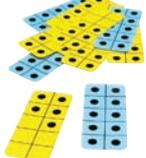


# Glossary of Manipulatives

	<p><b>Base Ten Blocks</b> Base Ten Blocks include cubes representing 1,000, flats representing 100, rods representing 10, and units representing 1. Blocks can be used to teach various number and place-value concepts, such as the use of regrouping in addition and subtraction. Each unit measures 1 cm<sup>3</sup>, making blocks ideal for measuring area and volume.</p>
	<p><b>Cuisenaire® Rods</b> Cuisenaire Rods include rods of 10 different colors, each corresponding to a specific length. White rods, the shortest, are 1 cm long. Orange rods, the longest, are 10 cm long. Rods allow children to explore all fundamental math concepts, including addition and patterning, multiplication, division, fractions and decimals, and data analysis.</p>
	<p><b>DecaDots®</b> The vertical ten-frame tiles provide an intuitive and visual representation of patterns for numbers up to 10. They can be used to learn shortcuts, such as counting the spaces remaining instead of counting the number of dots. They emphasize the importance of 10 in place value.</p>
	<p><b>Geared Clocks</b> Each clock is 4" x 4" and includes a removable stand. Made of plastic, clocks have hidden gears that reflect accurate hour and minute relationships. The hour and minute hands are color-coded to match hour and minute markings on the clock face. Clocks allow children to explore telling time on analog clocks and calculating elapsed time.</p>
	<p><b>Graphing Mat</b> This 24" x 72" vinyl graphing mat has a 3 x 10 grid on one side and a 4 x 12 grid on the reverse. Both sides are ideal for activities that use manipulatives or other real objects. The mat can be used to introduce children to graphing data.</p>
	<p><b>Pattern Blocks</b> Blocks include six shapes in six different colors: yellow hexagon, red trapezoid, orange square, green triangle, blue parallelogram (rhombus), and tan rhombus. The versatile blocks can be used to teach concepts from all strands of mathematics. Blocks illustrate algebraic concepts such as patterning and sorting. Children learn geometry and measurement concepts such as symmetry, transformations, and area. Blocks also can be used to show number concepts such as counting and fractions.</p>
	<p><b>Snap Cubes®</b> Snap Cubes are <math>\frac{3}{4}</math>-inch interlocking cubes. Each side of a cube can be connected to another cube. Cubes come in 10 different colors and can be used to teach a variety of math concepts. Use cubes to explore number sense and operations with activities involving counting, place value, addition, and subtraction. Or use cubes to show measuring using nonstandard units. Cubes also can be used to demonstrate patterning and basic geometry.</p>



**Tangrams** Tangrams are ancient Chinese puzzles made of seven three- and four-sided shapes. Each set of Tangrams contains four Tangram puzzles in four different colors. Each puzzle consists of five triangles (two small, one medium, and two large), a square, and a parallelogram. Tangrams can be used to solve puzzles in which all seven pieces must be put together to create a specified shape. Tangram puzzles can be used to teach many geometric concepts, including symmetry, congruency, transformations, and problem solving.



**Two-Color Counters** These versatile counters are thicker than most other counters and easy for children to manipulate. They can be used to teach number and operations concepts such as patterning, addition and subtraction, and multiplication and division. Counters also can be used to introduce children to basic ideas of probability.

