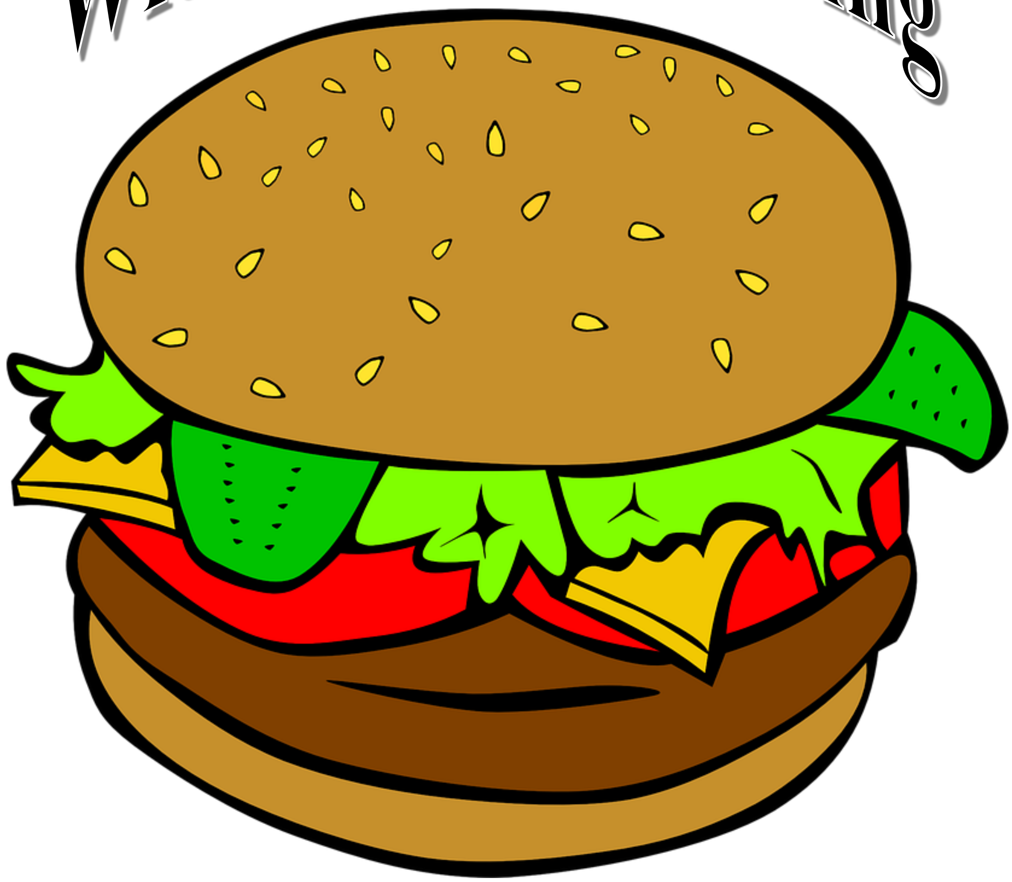
# Solving Systems of Equations With Understanding

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**This program outlines a three-step process** for introducing students to the concept of solving systems of equations in two variables. It has been classroom tested in grades 4 through high school and shown to produce a noticeable increase in students' ability to both *understand* and to *solve* systems of equations.

These three steps can be spread across a span of years as in grades 6, 7, and 8 in middle school, or it can be incorporated into a single year to provide a smooth transition from the most basic representations to more rigorous examples.

Initial instruction should include equations in which coefficients and constants and solutions are positive whole numbers. This allows students to first grasp an understanding of the process and concepts before working with more demanding numbers. As they progress, fractional solutions and negatives can be incorporated to bring the problems to the level at which the students are to be tested.

# Solving systems of equations using Menu Math

## Solving by elimination

## Recommended grade level: 6

Use this after introducing students to the Menu Math activities. These problems make good warmups. It is not necessary to connect it to the term "system of equations" yet, but you may do so if you wish.

Explain that they are at a new restaurant, and you overhear some customers place their orders, and you also hear what they were charged. How can you find out the cost of each menu item? Allow the students to reason through this process. Introduce the first equation and ask for possible solutions:

$3h + 2f = \$11$

Allow students to explain their solutions. They might suggest that the burgers cost $3, and the fries cost $1. However, it could also be possible for the burgers to sell for $1 and the fries cost $4. While this are not reasonable prices, it works mathematically. That is the point they need to see. Burgers might also cost $2.50 and fries cost $1.75. Fractional values are possible.

If they don't suggest it, ask if fries might sell for $5.50. This would mean that the burgers are free. Again, though this is not likely, it lays the foundations for x- and y-intercepts that they will learn about later.

Finally, ask if it's possible for burgers to sell for $4. This would mean that the restaurant is paying you to eat their fries! While this is silly, it demonstrates that solutions with negative numbers are also a possibility. The important thing they need to understand is that there are many possible solutions, and we don't have enough information to solve the problem yet.

Next write the second order (equation) on the board below the first one and ask the students to consider it.

$3h + 2f = \$11$

$h + 2f = \$5$

Typically, some students will realize that there is now enough information to solve the problem. If not, ask them, "What is the difference in the food orders?" Then ask, "What did that do to the price?" This helps them see that dropping the two hamburgers lowered the price by $6. They are home free at this point. This means the burgers sell for $3 and they can solve for the fries.

This approach has been used with students as low as 4th and 5th grades.

I like to write this out algebraically so they connect the language of algebra to their thought process.

$$\begin{array}{rll} & 3h + 2f = \$11 & \\ - & \underline{h + 2f = \ \$5} & \text{subtract} \\ & 2h \quad = \$6 & \text{divide} \\ & h = \$3 \longrightarrow & 3 + 2f = 5 \quad \text{substitute} \\ & & 2f = 2 \quad \text{subtract} \\ & & f = \$1 \quad \text{divide} \end{array}$$

Then I show some more examples. A practice page is provided along with an answer key.

*Can you find the price of a hamburger and of an order of fries at each of these restaurants?*

Restaurant A:

$$3h + 2f = \$11$$
$$h + 2f = \$5$$

---

Restaurant B:

$$2h + 4f = \$12$$
$$3h + f = \$8$$

---

Restaurant C: What is the price of a cheeseburger?

$$2h + 3c + f = \$20$$
$$3h + 2c + f = \$19$$
$$h + 5c + 2f = \$27$$

# Menu Math

Name____________________________

Solving Systems of Equations

Date_________________ Class_______

Can you find the prices of the menu items at these five restaurants?

Restaurant A

$3c + 5f = 27$

$3c + 2f = 18$

Restaurant B

$6f + 2x = 24$

$2f + 2x = 12$

Restaurant C

$h + 4m = 11$

$4h + 4m = 26$

Restaurant D

$5h + 2f = 20$

$h + 4f = 13$

Restaurant E

$3c + 2m = 22$

$2c + 5m = 22$

**Answer Key**

Restaurant A: (4, 3)

Restaurant B: (3, 3)

Restaurant C: (5, 1.50)

Restaurant D: (3, 2.50)

Restaurant E: (6, 2)

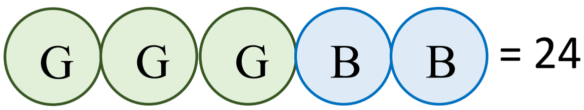
 

# Solving systems of equations using Money from Mars

## Solving by graphing and patterning

## Recommended grade level: 7

I tell the students that I grew up on Mars, and our money system is different than theirs. Our coins are not made of different metals or in different sizes, but they are different colors. For example, the coins below are worth 24 Martian cents.




Ask them what are possible values that will make this true? Remember that all green coins share the same value, and blue coins also have equal values. They may suggest these possible solutions:

G=2, B=9

G=6, B= 3

G=8, B=0

G=4, B=6

They may suggest that you would never have a coin of no value, but remind them that this is Mars, and things are strange there.

They might also suggest that G=1, and B=10½. Tell them that on Mars, there are no fractions. For now, we will only deal with whole number solutions.

If no one suggests it, ask them if it is possible for G=10. That would make B=-3. The more of the blue coins you had, the poorer you would be! Explain that negative numbers are illegal on Mars. They may want to go live there! For now, we will deal only with positive whole numbers.

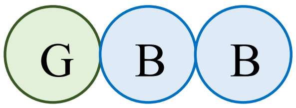

| G | B |
|---|---|
| 0 | 12 |
| 2 | 9 |
| 4 | 6 |
| 6 | 3 |
| 8 | 0 |

We have found four solutions, but are there more? How do we know when we have found them all? Let's organize them into a table. We will start with our lowest green value at the top. When we do this, we notice a pattern! Patterns are wonderful discoveries because they make our math make sense. Is the pattern complete? Can we come up with other solutions that fit this pattern without using fractions or negative solutions? Yes! We can use G=0 and B=12.

Now our pattern is complete and we see that there are five possible solutions. But we don’t know which of the five is correct on Mars.

Now that we know that patterns govern these problems, let's look at another, but let's be more systematic about our work as we go.



= 16

As we come up with solutions, we will immediately put them into a table to help us discover the pattern. Let's assume students came up with the solution G=14, B=1. Since 14 is a large value, it will go toward the end of our table. Likewise, the solution B=6, G=5 will be near the middle. When they find G=2, B=7, that will go near the top of the table since 2 is a low value. The green values are increasing on the table, and their corresponding blue values are decreasing.

Once the students find enough values, a pattern will emerge. With the solution G=8, B=4, students may notice that all the green solutions are even. By filling in the missing even numbers on the green column, it becomes clear that the blue column is decreasing by ones. We can easily fill in all the solutions. There are nine.

