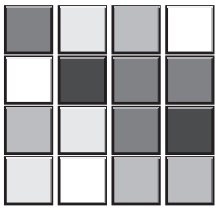
Name _____

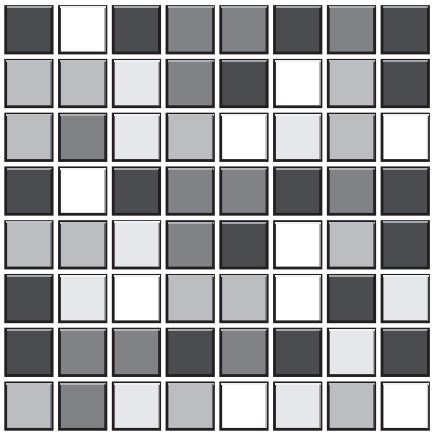
Use Color Tiles to model each number. Write the perfect square under the radical symbol. Write the square root.

1.



$\sqrt{}$ = _____

2.



$\sqrt{}$ = _____

Using Color Tiles, model each number to determine if it is a perfect square. Sketch the model. Write the perfect square under the radical. Write the square root.

3. 36

$\sqrt{}$ = _____

4. 100

$\sqrt{}$ = _____

Find each square root.

5. $\sqrt{4}$

_____

6. $\sqrt{81}$

_____

7. $\sqrt{144}$

_____

8. $\sqrt{25}$

_____

9. $\sqrt{9}$

_____

10. $\sqrt{16}$

_____

11. $\sqrt{49}$

_____

12. $\sqrt{121}$

_____

13. $\sqrt{1}$

_____

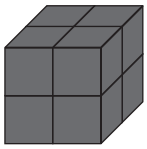
Name _____

Challenge! Use the pattern that you noticed on the previous page to find the square root of 400. Explain.

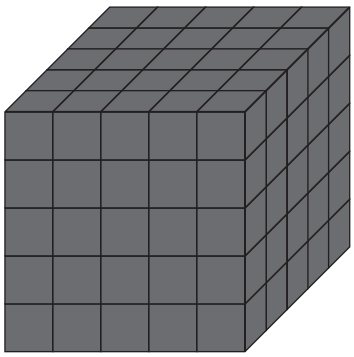
Name _____

Use Centimeter Cubes to build the model. Write the equation.

1. Write an equation for the cube root. _____



2. Write an equation for the cube root. _____



Using Centimeter Cubes, solve the problem.

3. Leonard has a box with a volume of 1 cubic inch. What is the length of one edge? _____

4. Paula tells her friend, "The cube root of 216 is the number of jobs I have lined up over summer break." How many jobs does she have? _____

Complete the equation.

5. $\sqrt[3]{1{,}728}$ = _____

6. $\sqrt[3]{729}$ = _____

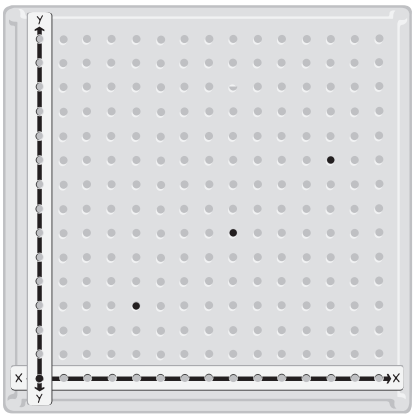
Name _____

Challenge! You know that a cubic box holds 512 Centimeter Cubes. How can you use this information to find $\sqrt[3]{512}$?

Name _____

Use an XY Coordinate Pegboard to plot the ordered pairs. Complete the table. Find the slope, or rate of change, of the line.

1.



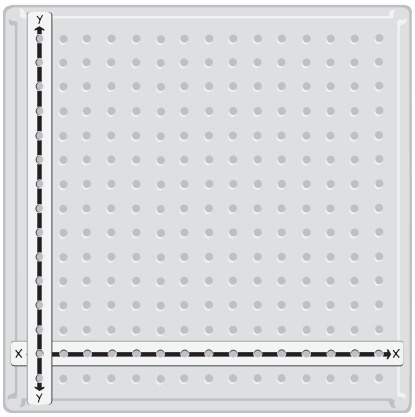
x	*y*

_____

Using an XY Coordinate Pegboard, model the ordered pairs. Sketch the graph. What is the slope of the line?

