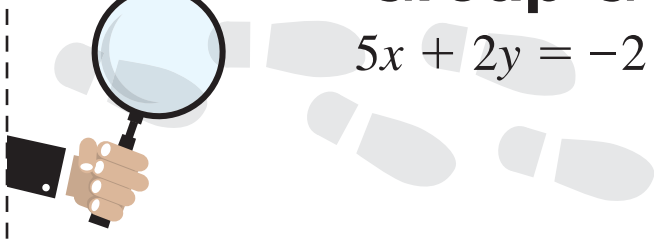
Group E
 $2x - 3y = 20$



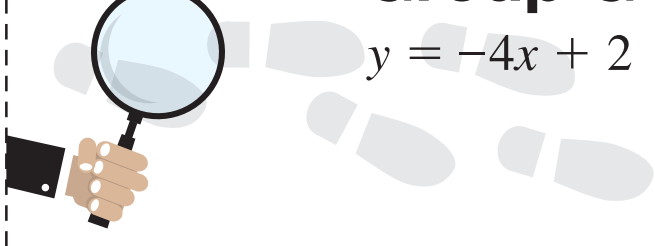
Group F
 $x = 3y + 3$



Group F
 $2x - 9y = -3$



Group G
 $5x + 2y = -2$



Group G
 $y = -4x + 2$



Group H

$$x + y = -4$$



Group H

$$4x + 2y = -2$$



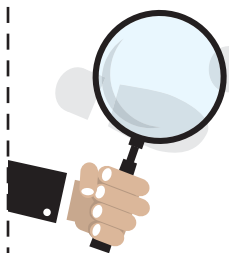
Group I

$$2x - y = -12$$



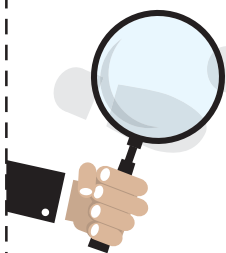
Group I

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



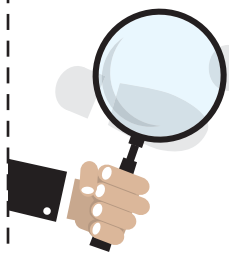
Group J

$$x + y = 2$$



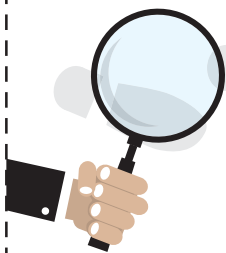
Group J

$$2x - 3y = 9$$



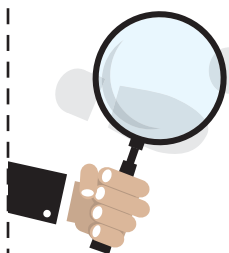
Group K

$$2x - 7y = -2$$



Group K

$$-2x + 9y = -2$$



Group L

$$3x - 4y = -16$$



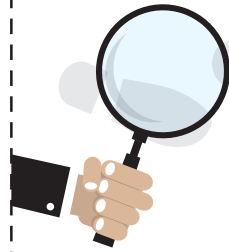
Group L

$$7x + 4y = 16$$



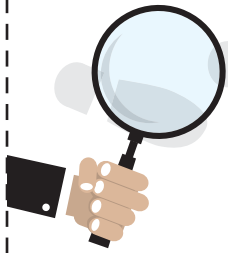
Group M

$$2x - 4y = -8$$



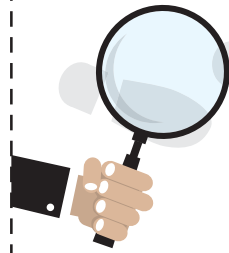
Group M

$$-3x + 5y = 9$$



Group N

$$7x + 3y = 1$$



Group N

$$-8x - 4y = 4$$



Group O

$$10x + 6y = 2$$



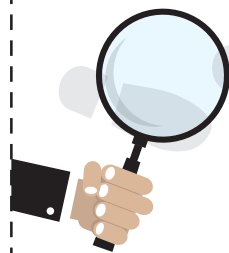
Group O

