



Equivalent Expressions, Equation Solving

Here is a proposed scheme to review Lessons 11–16, and to facilitate the transition to symbol manipulation. It can happen at any time after Lesson 16, and can be stretched as part of the work over several days.

A.

- Start with just yellow blocks on either side of the workmat, for example -5 on one side and 2 on the other. Ask: **Which is greater?**
- Complicate things by adding the same amount to both sides, adding zero in various forms, and other legal moves suggested by the students. This can and should include blue blocks.
- As you do this, point out that when we add zero on one side of the equation, we get an equivalent expression on that side. When we add the same amount to both sides, we get an equivalent equation.
- Every once in a while in this process, ask: **Which is greater?** In general, this will not change, unless someone suggests multiplying both sides by a negative number.

B.

- Start by showing $2x = 10$ on the workmat. Ask: **Which is greater?** (It depends.) Can the two sides be equal? For what value of x ?

C.

- Start by showing $x = 5$ on the workmat.
- As in part A, complicate the equation using only legal moves. Periodically ask: **What is the solution to the equation? How do you know?** The solution will remain unchanged, unless students decide to multiply both sides by a variable.

D.

- Ask: **When simplifying or complicating expressions and equations, what are the rules that govern manipulations on the workmat?**
- **For each one, what is the equivalent rule when doing pencil-and-paper algebra?**