2.

x	*y*
0	0
2	1
4	2
6	3
8	4
10	5



_____

Find the slope of a line that passes through each pair of points.

3. (–1, 2) and (1, –2)

_____

4. (2, 2) and (1, 1)

_____

5. (–7, 3) and (7, –3)

_____

6. (0, 0) and (5, 0)

_____

7. (–1, –4) and (2, 8)

_____

8. (4, 6) and (6, 9)

_____

9. Which lines from Problems 3–8 have a negative slope?

_____

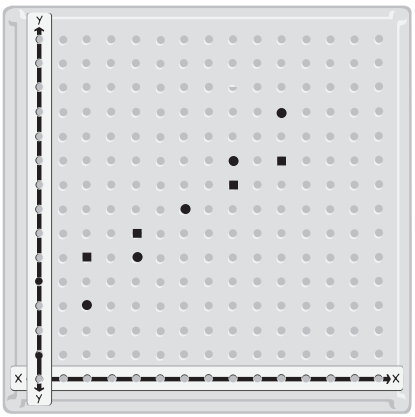
Name _____

Challenge! Describe a line that has a positive slope. Describe a line that has a negative slope. What does a line with zero slope look like? Draw pictures to help.

Name _____

Use an XY Coordinate Pegboard to plot the ordered pairs shown. Draw each line and write its equation in the form $y = mx + b$. At what point do the lines intersect?

1.



$y =$ _____

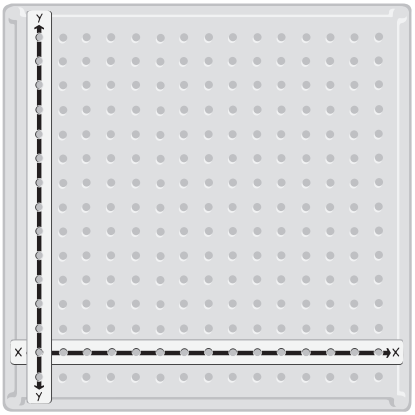
$y =$ _____

point of intersection: _____

Using an XY Coordinate Pegboard, model the lines for the given equations. Name the slope and *y*-intercept for each line. Name the point of intersection of the lines.

2. $y = 3x$

$y = x + 6$



$m =$ _____, $b =$ _____

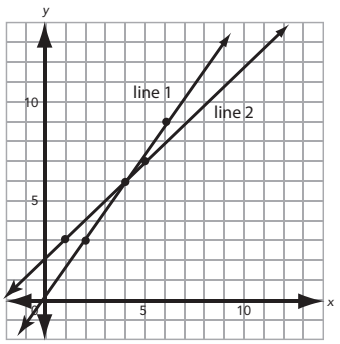
$m =$ _____, $b =$ _____

point of intersection:

_____

Name the slope and *y*-intercept of each line graphed. Name the point of intersection.

3.



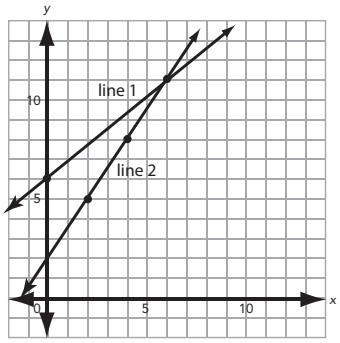
point of intersection:

_____

line 1 $m =$ _____, $b =$ _____

line 2 $m =$ _____, $b =$ _____

4.



point of intersection:

_____

line 1 $m =$ _____, $b =$ _____

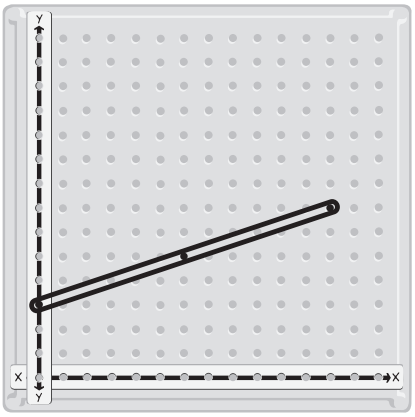
line 2 $m =$ _____, $b =$ _____

Name _____

Challenge! What do you know about the ordered pair for the point of intersection of two lines in terms of their equations? What might it mean if the lines are parallel? Explain.