$$-12x - 4y = 4$$



Group P

$$2x + 4y = -2$$

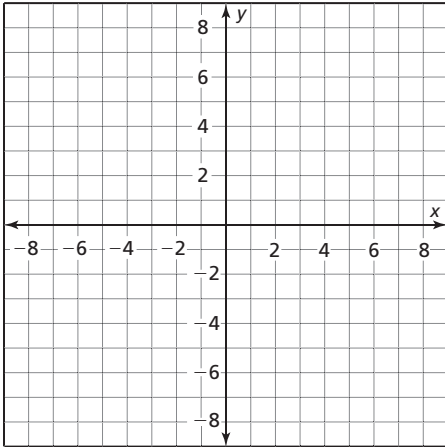


Group P

$$-4x - 6y = -4$$

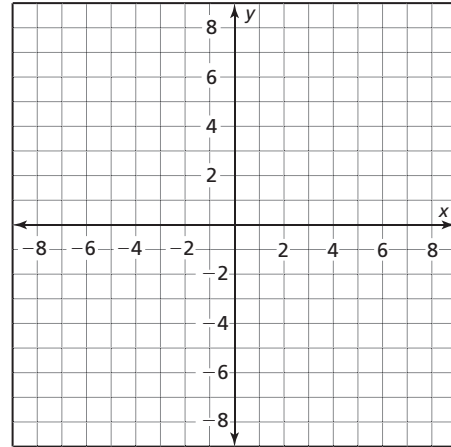
Student answer sheet for Linear System Sleuths

Group A



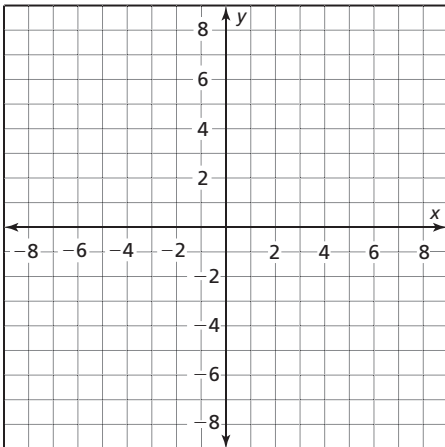
Solution:

Group B



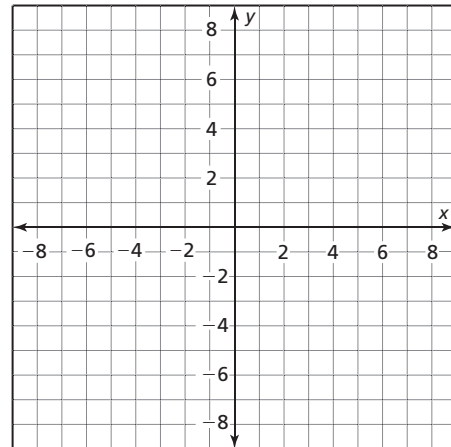
Solution:

Group C



Solution:

Group D



Solution:

Group E

Solution:

Group F

Solution:

| | |
|----------------|----------------|
| Group G | Group H |
| Solution: | Solution: |
| Group I | Group J |
| Solution: | Solution: |
| Group K | Group L |
| Solution: | Solution: |
| Group M | Group N |
| Solution: | Solution: |
| Group O | Group P |
| Solution: | Solution: |

Answers for Linear System Sleuths

Group A: $(-4, 2)$

Group B: $(2, -4)$

Group C: $(-1, 3)$

Group D: $(2, 5)$

Group E: $(-5, -10)$

Group F: $(12, 3)$

Group G: $(2, -6)$

Group H: $(3, -7)$

Group I: $(-12, -12)$

Group J: $(3, -1)$

Group K: $(-8, -2)$

Group L: $(0, 4)$

Group M: $(2, 3)$

Group N: $(4, -9)$

Group O: $(-1, 2)$

Group P: $(7, -4)$