K-12 Math moves

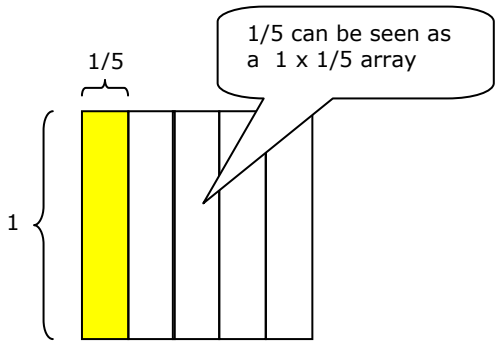
Tables and Functions
tables of values or outcomes → functions and function machines
times tables
use tables to explain division and multiplication by fractions

Number lines, Grids, and Graphs
number lines for skip-counting
grids for multiplication facts and number patterns
arrays for multiplication/division
number line for addition and subtraction of integers
4 quadrants for multiplication of integers

Answers-in-context
after crunching, state the answer in a sentence

Justifying, Clarifying, and Checking Your Work: how do you/we know your work is correct?
express answers and processes in words (English, Spanish, etc.) AND in symbols
see showyerwork.ppt

Concrete → Representation → Abstract → Concrete…
describe patterns and processes verbally and symbolically
sketch and diagram
represent—on paper, with blocks, with your body, etc.
make metaphors (e.g. "equations are like balance beams")
see National Library of Virtual Manipulatives
http://nlvm.usu.edu/en/nav
or see a list of Virtual Manipulatives
www.soesd.k12.or.us/files/manipulinks.doc
Fold Paper (tangrams, patty paper, etc.)
translate fractions into pattern blocks, power polygons, arrays



Balance Problem-Solving and Problem-Posing
when do you and your friends have to divide things up?
pizza, money, time
come up with problem templates where students have to—or have to be able to
pose problems verbally, solve them symbolically, defend them verbally

Dimensionality: location, length, area, volume (point, line, plane, 3D), and 10^0, 10^1, 10^2, 10^3)
what kind of units are we talking about? why?

Dice, Chance, and Problem-Richness
counting strips in K-1
race games
diffies

Directionality
NSEW, Orientation,
left-right, forward-back,
Turns, Degrees, Circles, parts of circles

Mapping and Scale

Building/Constructing (probably goes with Concrete → Representation… above)
with base 10 blocks—even 5x5 (25-square unit) squares for building/learning times tables
with pattern blocks
with compass and straight edge—actually or virtually with C.a.R. www.z-u-l.de/doc_en/

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