16

| G | B |
|---|---|
| 6 | 5 |
| 14 | 1 |

16

| G | B |
|---|---|
| 2 | 7 |
| 6 | 5 |
| 14 | 1 |

16

| G | B |
|---|---|
| 2 | 7 |
| 6 | 5 |
| 8 | 4 |
| 14 | 1 |

16

| G | B |
|---|---|
| 0 | 8 |
| 2 | 7 |
| 4 | 6 |
| 6 | 5 |
| 8 | 4 |
| 10 | 3 |
| 12 | 2 |
| 14 | 1 |
| 16 | 0 |

At first, students may be disappointed. After doing the first problem, we had five possible solutions, and now we have nine. It's getting worse! Or is it? Notice that there is one solution common to both charts: G=4, B=6. Ta=da! We are now ready to go shopping on Mars!

Now I ask students to graph the two solutions. They notice that the solutions form a linear relationship. In fact, if we were missing a solution or had an incorrect solution, it would be visually clear. They will also notice that the two functions intersect at (4, 6). They have now solved this problem three ways: by guess-and-check, by t-table, and by graphing.

You can now assign a second problem for classwork or homework and they should be able to complete it with much less effort.

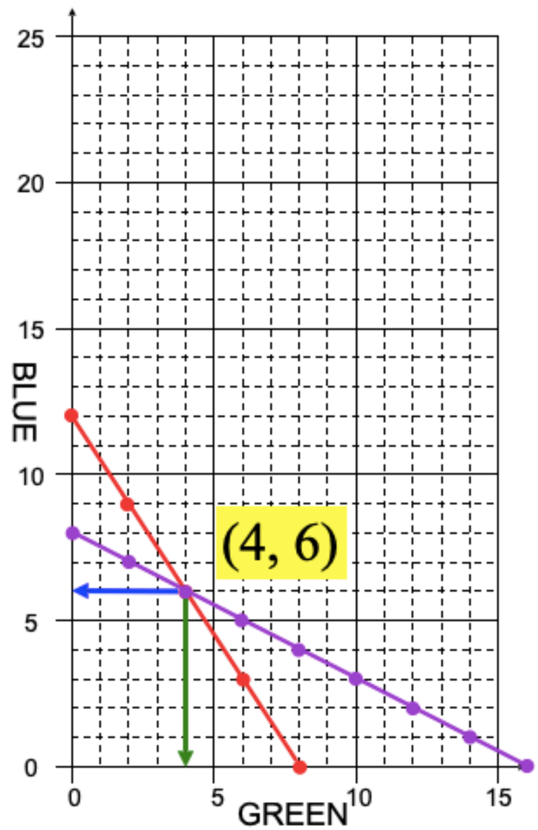
# Money from Mars 1


24

| G | B |
|---|---|
| 0 | 12 |
| 2 | 9 |
| 4 | 6 |
| 6 | 3 |
| 8 | 0 |


16

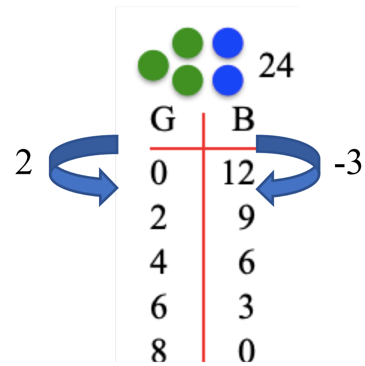
| G | B |
|---|---|
| 0 | 8 |
| 2 | 7 |
| 4 | 6 |
| 6 | 5 |
| 8 | 4 |
| 10 | 3 |
| 12 | 2 |
| 14 | 1 |
| 16 | 0 |



As students gain more practice with these problems, they will notice even more patterns. For example, if you focus on the zero solutions, that is the x- and y- intercepts, these two points can be graphed and connected to reveal all the other points. In the first problem, this would be a y-intercept of G=0, B=12 (0, 12) and an x-intercept of G=8, B=0 (8, 0).

These two intercepts can be calculated easily. Given the equation 3g + 2b = 24, then 24÷3 is the green (x) intercept, and 24÷2 is the blue (y) intercept. The equation of a linear function in standard form is Ax + By = C. Thus, the x-intercept is $^{C}/_{A}$, and the y-intercept is $^{C}/_{B}$. You may wish to introduce the Standard Form equation at this time.

Also, notice that the way the t-table advances is related to the ratio of the coins. For example, in the first problem, there were 3 green coins and 2 blue coins. The blue column however decreases by three while the green column increases by 2. The ***slope*** of the table is $^{-3}/_{2}$. Thus, as soon as *one* solution is found, the students can use the slope to find all the others. If you have not yet introduced the concept of slope yet, this would be a good time to do so.




It would also be a good idea to show that there are some unique problems. For example, this pair of problems has an infinite number of solutions. Give it to the students and they will discover why this is so.

4p +8y = 36

2p + 4y = 18

Similarly, this pair has *no* solution. Again, if students do the problem, they will quickly see why it doesn't work.

3b + 6r = 30

b + 2r = 8

After the students have completed a few Money from Mars problems, remind them how they solved problems in Menu Math. Do an example with them. Then apply elimination to these problems. Have them write the problems algebraically. For example, the first problem would be written:

3g + 2b = 24

g + 2b = 16

Examples of algebraic solutions and an answer key are included.

Name ______________________________

# Money from Mars 1

| G | G | G | B | B |
|---|---|---|---|---|
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= 24

| G | B | B |
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= 16

| *G* | *B* |
|---|---|
| | |

| *G* | *B* |
|---|---|
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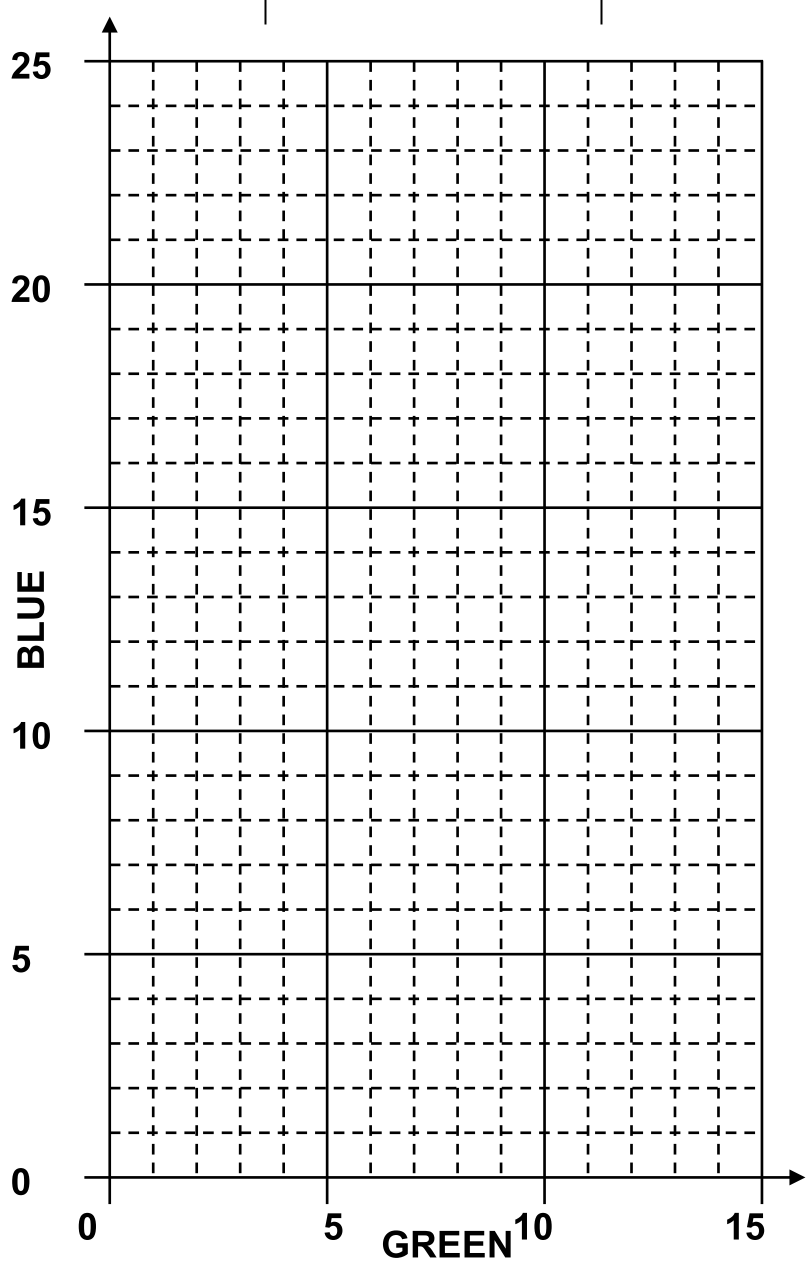