# Index

**Boldface** page numbers indicate when a manipulative is used in the Try It! activity.

- Addition  
addends, find missing, 36–39  
Associative Property, 20–23  
Commutative Property, 24–31  
connecting with subtraction, 60–63  
counting on, 44–47  
doubling, 52–55  
fact families, 32–35  
make-10 strategy, 64–67  
regrouping  
    with, 86–89  
    without, 82–85  
sentences, 12–15  
three numbers, 16–19
- Associative Property of Addition, 20–23
- Balance Bucket,  
    Commutative Property of Addition, 28
- Base Ten Blocks  
addition  
    counting on, **45**  
    with regrouping, **87**  
    without regrouping, **82, 83**  
comparing two-digit numbers, 74, **75**  
find ten more, ten less, 90, **91**  
make-10 strategy, addition and subtraction, 64  
place value, **71**  
subtraction  
    counting back, 48  
    multiples of ten, 94, **95**
- Color Cubes  
addition, doubling, 52  
nonstandard units, estimate and measure with, 104
- Color Tiles  
addition  
    Commutative Property, 24, 28  
    with regrouping, 86  
bar graphs, making, **113**  
equal shares of rectangles, 134, **135**
- Common Core State Standards  
1.OA Operations and Algebraic Thinking  
    1.OA.1, 8–11, 12–15  
    1.OA.2, 16–19, 20–23  
    1.OA.3, 20–23, 24–27, 28–31  
    1.OA.4, 36–39, 40–43  
    1.OA.5, 44–47, 48–51  
    1.OA.6, 32–35, 44–47, 48–51, 52–55, 56–59, 60–63, 64–67  
    1.OA.8, 36–39, 40–43
- 1.NBT Number and Operations in Base Ten  
    1.NBT.2a, 70–73  
    1.NBT.2b, 70–73, 78–81  
    1.NBT.2c, 70–73  
    1.NBT.3, 74–77  
    1.NBT.4, 82–85, 86–89  
    1.NBT.5, 90–93  
    1.NBT.6, 94–97
- 1.MD Measurement and Data  
    1.MD.1, 100–103  
    1.MD.2, 104–107  
    1.MD.3, 108–111  
    1.MD.4, 112–115, 116–119
- 1.G Geometry  
    1.G.2, 122–125, 126–129, 130–133  
    1.G.3, 134–137
- Commutative Property of Addition, 24–27, 28–31
- Comparing two-digit numbers, 74–77
- Cuisenaire® Rods  
addition  
    addends, find missing, 36  
    Associative Property, **21**  
    Commutative Property, **29**  
    make-10 strategy, 64  
    sentences, **9**  
    three numbers, 16  
connecting addition and subtraction, 60  
fact families, 32  
nonstandard units, estimate and measure with, 104  
ordering numbers, 78  
place value, 70  
subtraction  
    make-10 strategy, 64  
    sentences, 12  
    subtraction, comparison, **57**
- DecaDots®  
add three numbers, **17**  
addends, find missing, **37**  
ordering numbers, **79**  
subtrahends, find missing, **41**
- Deluxe Rainbow Fraction® Squares  
equal shares of rectangles, 134
- Geared Mini-Clock  
time to the half-hour on an analog clock, 108, **109**
- Geometry  
combining shapes  
    to compose new shapes, 126–133  
    to form a copy of a given shape, 122–125  
equal shares of rectangles, 134–137
- Graphing Mat  
bar graph, 112  
pictograph, 116
- Graphs  
bar, 112–115  
pictographs, 116–119
- Inchworms™  
addition, counting on, 44  
subtraction, counting back, 48  
length, sorting by 100–103
- Link 'N' Learn® links  
length, sort by, 100
- Measurement and data graphs  
    bar, 112–115  
    pictographs, 116–119  
length, sorting by 100–103  
nonstandard units, estimate and measure with, 104–107  
time to the half-hour on an analog clock, 108–111
- Nonstandard units, estimate and measure, 104–107

- Number and operations in base ten
  - addition, two-digit numbers
    - with regrouping, 86–89
    - without regrouping, 82–85
  - comparing two-digit numbers
    - using  $>$  and  $<$ , 74–77
  - ordering numbers, 78–81
  - place value for tens and ones, 70–73
  - subtraction, multiple of 10, 94–97
  - ten more, ten less, finding for two-digit numbers, 90–93
- Operations and algebraic thinking
  - addition
    - addends, find missing, 36–39
    - Associative Property of Addition, 20–23
    - Commutative Property of Addition, 24–31
      - counting on, 44–47
      - doubling, 52–55
      - sentences, 8–11
      - three numbers, 16–23
    - connecting addition and subtraction, 60–63
    - fact families, 32–35
    - make-10 strategy to add or subtract, 64–67
    - subtraction
      - comparison, 56–59
      - counting back, 48–51
      - sentences, 12–15
      - subtrahends, find missing, 40–43
  - Ordering numbers, 78–81
- Pattern Blocks
  - addition, doubling, 52, **53**
  - combine shapes to form a copy of a given shape, 122
  - nonstandard units, estimate and measure with, **105**
  - pictographs, **117**
- Place value for tens and ones, 70–73
- Snap Cubes®
  - addition
    - addends, find missing, 36
    - Associative Property of Addition, 20
    - Commutative Property of Addition, **25**
    - make-10 strategy, **65**
    - regrouping, with, 86
    - sentences, 8
    - three numbers, 16
  - addition and subtraction
    - connecting, 60, **61**
    - fact families, **33**
  - bar graphs, making, 112
  - combine shapes to compose new shapes, 126
  - length, sorting by, 100, **101**
  - ordering numbers, 78
  - place value, 70
  - subtraction
    - comparison, 56
    - counting back, **49**
    - make-10 strategy, **65**
    - subtrahends, find missing, 40
- Subtraction
  - comparison, 56–59
  - connecting with addition, 60–63
  - counting back, 48–51
  - fact families, 32–35
  - make-10 strategy, 64–67
  - multiples of 10, 94–97
  - sentences, 12–15
  - subtrahends, find missing, 40–43
- Tangrams
  - combine shapes
    - to compose new shapes, 126, **127**, 130, **131**
    - to form a copy of a given shape, 122, **123**
- Three Bear Family® Counters
  - Commutative Property of Addition, 28
- Time to the half-hour on an analog clock, 108–111
- Two-Color Counters
  - addition
    - Associative Property, 20
    - Commutative Property, 24
    - counting on, 44
    - sentences, 8
    - without regrouping, 82
  - fact families, addition and subtraction 32
  - subtraction
    - comparison, 56
    - sentences, 12, **13**
    - subtrahends, find missing, 40

# Notes