Race Games—getting the feel of addition and subtraction

Students should be able to build sums and differences of whole numbers with base 10 blocks. One good way to practice that—and give kids a good metaphor that connects them to counting—is to play race games. On the way up, students roll the die (or dice, see below) and add the quantity shown on the dice to their previous total, trading 10 of any smaller unit for 1 of the next larger. When somebody reaches the goal—100, for example—they win (!), and the race game turns around and becomes a race to zero. On the way back down to zero, students roll the die (or dice) and decrease their holdings by the quantity shown, trading in a larger unit, when necessary, for 10 of the next smaller.

Once students are familiar with the standard race game—up to whatever and back down to zero—they are ready for some variations. The unit could be instead of the centimeter cube, the 1000 centimeter cube, making the old centimeter cube worth .001, the long "ten" worth .010, and the flat "hundred" worth .100. Students could race with fractions (pattern blocks, index cards, egg cartons, etc.) using a cube (0, 1/2, 1/3, 2/3, 5/6, 1/6) or a dodecahedron (0, 1/2, 1/3, 2/3, 5/6, 1/6, 1/4, 3/4, 1/12, 5/12, 7/12, 11/12).

race games and diffies

- place value (base 10 whole numbers)—**race up to and down from** 200, 400, 1000, 1200, with 10-sided dice: (0…9, 00…90, 000…900)
  1x1x1 cm cube = 1 unit
  - o   for place value mat, see http://www.soesd.k12.or.us/files/place_value_mat.pdf
  - o   for a race games overview, see http://www.soesd.k12.or.us/files/race_games.pdf
- place value (base 10 decimal fractions)—**race up to and down from** 1.000, 2.000, etc. with 10-sided dice: (0…9, 00…90, 000…900)
  let various sized cubes = 1, starting with big 10x10x10 cm cube
- use **diffies** to practice subtraction: roll dice to fill in numbers in each of the corners
  they are somewhat self-checking in that they always ratchet down to zero
  - o   for virtual diffies, see http://nlvm.usu.edu/en/nav/frames_asid_326_g_3_t_1.html
    Whole Numbers, Integers, Fractions, Decimals, and Money

- o   for a blank diffy: www.soesd.k12.or.us/files/diffy_blank.pdf
- o   for fraction dice: etacuisenaire or enasco
- o   for online 10-sided dice (1-, 2-, and 3-digit): www.soesd.k12.or.us/math/math_resources
- o   for blank polyhedral dice, see www.greathallgames.com/aacc/adice/adiceBlank.html