## DDITION and SUBTRACTION generalized use of a repertoire of strategies for addition equivalence with place value and subtraction dependent on the numbers using constant difference generalization of subtraction as removal, as difference, and regrouping as used to find missing addends and subtrahends constant difference as equivalence swapping varies adding on vs. removing decomposing the subtrahend to get to a landmark number taking leaps of ten back and adjusting keeping one addend whole and keeping one addend whole and moving to a landmark number units used in measuring can vary taking leaps of ten in size, but results are equivalent place value patterns occur when making models distance is measured as a series of models and adding on groups of ten models difference removal with multiplicative iterated units. system models place determines value models adding on open amounts with number line additive system hundred models chart groups unitizing splitting t-chart patterns can be made from iterated units bead combinations that make 10 using the ten-structure string making tens skip counting using compensation associativity systematic production using known facts counting on of arrangements commutativity using doubles for conservation near doubles part/whole relations: doubles relationship between addition models equivalence and subtraction with symbols models with to represent amounts arithmetic rack compensation ten-frame uses the five-structure models quantity with tallies hierarchical inclusion counting backwards uses 1–9 sequence when counting counting three times when adding one-to-one need for organization correspondence modeling of situation and keeping track synchrony: one word for every object one-to-one tagging trial and error cardinality modeling of action counting magnitude subitizing