Name ___________________________

# Money from Mars 2

| P | R |
|---|---|
| | |

| P | R |
|---|---|
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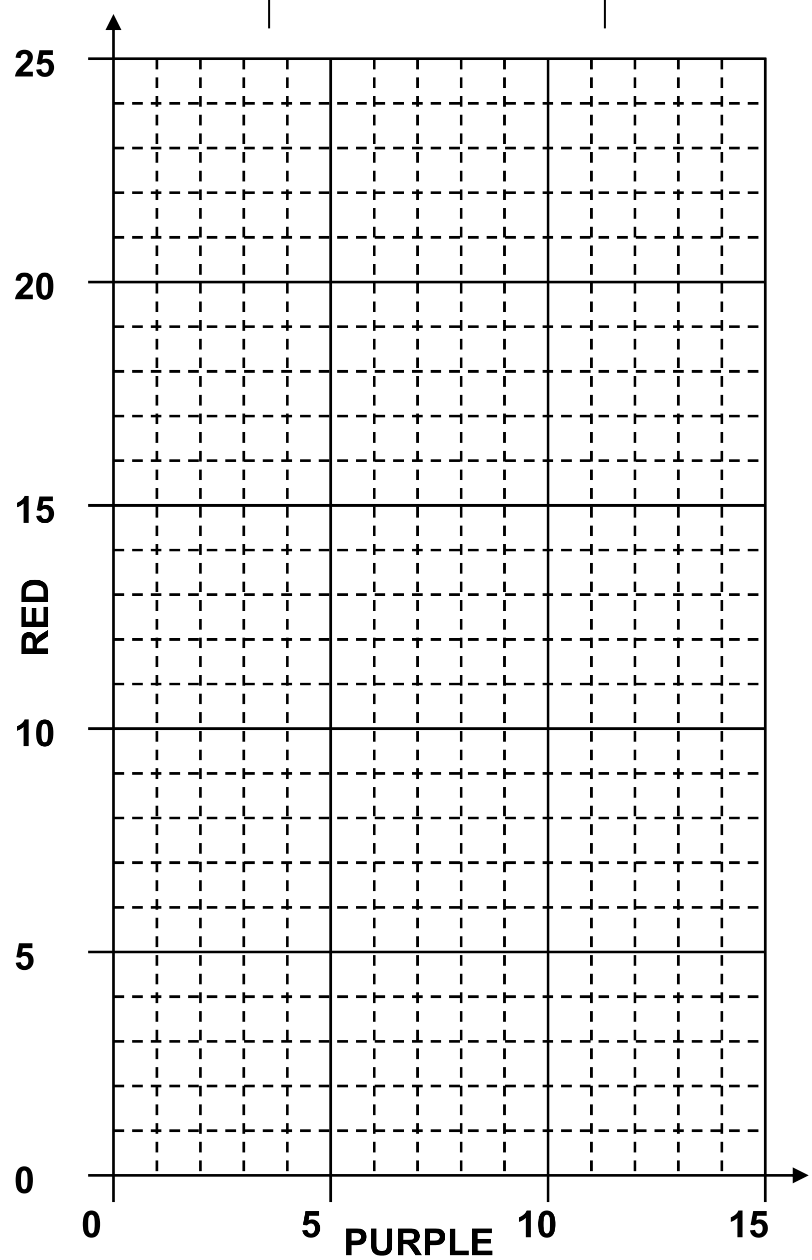
P P P P R R R = 48

P P R R R = 30



Name ______________________________

# Money from Mars 3

| Y | Y | B |
|---|---|---|
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= 14

| Y | Y | B | B | B | B | B |
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| *Y* | *B* |
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| *Y* | *B* |
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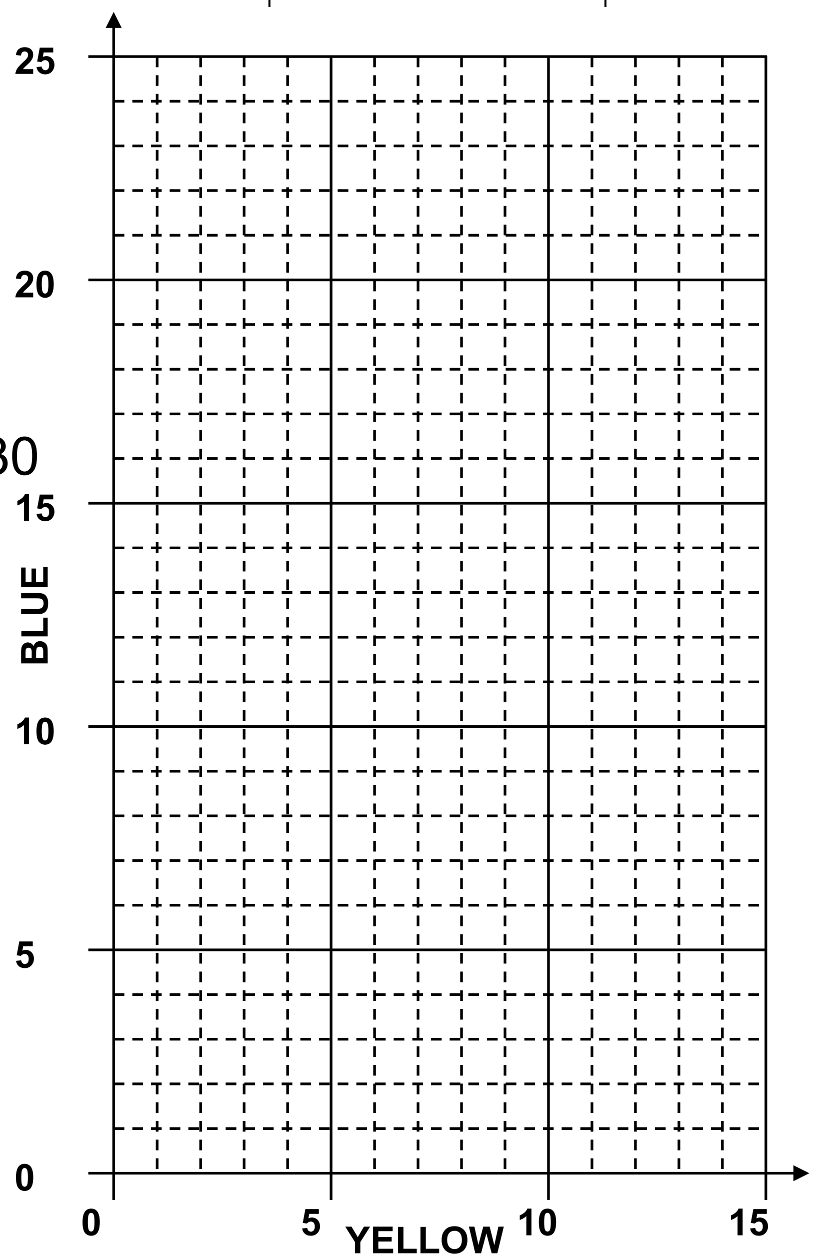

Name ______________________________

# Money from Mars 4

P P P G = 15

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P P G G G = 24

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| *P* | *G* |
|---|---|
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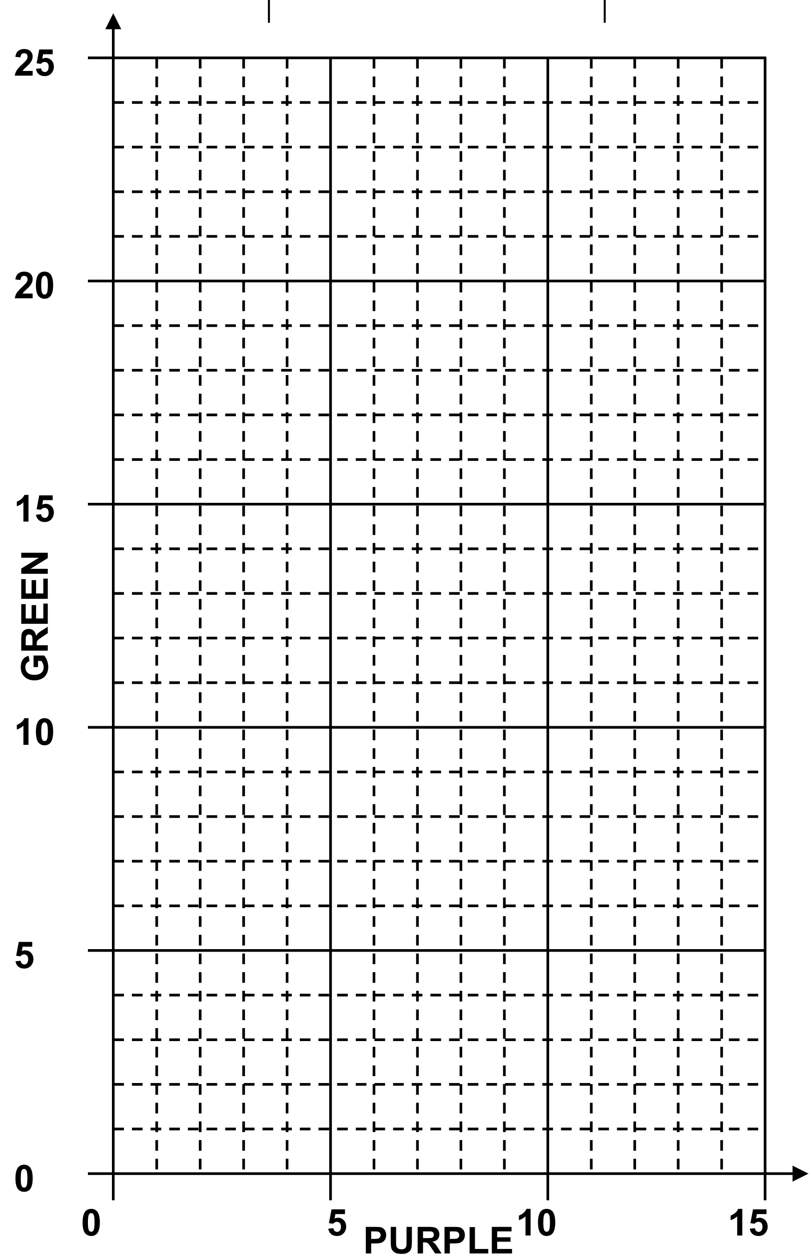
| *P* | *G* |
|---|---|
| | |



