Operation: *Solve* Part 1

Directions: Use the equations below to answer the following questions.

Part 1:

1) $3x = 6$ 2) $4x = 8$ 3) $10 = -5x$

a. In the equations above, what operation is being used? _____

b. When x is being multiplied by a number, I can _____ the tiles into equal groups to get x alone. Draw a picture or use tiles to help you answer the question.

Conclusion: When x is being multiplied by a number, I can _____ to solve for x. Show your work and **solve the equations #1-3** algebraically. Use your tiles if needed.

Part 2: Predict.

4) $\frac{x}{3} = 6$ 5) $\frac{x}{4} = 8$ 6) $-\frac{x}{5} = 15$

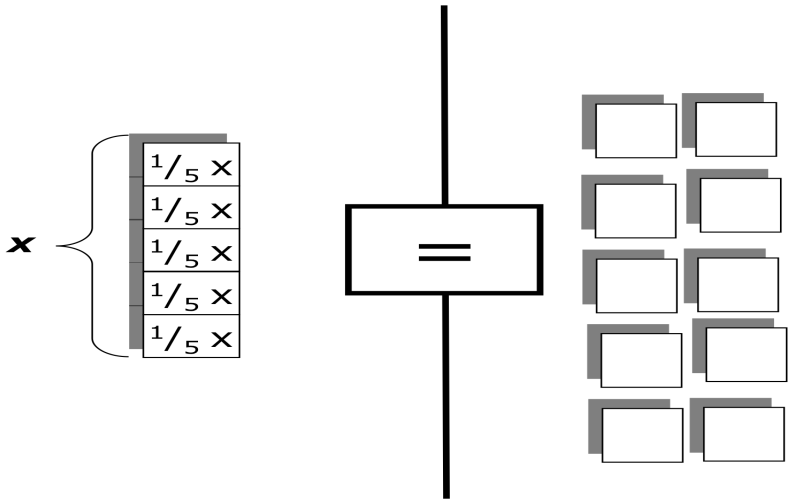
a. Using your conclusion from Part 1, predict how to solve for x when x is being **divided** by a number?

b. Look at the picture (top of page 2) representing $\frac{x}{5} = 2$ or $\frac{1}{5}x = 2$.

c. $\frac{1}{5}th$ of x is equal to _____.

d. But **one whole positive** x is equal to _____.

e. Multiply $\frac{1}{5}x = 2$ by 5 on each side to solve. Show your work.



Conclusion: When x is being divided by a number, I can _____ to solve for x. Show your work and **solve the equations #4-6** algebraically. Draw a picture if needed.

Part 3:
1) Complete the missing parts of the table and use your tiles and equation mat as you go.

Algebra	Steps to Solve
$2(x+3) = 3(2x+4) + (-2)$ $2x + 6 = 6x + 12 + (-2)$ $2x + 6 = 6x + 10$ $6 = 4x + 10$ $-4 = 4x$ $-1 = x$	1) Distribute 2) Simplify 3) Bring x's to one side 4) Subtract constant to get x alone 5) Divide by the coefficient of x to get x alone

2)

Algebra	Steps to Solve
$2(x-3)=3(2x-4)+(-2)$ $2x-6=6x-12+(-2)$ $2x-6=6x+(-14)$ $-6=4x+(-14)$ $12=4x$ $3=x$	1) Distribute 2) Simplify 3) Bring x's to one side 4) 5)

a. What do you notice about steps 1, 2, and 3 when solving each of the equations above?

b. List the **first three steps** to look for when solving an equation:

1) _____

2) _____

3) _____

3) Complete the table. **Cross out any unnecessary steps.** *Hint: Use Part 2 if you are not sure.

Algebra	Steps to Solve
$\frac{1}{4}x=2$ $(4)\frac{1}{4}x=2(4)$ $x=8$	1) Distribute 2) Simplify 3) Bring x's to one side 4) add or subtract to bring constant(s) to one side to get x alone 5)

c. Now go back to the equations (Part 3, #1-3) in the tables above. Circle **step 4** in each of the tables and fill in the blanks below.

4) _____ OR _____

Now go back and circle **step 5** in each of the equations. Fill in the blanks below.

5) _____ OR _____

Conclusions:

a. When solving equations, the steps to take when trying to solve are:

1) _____

2) _____

3) Bring x _____

4) Add OR _____ to _____

5) Multiply OR _____ to _____

b. Why are all of these steps not always needed? Explain.