

TASK 2.9.4: ALGEBRA TILES AND RATIONAL EQUATIONS

Algebra tiles work well with integers, but it is hard to represent fractions using algebra tiles. For this equation you and your partner will draw a representation of the equation and explain your solution process.

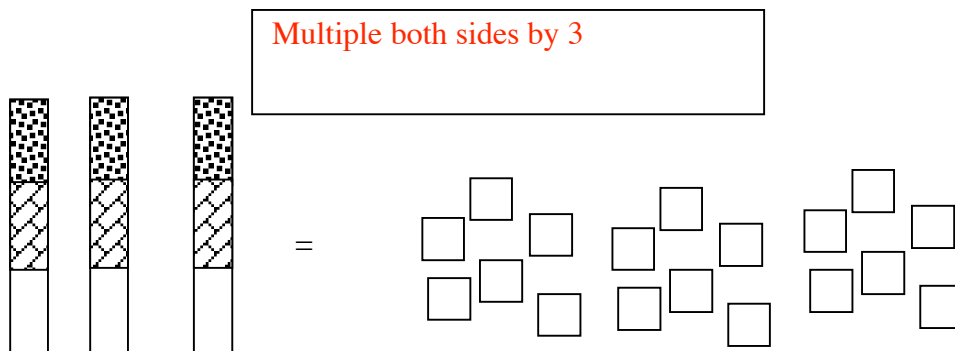
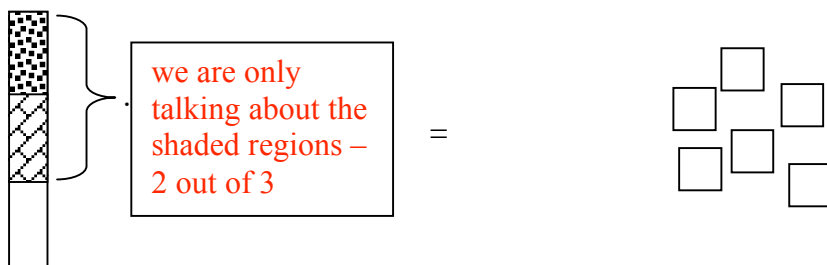
Draw an algebra tile sketch of the equation $\frac{2}{3}x = 6$

1. On your graphing calculator create the graph of these equations entering one side in y_1 and the other in y_2 . Sketch the graph on your paper. State the viewing window you used on the calculator.
2. Label the intersection and explain the meaning of the intersection and the original equation.
3. Copy part of the table from the table function on your calculator. Show the solution to this equation in the table. (You may have to adjust your table set on the calculator.)

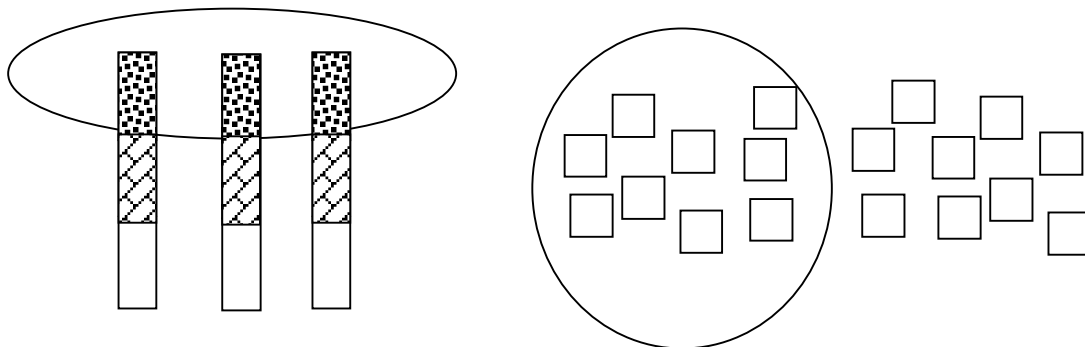
Not many teachers have seen this model before – this model “explains” what happens when we multiply by the reciprocal.

Algebraic solution $\left(\frac{3}{2}\right)\frac{2}{3}x = 6\left(\frac{3}{2}\right)$

This can be read as multiply $\frac{2}{3}x$ by 3 and then divide by 2. This is a visual of that process.

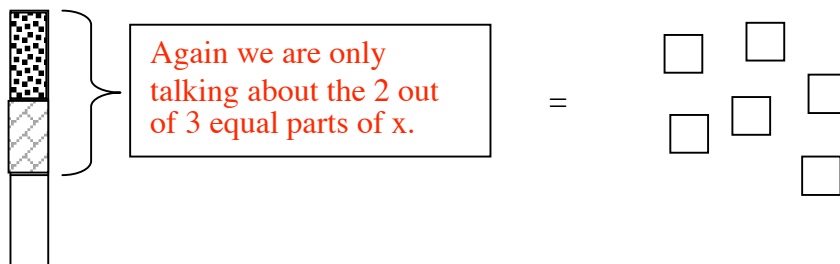


Divide by 2



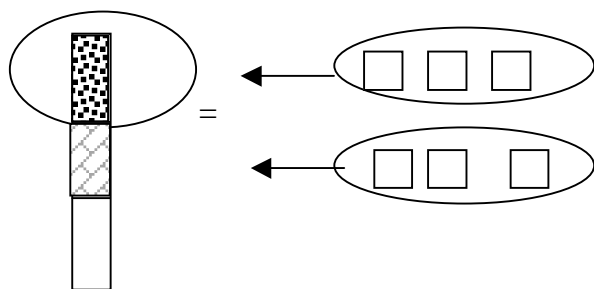
Thus 3 thirds equal 1 whole and that equals 9.

Another way to solve this would be to divide by 2 first then multiply by 3. Here is a visual of that solution.



Again we are only talking about the 2 out of 3 equal parts of x.

Divide both sides by 2



This put 3 things in each equal part of the algebra tile. Multiplying by 3 creates one whole tile made up of 3 equal parts each containing 3 units for a total of 9.

Algebra I: Strand 2. Linear Functions; Topic 9. Concrete Models; Task 2.9.4

1.

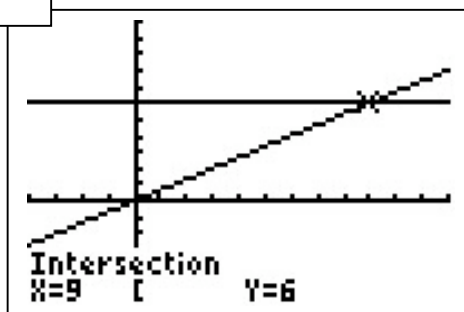
Windows on the graph can vary.
This window is:

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WINDOW
Xmin=-4
Xmax=12
Xscl=1
Ymin=-6
Ymax=11
Yscl=1
Xres=1

```

2



The intersection on the graph represents the number of units that x must contain so that if only $2/3$ of x are considered, it will contain 6 units.

3

The table shows the solution:
when $x = 9$, both y_1 and y_2 have the same value of 6.

X	Y ₁	Y ₂
6	4	6
7	4.6667	6
8	5.3333	6
9	6	6
10	6.6667	6
11	7.3333	6
12	8	6

X=9

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