Name ______________________________

# Money from Mars 5

| R | G |
|---|---|

| R | G |
|---|---|

R R R R G G G = 48

| R | R | R | R | G | G | G |
|---|---|---|---|---|---|---|
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R R G G G G G = 66

| R | R | G | G | G | G | G |
|---|---|---|---|---|---|---|
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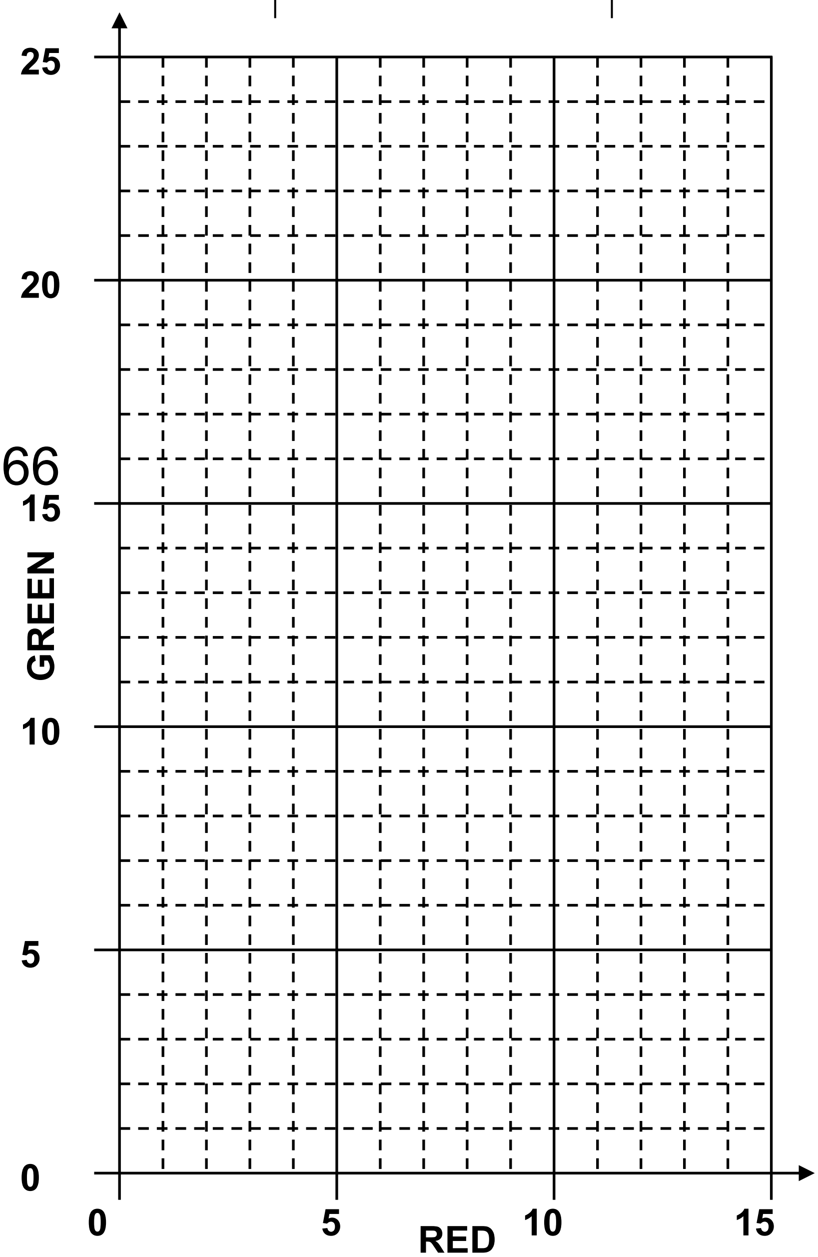


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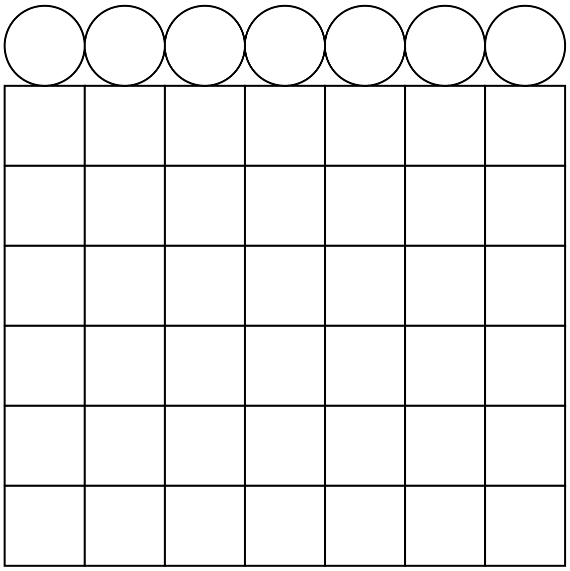
Name ______________________

# Money from Mars ___



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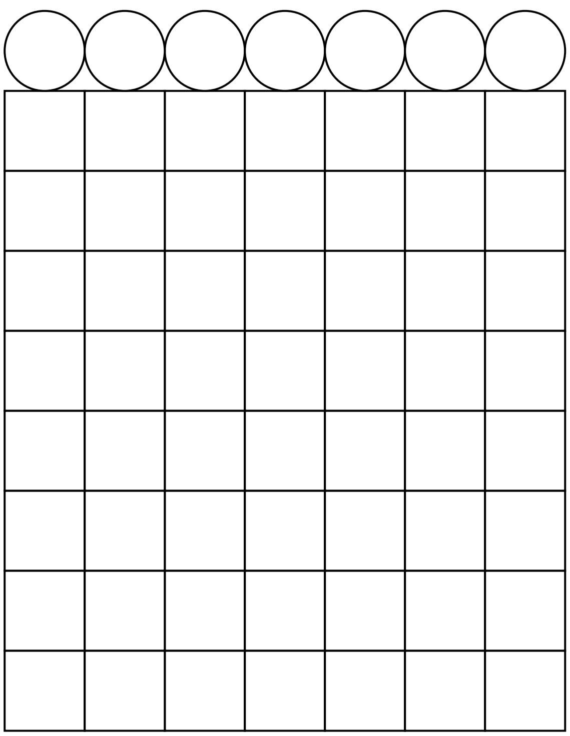

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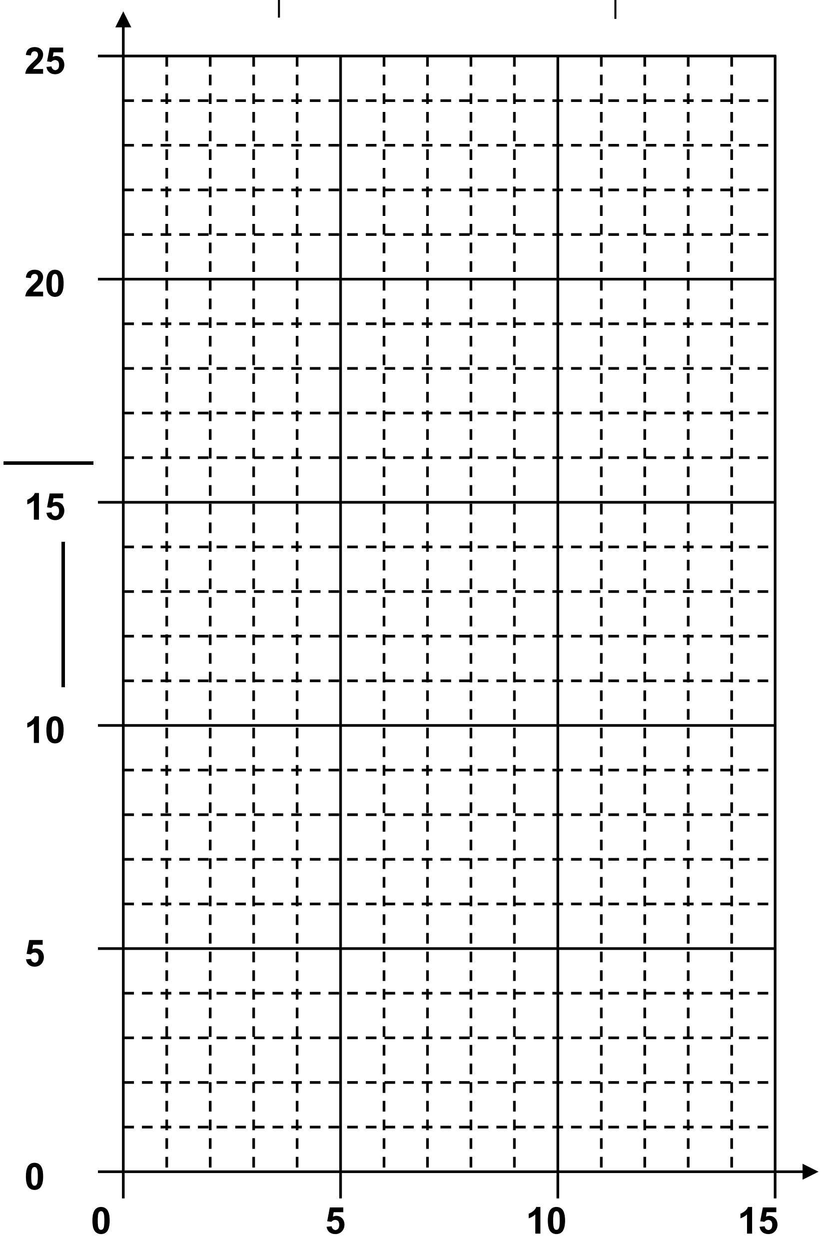


# The Common Core Connection

This activity addresses these Common Core Math standards:

**4th grade**

Operations and Algebraic Thinking 2
Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Operations and Algebraic Thinking 5
Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

**5th Grade**

Operations and Algebraic Thinking 2
Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Operations and Algebraic Thinking 3
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Geometry 1
Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond

Geometry 2
Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

**6th Grade**

Expressions and Equations 2
Write, read, and evaluate expressions in which letters stand for numbers.

Expressions and Equations 2c
Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems.

