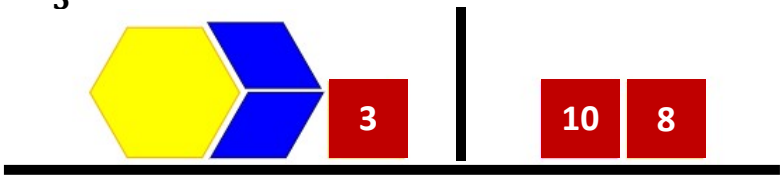
Lesson 3

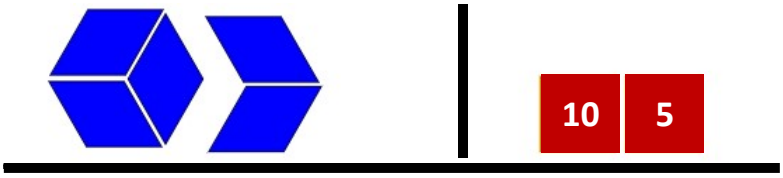
The new feature of Lesson 3 is that we now have more than one term involving the unknown on one side of the equation. These terms are to be added or subtracted, depending on the problem.

Example 1.

$$\boldsymbol{y+\frac{2}{3}y+3=18,} \qquad \boldsymbol{B=} \quad \boldsymbol{y=} \quad \boldsymbol{Check}\text{:}\_\_\_\_\_$$



After subtracting a 3-value from the cubes on both sides, we are left with a value of 15 on the right side. In order to find the value of the blue block, we replace the yellow block with 3 blue blocks.



We now have 5 blue blocks with a total value of 15. Hence, each blue block has a value of 3, $B=3$. Hence, the yellow block has a value of 9, $y=9$. The check in the original setup above shows, on the left side, that $9+3+3+3=18$; the right side is also 18. **Answer:** $B=3, y=9, Check\text{:}\ 18=18.$

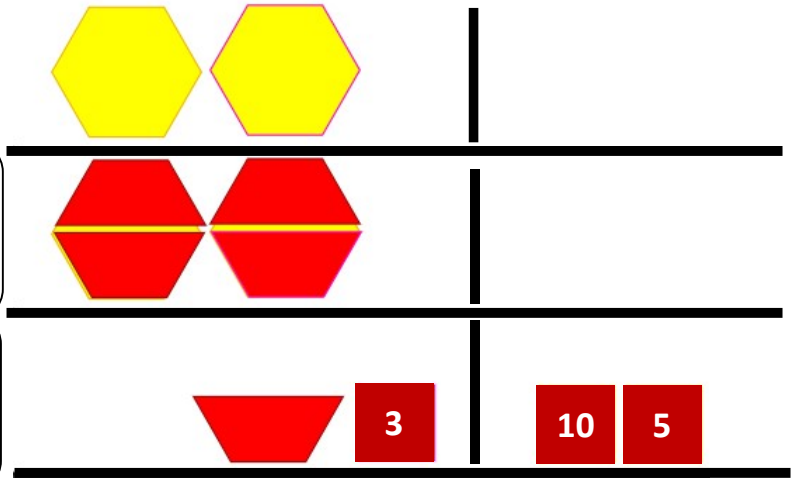
Example 2.

$$\boldsymbol{2y-\frac{3}{2}y+3=15,} \qquad \boldsymbol{R=} \quad \boldsymbol{y=} \quad \boldsymbol{Check}\text{:}\_\_\_\_\_$$

This problem requires the **removal** of blocks *as part of the setup process*. We place 2 yellow blocks and exchange them for 4 red blocks, in order to be able to take away 3 red blocks. We then complete the rest of the setup. The third line below is *the original physical setup*. It is where the check will be done.

In order to be able to subtract $\frac{3}{2}y$, we replace each yellow block by 2 red blocks.

Now we can take away 3 red blocks and complete the rest of the setup.



By subtracting a 3-value from the cubes on both sides (not shown), we see that $R=12, y=24$, and the check is $15=15$. **Answer:** $R=12, y=24, Check\text{:}\ 15=15.$