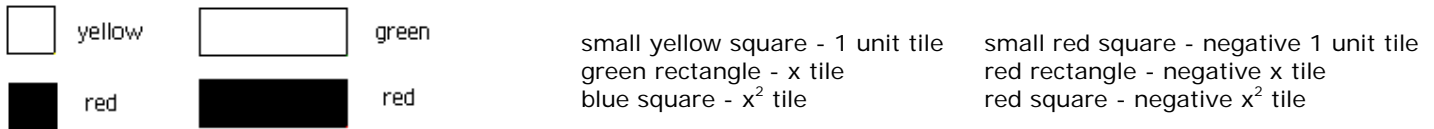


# Understanding Solving Equations by Balancing a Scale Part I

Each of the pieces of the algebra models represent an algebraic expression:



Algebra tiles can be used to model solving equations.

Figure 1 illustrates a **balanced** scale. This is because 4 yellow square tiles balances with 4 square yellow square tiles. Build this scale in front of you.

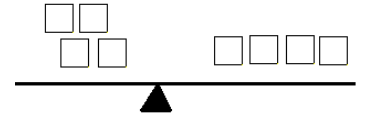


Figure 1

1. Let's discover some things we can do to balanced scale that will keep it balanced. Check off all changes that keep the scale in figure 1 balanced.

- What would happen if you added 2 yellow squares tiles to both sides of figure 1?
- What would happen if you added 1 red square tile to both sides of figure 1?
- What would happen if you added 1 red square to the left side and one yellow square tile to the right side of figure 1?
- What would happen if you added double the number of tiles on both sides of figure 1?
- What would happen if you removed one yellow square from the left side and added one red square to the right side of figure 1?
- What would happen if you cut the number of tiles in half on each side of figure 1?
- What would happen if you doubled the left side and divided the right side by 2 in figure 1?
- What would happen if you added one red square to the left side only in figure 1?
- What would happen if you added one yellow square to the right side only in figure 1?
- What would happen if you added red square to the left and removed one yellow square from the right in figure 1?

Look over your results to the 10 things you did to the balanced scale. In a few sentences or phrases describe what you can do to a balanced scale that keep the scale balanced.

2. Figure 2 illustrates a **balanced** scale. Build this on your scale. How many red or yellow squares would the green rectangle be equal to?

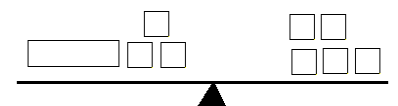


Figure 2

Using one of the ideas from above, we can show that the green rectangle is equal to 2 yellow squares. Show at least two ways this can be accomplished.

3. Set up figure 3 on your balance scale. Again use one of the ideas from question 1 to find at least two ways you can determine the value of the one green rectangle.

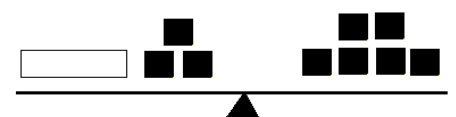


Figure 3

4. Set up figure 4 on your balance scale. Again use one of the ideas from question 1 to find at least two ways you can determine the value of the one green rectangle. Explain why your answer makes sense.

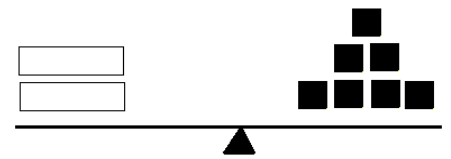


Figure 4

5. Set up figure 5 on your balance scale. Again use one of the ideas from question 1 to find at least two ways you can determine the value of the one green rectangle. Explain why your answer makes sense.

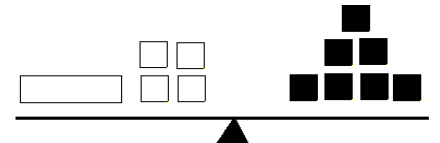


Figure 5

6. Set up figure 6 on your balance scale. Again use one of the ideas from question 1 to find at least two ways you can determine the value of the one green rectangle. Explain why your answer makes sense.

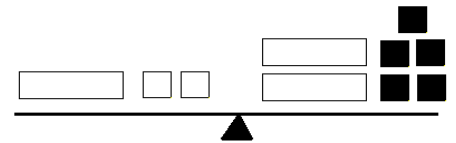


Figure 6

7. Set up figure 7 on your balance scale. Again use one or more of the ideas from question 1 to find at least two ways you can determine the value of one green rectangle. (Notice there are not green rectangles in this figure.) Explain why your answer makes sense.

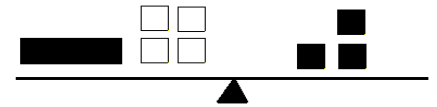


Figure 7

8. Set up figure 8 on your balance scale. Again use one or more of the ideas from question 1 to find at least two ways you can determine the value of one green rectangle. (Notice there are not green rectangles in this figure.) Explain why your answer makes sense.



Figure 8

9. Set up figure 8 on your balance scale. Again use one or more of the ideas from question 1 to find at least two ways you can determine the value of one green rectangle. Explain why your answer makes sense.

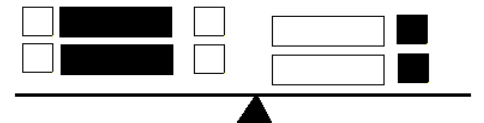


Figure 9

10. Set up figure 8 on your balance scale. Again use one or more of the ideas from question 1 to find at least two ways you can determine the value of one green rectangle. Explain why your answer makes sense.

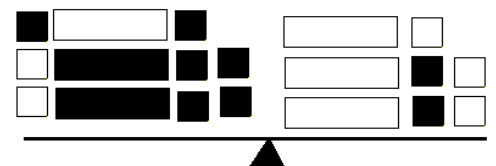


Figure 10