**7$^{th}$ Grade**

Expressions and Equations 3
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

**8$^{th}$ Grade**

Expressions and Equations 8a
Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Expressions and Equations 8b
Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.

Expressions and Equations 8c
Solve real-world and mathematical problems leading to two linear equations in two variables.

**High School Algebra**

Reasoning with Equations and Inequalities 6
Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

# Money from Mars
## An Algebraic Solution (problem 1)

$$3g + 2b = 24$$
$$1g + 2b = 16$$

$$\begin{array}{rl} 3g + 2b = 24 & \\ -\ (\underline{1g + 2b = 16}) & \text{Subtract} \end{array}$$

$$\frac{2g}{2} = \frac{8}{2} \quad \text{Divide by the coefficient.}$$

$$g = 4$$

$$\begin{array}{rl} 3(4) + 2b = 24 & \text{Substitute.} \\ 12 + 2b = 24 & \text{Multiply} \\ \underline{-12 \qquad -12} & \text{Subtract.} \\ \frac{2b}{2} = \frac{12}{2} & \text{Divide by the coefficient} \end{array}$$

$$b = 6$$

Money from Mars

An Algebraic Solution (problem 5)

$4r + 3g = 48$

$2r + 5g = 66$ Multiply the second equation by 2.

$4r + 10g = 132$

$\underline{4r + 3g = 48}$ Subtract the first equation.

$\dfrac{7g}{7} = \dfrac{84}{7}$ Divide by the coefficient.

$g = 12$

$4r + 3(12) = 48$ Substitute.

$4r + 36 = 48$ Multiply

$4r + 36 = 48$

$\underline{\quad -36 \quad -36}$ Subtract.

$\dfrac{4r}{4} = \dfrac{12}{4}$ Divide by the coefficient

$r = 3$

Answer Key

Problem 1:
$3g + 2b = 24$
$g + 2b = 16$ $g = 4, b = 6$

Problem 2
$4p + 3r = 48$
$2p + 3r = 30$ $p = 9, r = 4$

Problem 3
$2y + 1b = 14$
$2y + 5b = 30$ $y = 5, b = 4$

Problem 4
$3p + 1g = 15$
$2p + 3g = 24$ $p = 3, g = 6$

Problem 5
$4r + 3g = 48$
$2r + 5g = 66$ $r = 3, g = 12$

# Solving systems of equations beyond Mars

Solving by elimination, graphing, and substitution

Recommended grade level: 8 or algebra

I begin by reviewing solving systems by elimination in Menu Math. Then I have them practice solving problems in which all coefficients, constants, and solutions are positive whole numbers. We slowly transition into solutions in which an answer is a decimal of dollars and cents. In these initial problems, one pair of coefficients match allowing for immediate subtraction.

$x + 4y = 34$

$x + 3y = 26$

Then I present a problem in which neither pair of coefficients match, and one equation must be multiplied by a scaling factor to create a match.

$x + 4y = 12$ (Multiply the equation by 2 so that the coefficients of x match.)

$2x + 3y = 14$

In day two, negative coefficients are used. Students are initially intimidated, but eventually see that *adding* one equation will eliminate a variable, and adding is easier than subtraction.

$12x + 4y = 60$

$9x - 4y = 3$

Lastly, fractional coefficients and constants are presented. This process takes three class periods of instruction and practice.

$6x + 1.5y = 18$

$5x + 3y = 18.5$

Sample worksheets follow.

Answer Key

Solving by Elimination 1

| | |
|---|---|
| 1. (5, 2) | 2. (2, 2) |
| 3. (7, 7) | 4. (4, 9) |
| 5. (5, 8) | 6. (12, 1) |

Solving by Elimination 2

| | |
|---|---|
| 1. (4, 0) | 2. (3, 7) |
| 3. (2, 14) | 4. 3, -1) |
| 5. (10, -1) | 6. (8, 6) |

Solving by Elimination 3

| | |
|---|---|
| 1. (4, ½) | 2. (-4, 3) |
| 3. (2, ¼) | 4. (-3, -2) |
| 5. (-6, 0) | 6. (-2, -2) |

Solving Systems of Equations Name______________________________

Elimination: 1 Date___________________ Class_______

Solve each system of equations by elimination. Check your solutions.

1.
$2x + 7y = 24$
$2x + 4y = 18$

2.
$7x + 2y = 32$
$3x + 2y = 16$

3.
$8x + 5y = 91$
$2x + 5y = 49$

4.
$9x + 6y = 90$
$3x + 3y = 39$

5.
$2x + 11y = 98$
$x + 4y = 37$

6.
$4x + 5y = 53$
$7x + 2y = 86$

Solving Systems of Equations

Name______________________________

Elimination: 2

Date___________________ Class_______

Solve each system of equations by elimination. Check your solutions.

1.

$5x + 3y = 20$

$2x - 3y = 8$

2.

$5x + 3y = 36$

$-5x + 8y = 41$

3.

$-4x + y = 6$

$4x + 4y = 64$

4.

$3x + -5y = 14$

$x + 2y = 1$

5.

$6x - 7y = 67$

$x + y = 9$

6.

$4x + -3y = 14$

$5x + 4y = 64$

Solving Systems of Equations　　Name______________________________

Elimination: 3　　Date___________________ Class_______

Solve each system of equations by elimination. Check your solutions.

1.
$2.5x + 4y = 12$
$2.5x + 6y = 13$

2.
$\frac{1}{4}x + 4y = 11$
$x - y = -7$

3.
$5x + 2y = 10.5$
$3x + -2y = 5.5$

4.
$11x + .5y = -34$
$2x + y = -8$

5.
$-4x + 5y = 24$
$2x + 3y = -12$

6.
$5x - 2y = -6$
$4x + 7y = -22$

Students may need additional practice beyond these examples. Once the students have gained mastery at solving systems by elimination, I move on to graphing. If they have not already done Money from Mars, I teach that. If they are familiar with that process, I have them do one example as a refresher. Then we practice solving by graphing in standard form.

I show them how to find the x- and y-intercepts so they see the ease of this strategy. Then I show them how to graph using slope-intercept form and we practice this.

Lastly, I give them a worksheet in which the equations are mixed. Some are in standard form, some are in slope-intercept form, and some must be transformed first. Worksheets for these are included.

Answer Key

Solving by graphing in standard form

| | |
|---|---|
| 1. (2, 3) | 2. (4, 2) |
| 3. (10, -3) | 4. (-1, 4) |
| 5. (-4, -4) | 6. (2, 6) |

Solving by graphing in slope-intercept form

| | |
|---|---|
| 1. (2, -2) | 2. (1, 1) |
| 3. (2, -2) | 4. (-1, -4) |
| 5. (-2, 0) | 6. (2, -2) |

Solving by graphing: mixed forms

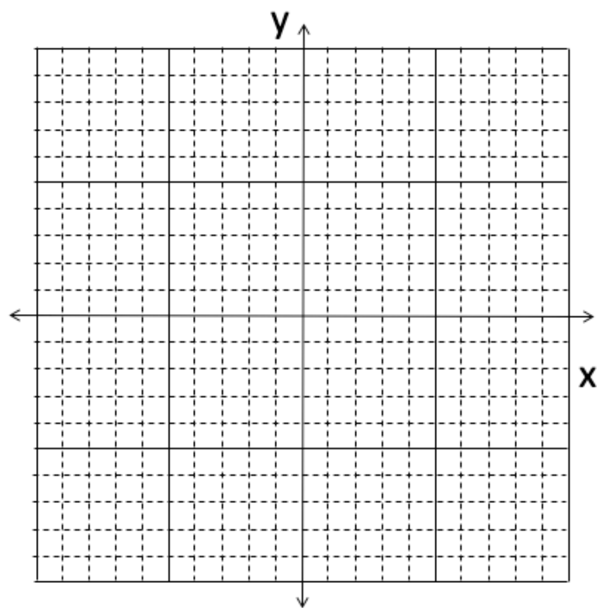
| | |
|---|---|
| 1. (1, -2) | 2. (-1, -1) |
| 3. infinite solution | 4. (-3, 1) |
| 5. (-1, -4) | 6. (0, 3) |

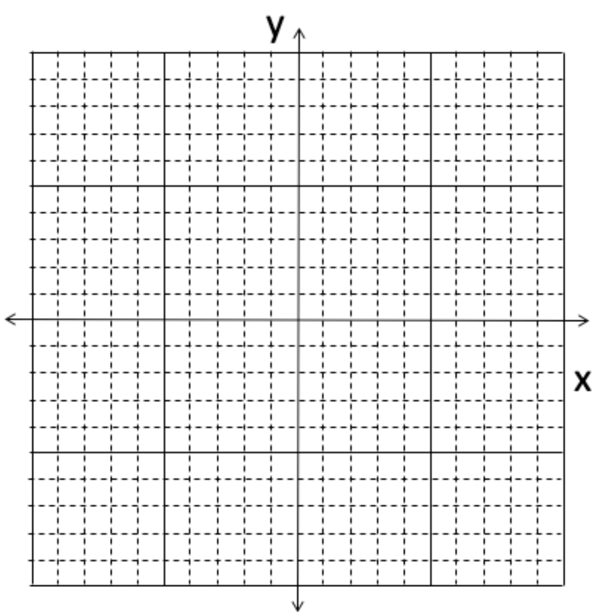
Solving Systems of Equations | Name______________________________

In standard form | Date___________________ Class_______

Solve each system of equations by graphing. Check your solutions.

