

# Race Games

Once a kid can count, s/he can race up to somewhere (probably not beyond the upper limits of what s/he can count) and back down to zero. This gives the kid practice at composing and decomposing numbers, making and breaking groups and groups of groups (etc.) of tens, plus it gives the kid a beginning feel for magnitude: units, tens, hundreds, thousands, maybe ten thousands if you get the tag board thousands and glue 'em together in a stack a meter long.



Beginning race games need just one die: a regular six-sided die will do, but a ten-sided die that goes from 0...9 or from 1...10 is better since you can use all the 1-digit counting numbers. The most beginning race game could go to something like 20 with a 1...6 or 0...9 die and then back to zero, then move up to races to 100 with a 20-sided die. Don't stop at 100, though: if you do, it'll train some kids that 100 is the end of the world, that the numbers stop there. (We need them to grasp the mysterious reality that the numbers just keep on going.)

Once kids have logged some practice racing up and back to whatever, it's good to have them work some diffies within that range, so they can be building numbers, getting a feel for how the numbers relate to each other, how they differ, decomposition, and (very importantly) the (fraternal) twin ideas of subtraction-as-comparison and adding-up-from-smaller-to-larger. For a web-based problem illustrator that does virtual base 10 blocks, go to [http://nlvm.usu.edu/en/nav/frames\\_asid\\_155\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_155_g_2_t_1.html) The National Library of Virtual Manipulative's Base Blocks Subtraction page.

The progression of race games I usually go through with kids starts small but quickly moves to much bigger numbers (in each case, "race to whatever" means "race to whatever and back down to zero").

The key thing is getting kids to have a feel for numbers generally and for base 10 particularly and the ways numbers relate to and compose or contain each other.

I like race games to have 3 people: 2 racers and a banker. The banker is in charge of the trading: when racing up, every time you have ten of something, you trade it in for one of the next bigger unit. That means giving your 10 things to the banker and getting the one thing back. When racing down, you'll need to trade in a big thing for 10 of the next size down so you can take away the amount you rolled with the dice. Consider the grouping of the three students: whether, if, and/or when the banker should be a more capable student than the racers, a less capable student—or if it even matters.

#### With younger kids

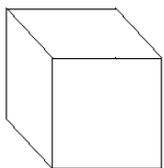
1. race to 20 with a 1...6 or 0...9 die
2. race to 50 with a 0...9 die
3. race to 100 with a 1...20 die
4. race to 200, then 500, then 1,000 with two dice: a 0...9 or 00...90 die for tens and a 0...9 die for ones
5. race to 10,000 with a 000...900 die, a 00..90 die, and a 0...9 die

#### With older kids, use bigger numbers and go faster:

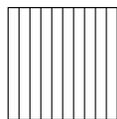
1. race to 100 with a 1...20 die
2. race to 500, then 1,000 with two dice: a 0...9 or 00...90 die for tens and a 0...9 die for ones
3. race to 10,000 with a 000...900 die, a 00..90 die, and a 0...9 die

#### When it's time for decimals,

1. let the 10 cm x 10 cm x 10 cm thousands cube (the one we normally call 1,000) equal 1.000
2. then the small 1 cm x 1 cm x 1 cm unit cube equals .001 and you can race for a whole



large cubes



tens



tens



unit cubes

Some teachers like to give students a "place value mat," a laminated page with columns for thousands, hundreds, tens, and ones, so kids can organize their accumulations of blocks conventionally.