Name _____

Use an XY Coordinate Pegboard. Build the model and use it to answer the questions.

1. 

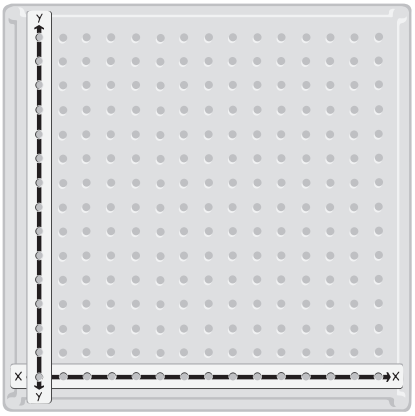
Louis is collecting silver dollars. In 6 months, he had 5 silver dollars in his collection. In 12 months, he had 7 silver dollars. Make a graph of dollars versus months. Assume the relationship is linear.

Does the line go through the origin? _____

How many silver dollars did Louis start with? _____

Write the equation of the line. _____

Using an XY Coordinate Pegboard, model the problem. Draw the model and use it to answer the questions.

2. 

Jo paid $7 for 6 pounds of apples. She paid $14 for 12 pounds of apples. Make a graph of cost versus pounds. Assume the relationship is linear.

Does the line go through the origin? _____

Is the relationship a proportion? _____

Write the equation of the line. _____

Use dot paper to graph the relationship. Answer the questions.

3. At 8:00 a.m. on a cold Saturday, Juan decided to track the temperature on his patio. At 11:00 a.m., the temperature was 8°F. At 2:00 p.m., the temperature was 14°F. Make a graph of temperature versus elapsed time. Assume the relationship is linear.

Is the relationship a proportion? _____

What was the temperature at 8:00 a.m.? _____

Write the equation of the line. _____

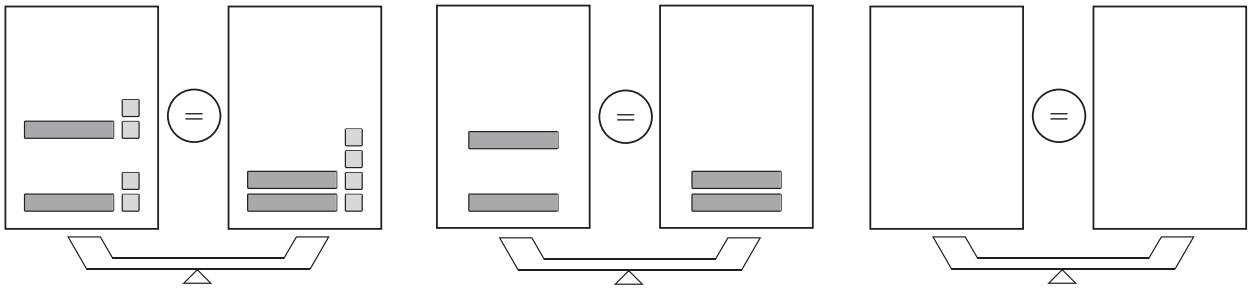
Name _____

Challenge! How do you know whether the equation of a line will be of the form $y = mx$ or $y = mx + b$? What is b?

Name _____

Use Algebra Tiles and the Algebra Tiles Equations Mat to model the equation shown and then solve it. Write the equation and the solution.

1.