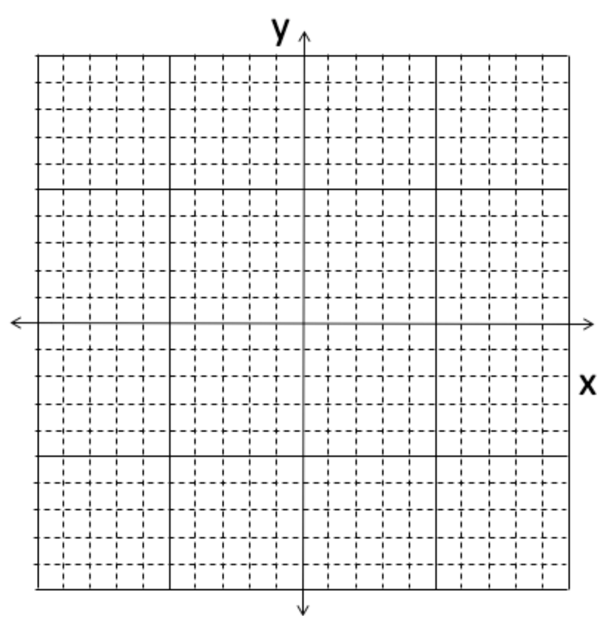
1.
$3x + 2y = 12$
$3x - 3y = -3$



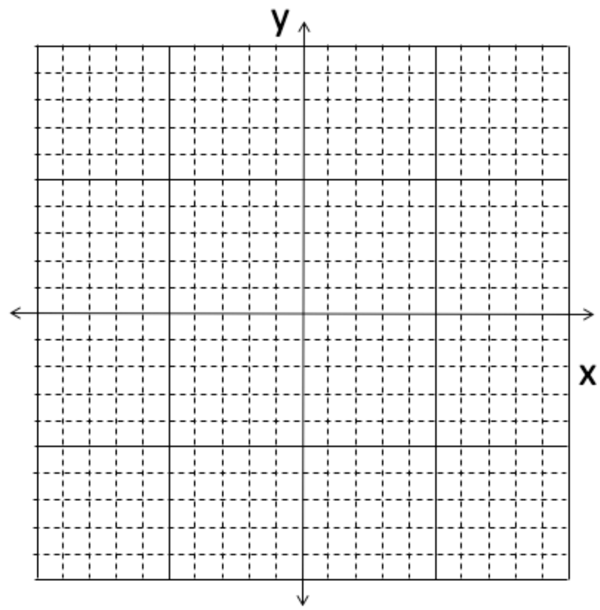



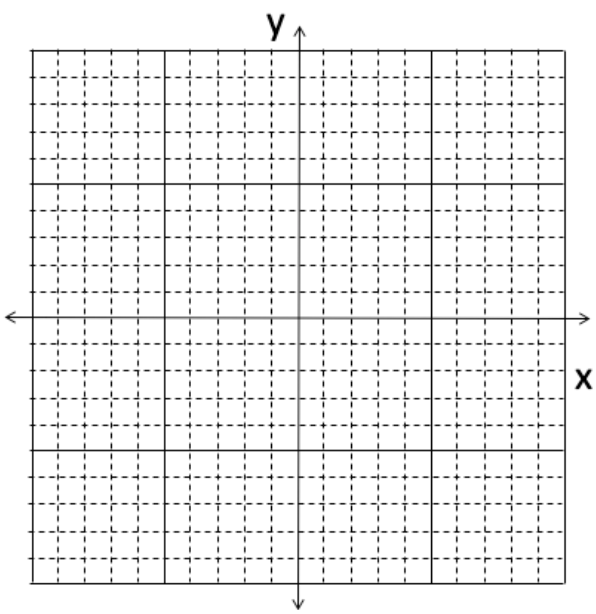

2.
$x + y = 6$
$2x + y = 10$

3.
$x + 2y = 4$
$x + y = 7$



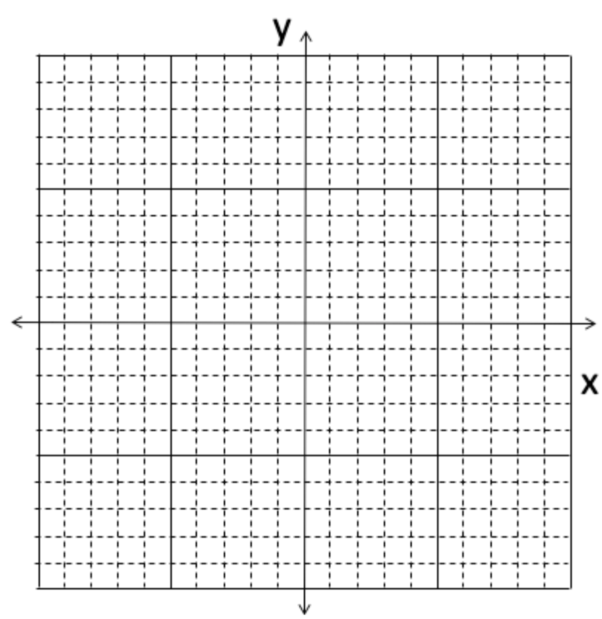
4.
$-x + y = 5$
$2x + y = 2$




5.
$x + y = -8$
$-2x + y = 4$

6.
$3x – 2y = -6$
$-2x + -y = -10$



Solving Systems of Equations

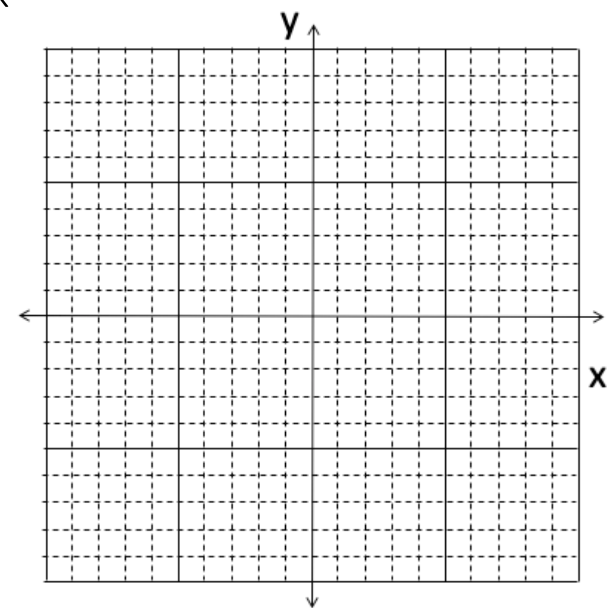
Name_______________________________

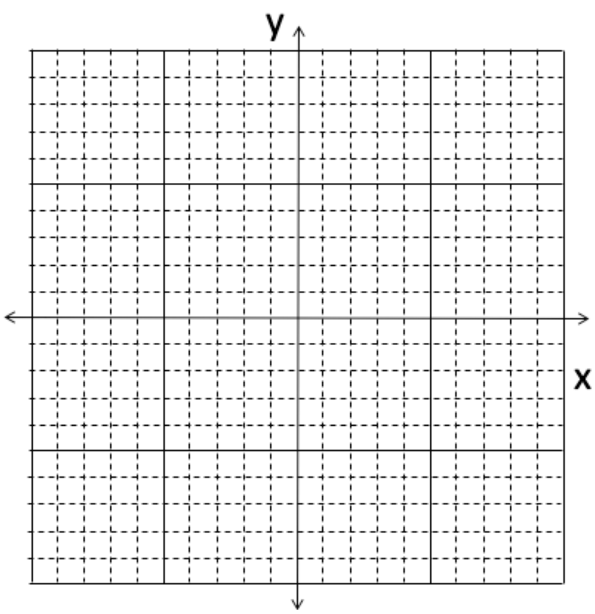
In slope-intercept form

Date___________________ Class_______