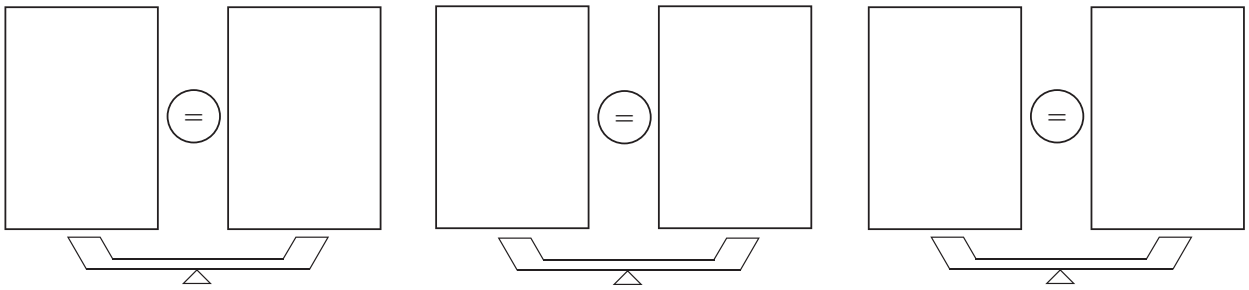


_____

_____

Using Algebra Tiles and the Algebra Tiles Equations Mat, model the equation. Sketch the model and solution. Write the solution.

2. $2x + 4 = 12$



Solve the equation. Show your steps.

3. $3(x + 4) = 3x + 12$

4. $33 = 8x - 7$

5. $5(x - 1) = 5x - 4$

6. $7(x - 6) = 7x + 3$

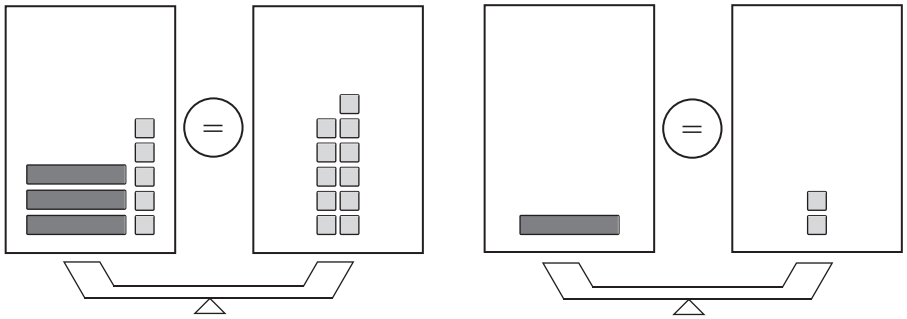
Name _____

Challenge! Give examples of equations and their solutions. Include equations with 1 solution, no solutions, and infinitely many solutions.

Name _____

Use Algebra Tiles and the Algebra Tiles Equations Mat to model the equation shown and then solve it. Write the equation and the solution.

1.

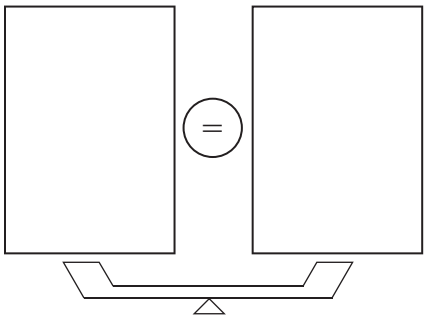


_____

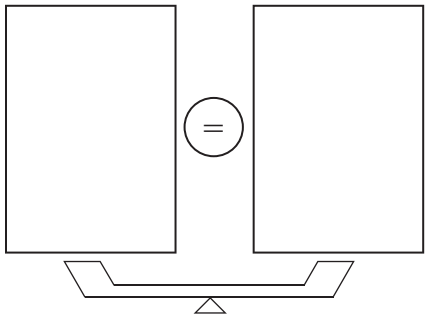
_____

Using Algebra Tiles and the Algebra Tiles Equations Mat, model the equation. Sketch the model. Solve the equation and write the solution.

2. $8 = 2x + 2$



3. $5x + 4 = 9$



Find each solution.

4. $6x + 12 = 18$

5. $8x + 4 = 20$

6. $16 = 10x + 6$

7. $21 = 2x - 7$

8. $3x + 9 = 51$

9. $45 = 5x - 5$

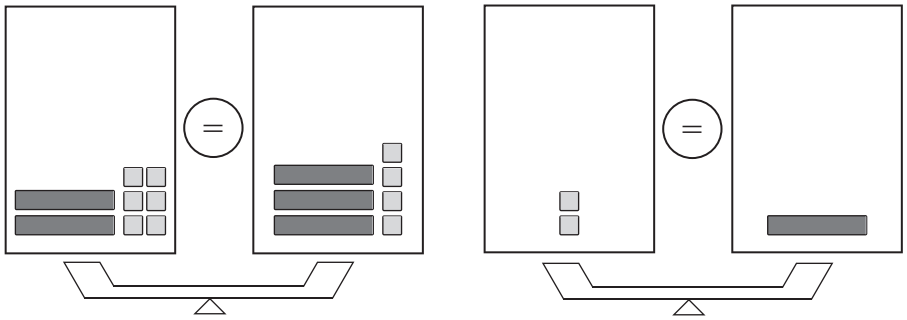
Name _____

Challenge! Explain the difference between solving equations like $2x = 14$ and $x + 6 = 14$ and solving $2x + 6 = 14$.

Name _____

Use Algebra Tiles and the Algebra Tiles Equations Mat to model the equation shown and then solve it. Write the equation and the solution.

1.

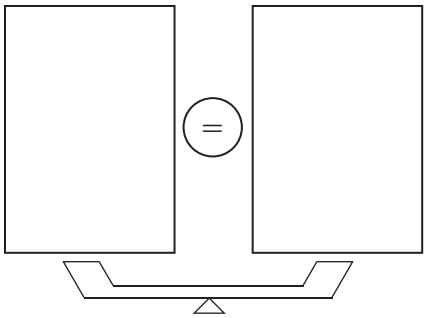


_____

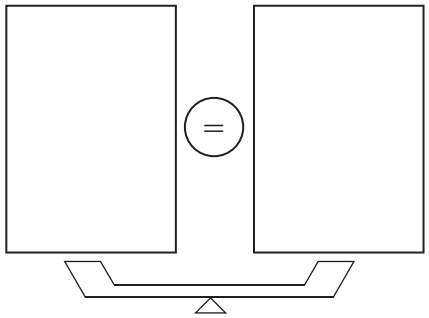
_____

Using Algebra Tiles and the Algebra Tiles Equations Mat, model the equation. Sketch the model. Solve the equation and write the solution.

2. $4x + 1 = x + 10$



3. $x + 5 = 3x + 1$



Find each solution.

4. $x + 10 = 2x$

5. $7x - 4 = 6x + 12$

6. $2x + 12 = 4x + 4$

7. $6x + 9 = 5x + 15$

8. $10x = 4x - 18$

9. $9x + 18 = 11x$

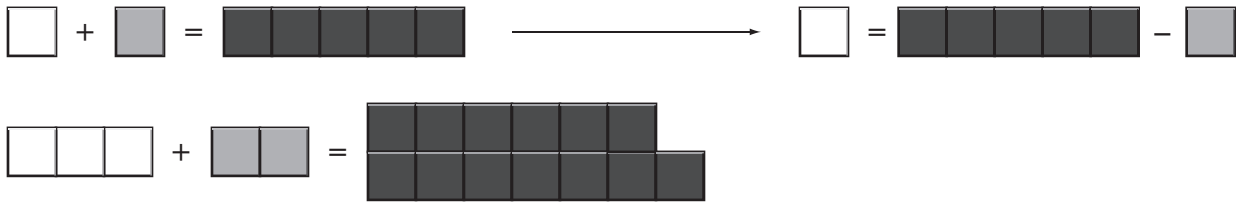
Name _____

Challenge! Explain how solving $2x + 16 = 14$ is different from solving $2x + 16 = x + 14$. How are they the same?

Name _____

Use Centimeter Cubes to model the system of equations shown. Write the system. Then use substitution to solve the system. Write all the steps to finding the solution.

1.



Equations in the system: _____

_____

Solution: _____

Using Centimeter Cubes, model the system of equations and use substitution to find the solution. Sketch the models.

2. $x + y = 5$ and $2x + y = 6$

Solution: _____

Use substitution to solve each system of equations.

3. $x + y = 10$

$x - 2y = 1$

_____

4. $x + y = 7$

$x + 2y = 12$

_____

5. $x + y = 4$

$4x - y = 1$

_____

6. $x + y = 2$

$x + 5y = 2$

_____

Name _____

Challenge! How many times do you use substitution to solve a system of linear equations? Explain when you use it.