Solve each system of equations by graphing. Check

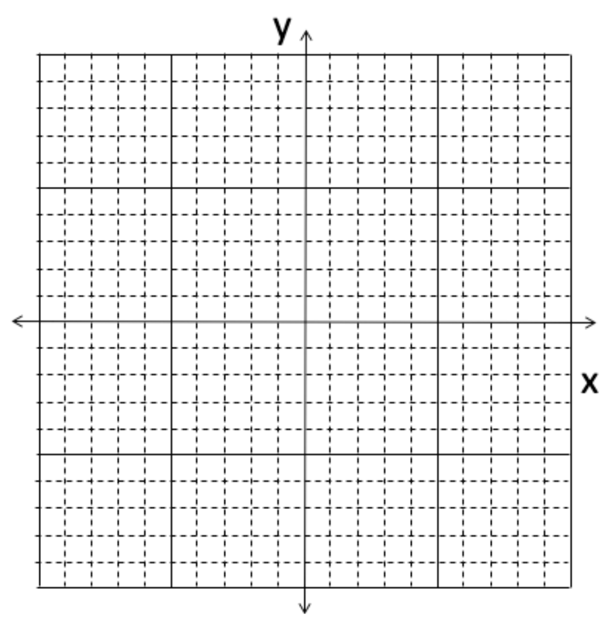
1.
$y = -2x + 2$
$y = x - 4$




2.
$y = 3x - 2$
$y = 4x - 3$

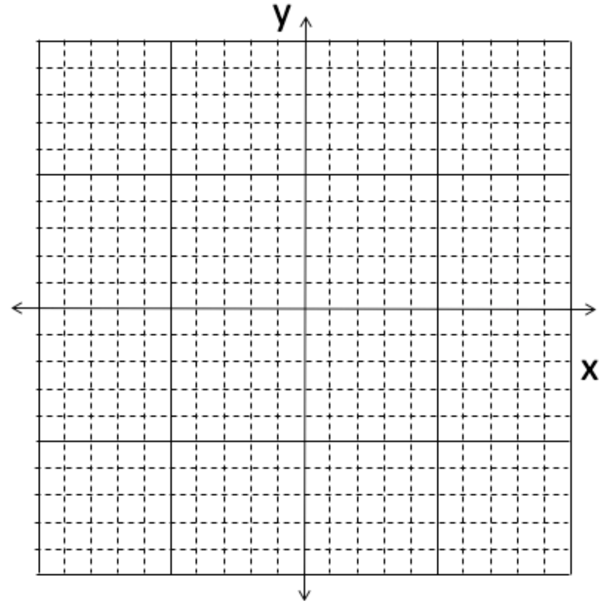
3.
$y = -2x + 2$
$y = x + -4$

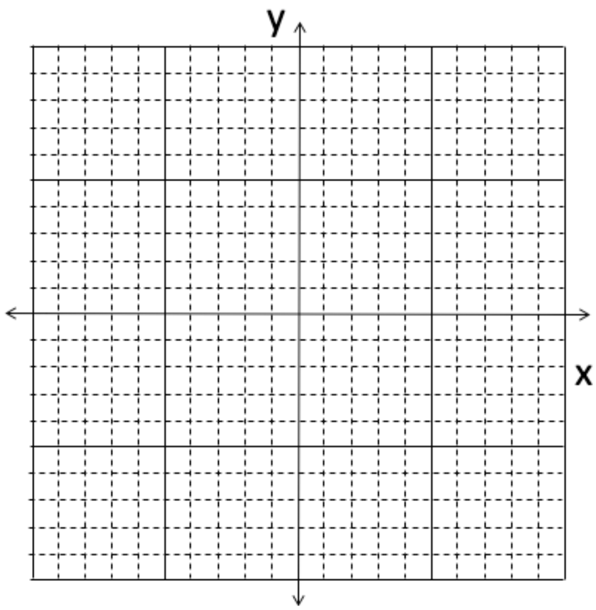


4.

$y = x - 3$

$y = 7x + 3$




5.

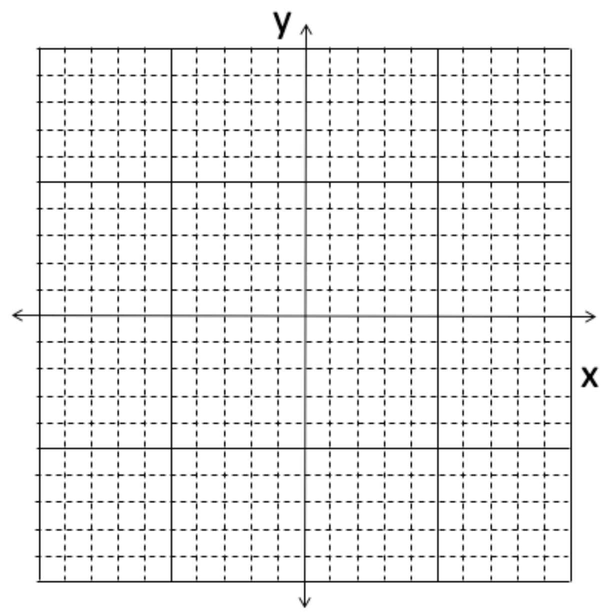
$y = {}^{5}/_{2}x + 5$

$y = -x + -2$

6.

$y = -{}^{3}/_{2}x + 1$

$y = {}^{1}/_{2}x + -3$



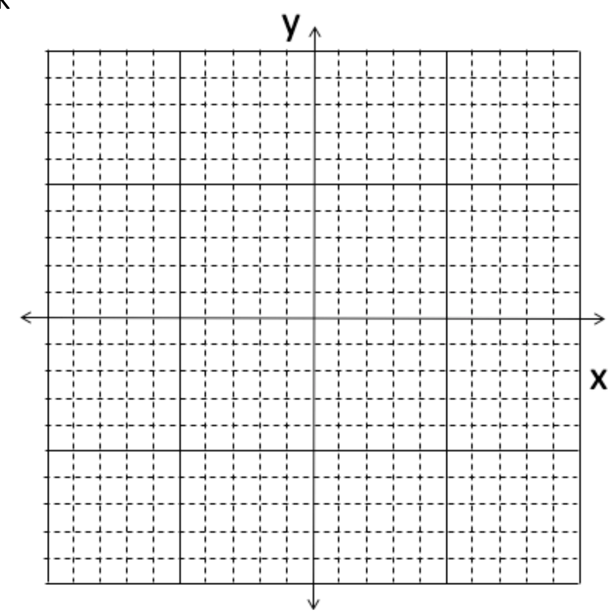

 

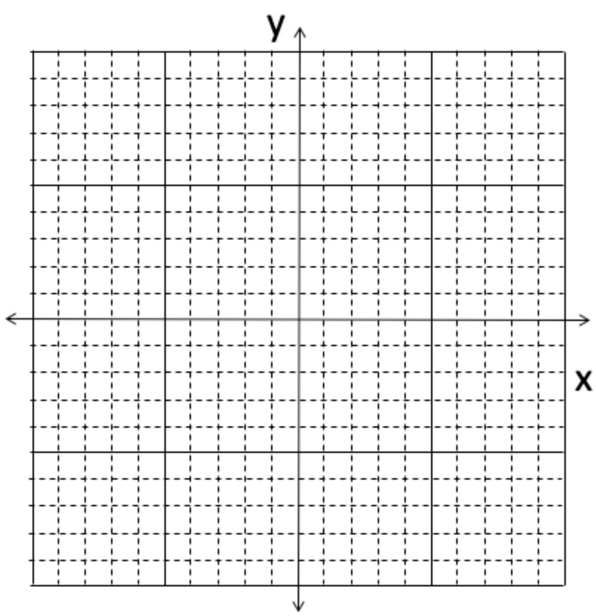
Solving Systems of Equations Name______________________________

By graphing: mixed form Date___________________ Class_______

Solve each system of equations by graphing. Check

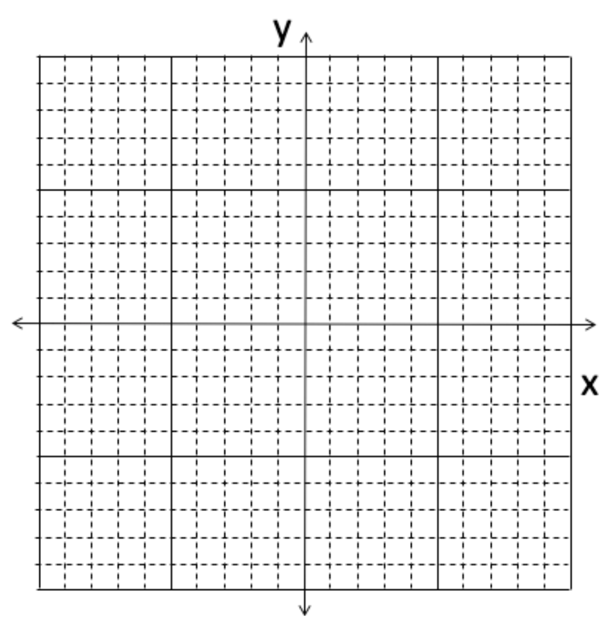
1.
$y = -4x + 2$
$x - y = 3$



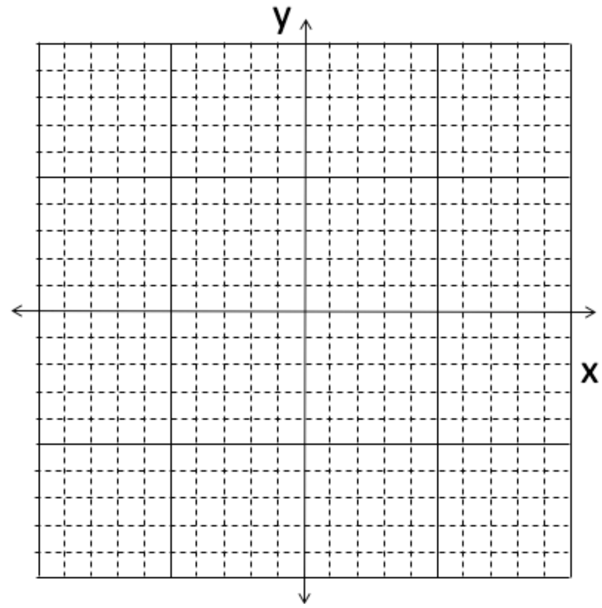

2.
$y = 4x + 3$
$x + y = -2$

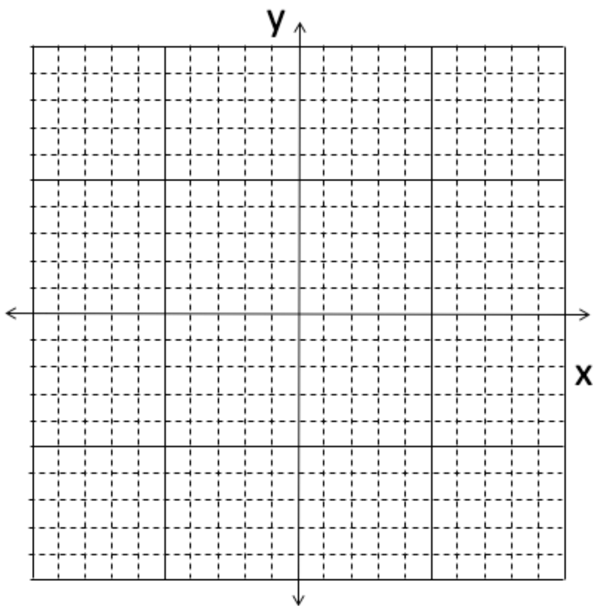
3.
$y = 2x + 4$
$-4x + 2y = 8$



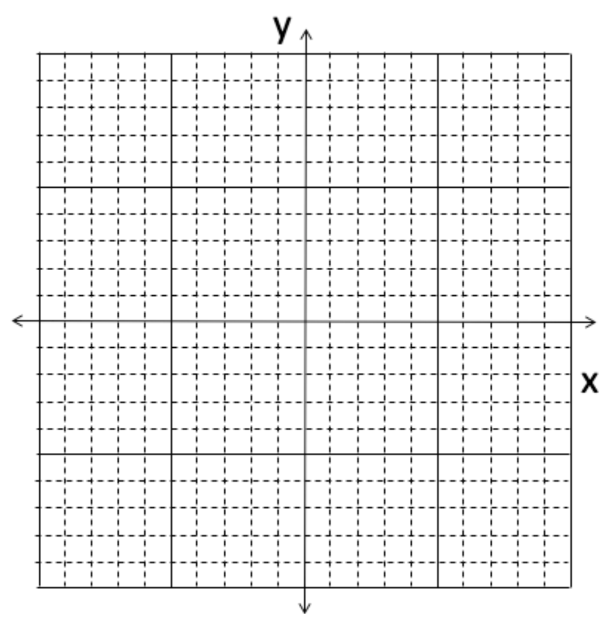
4.
$x + y = -2$
$y = {}^{1}/_{3}x + 2$




5.
$x + -3 = y$
$y = 7x + 3$

6.
$y = {}^{1}/_{2}x + 3$
$y = 3$



Once students have gained mastery with graphing systems of equations, I then move on to substitution. My first examples would be taken from the worksheet on solving by graphing in slope intercept form. For example, problem 1 looked like this:

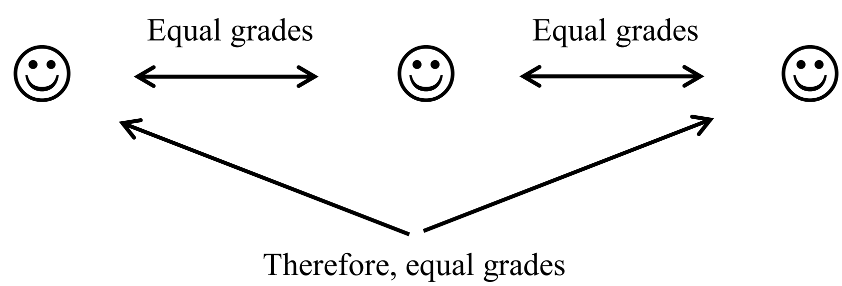
$$y = -2x + 2$$
$$y = x - 4$$

Using the transitive property, we can rewrite the two as one equation:

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

Students sometimes have trouble making this leap as they have not internalized the transitive property: If a=b and b=c, then a=c. I use a simple example to make this obvious. I ask a student, "What grade are you in?" and they tell me they are in 8th grade. Then I ask a second student the same question and get the same answer.

"Wow!" I say, "You two are in the same grade." Then I ask the second student again and ask a third student. I exclaim, "Then *you two* are in the same grade. But what about students 1 and 3?"




The students clearly see that they must be in the same grade as well.

They then solve this equation for x, and substitute that value into one of the equations to solve for y. I use the same six problems from the slope-intercept worksheet so the students can verify this as an alternative solution method.

Then I pull problems from the mixed form worksheet so they see substitution in this format:

$y = -4x + 2$
$x - y = 3$

Therefore, we can write these as one equation:

$x - (-4x + 2) = 3$

I ask the students which of the two types of substitution they find easiest. I also ask them which of the three methods they prefer: elimination, graphing, or substitution. Typically, they say it depends on the form in which the equation is written. This leads into our final assignment on solving systems.

I give the students a worksheet of systems of equations in all forms like the one that follows. I tell them that they need to solve each problem two ways and compare their answers to see that they match. Before solving each pair of equations, they should think about which strategies lend themselves to that particular problem. I have them work in pairs on this to discuss their plans and compare their work and solutions.

Answer Key

Practicing all strategies

1. (0, -3)    2. (-2, 1)

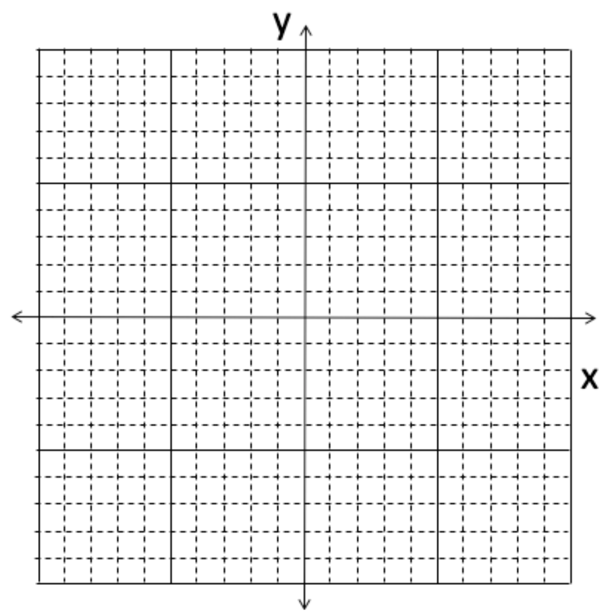
3. (2, 1)    4. (6, -7)

Solving Systems of Equations Name______________________________

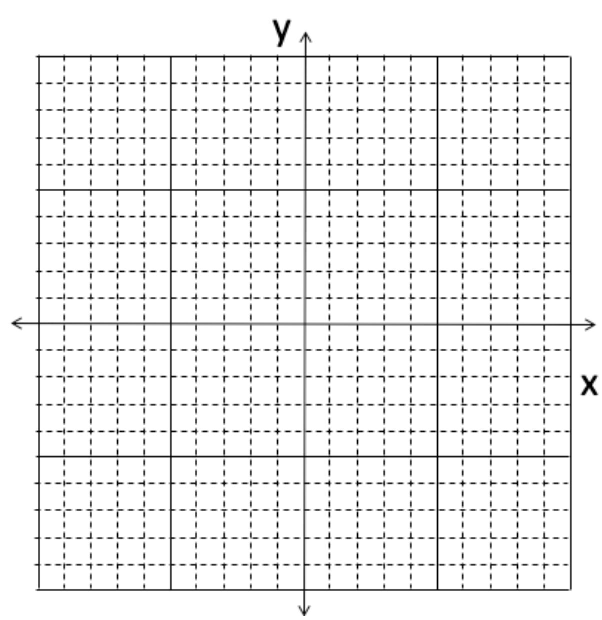
Practicing all strategies Date___________________ Class_______

Solve each system of equations two ways: by elimination, graphing, or substitution. Think ahead about which strategies will be the easiest to use. Graphs are provided for each problem if you need them.

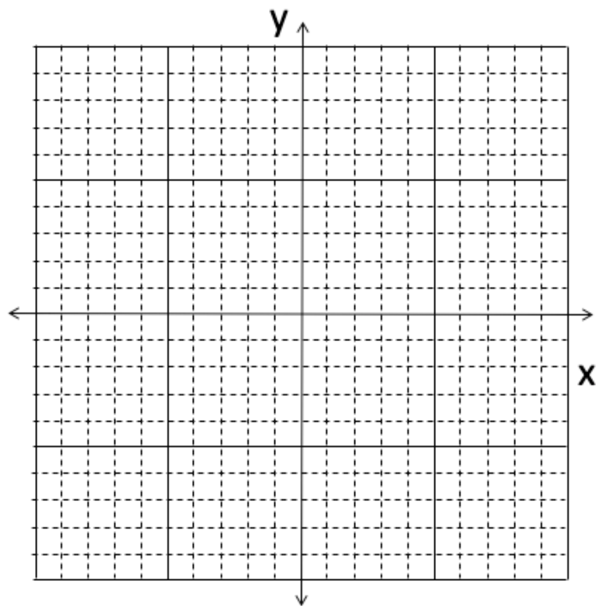
1.
$3x – 8y = 24$
$y = 5x + -3$



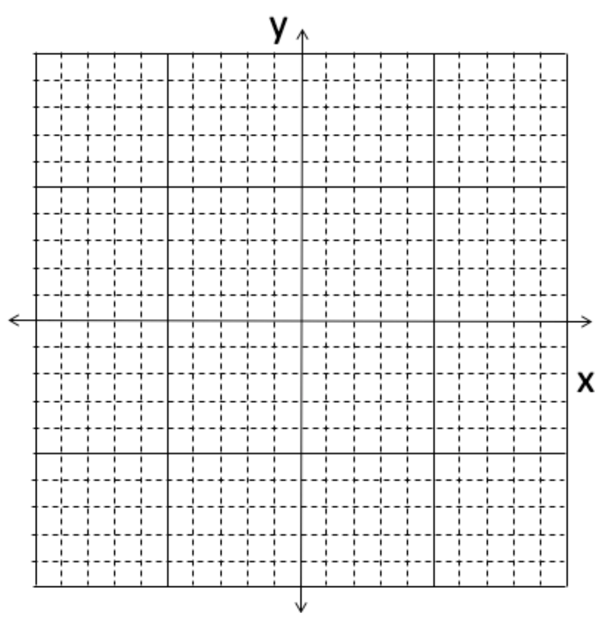

2.
$x = -2$
$y = {}^{-3}/_{2}x – 2$



3.
$y = {}^{5}/_{2}x + -4$
$y = -x + 3$




4.
$y = x - 13$
$4x + 2y = 10$




What strategy seemed easiest to use? Explain why. ________________________________________

________________________________________________________________________________

________________________________________________________________________________

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- *Menu Math: An appetizing helping of algebra in a burgers and fries format. Algebra never made so much sense!*

Feel free to contact me if you have questions or comments or would like to discuss a staff development training or keynote address at your site.

Happy teaching,

*Brad*