

What Works Workstations

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Handouts are available to download at www.nctm.org and at <http://apps.gcsc.k12.in.us.us/blogs/jmorley/what-works-workstations/>



Bibliography and Apps for “What Works in Work Stations”

Diller, Debbie. *Math Work Stations: Independent Learning You Can Count On, K-2*. Portland, ME: Stenhouse Publishers; Spi edition, 2010.

Frye, D., Baroody, A. J., Burchinal, M., Carver, S. M., Jordan, N. C., & McDowell, J. (2013). “Teaching Math to Young Children: A Practice Guide” (NCEE 2014-4005). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: <http://whatworks.ed.gov>

Kuhns, Catherine Jones. *Building Number Sense*. Peterborough, New Hampshire: Crystal Springs Books, 2009.

Newton, Nicki. *Guided Math in Action*. New York: Routledge, 2013.

Sammons, Laney. *Guided Math: A Framework for Mathematics Instruction*. Huntington Beach, CA: 2010.


Shumway, Jessica F. *Number Sense Routines*. Portland, ME: Stenhouse Publishers, 2011.

Van de Walle, John A., Karp, K., Bay-Williams, Jennifer M. *Elementary and Middle School Mathematics: Teaching Developmentally*. New York: Allyn and Bacon, 2010.

Number Sense and Place Value Apps	
<ul style="list-style-type: none"> ○ Frog Hop ○ Native Numbers ○ 123 Tracer Lite (ABC Tracer Free) ○ Number Fun ○ Candy Count ○ Math Flash ○ 100 Board ○ Halloween Counting and Words Game 	<ul style="list-style-type: none"> ○ Number Pieces ○ 10 Frame Fill ○ Native Numbers ○ 1 to 10 Lite ○ Todo Math ○ Glow Burst Lite ○ Scoot Pad • Everyday Math <ul style="list-style-type: none"> ○ Monster Squeeze ○ Top It Addition

Web Sites	
<ul style="list-style-type: none"> www.funbrain.com www.starfall.com 	<ul style="list-style-type: none"> www.ixl.com www.nctm.org

Table 3. Examples of a specific developmental progression for number knowledge



<p>Subitizing (small-number recognition)</p>	<p>Subitizing refers to a child's ability to immediately recognize the total number of items in a collection and label it with an appropriate number word. When children are presented with many different examples of a quantity (e.g., two eyes, two hands, two socks, two shoes, two cars) labeled with the same number word, as well as non-examples labeled with other number words (e.g., three cars), children construct precise concepts of one, two, and three.</p> <p>A child is ready for the next step when, for example, he or she is able to see one, two, or three stickers and immediately—without counting—state the correct number of stickers.</p>
<p>Meaningful object counting</p>	<p>Meaningful object counting is counting in a one-to-one fashion and recognizing that the last word used while counting is the same as the total (this is called the <u>cardinality principle</u>).</p> <p>A child is ready for the next step when, for example, if given five blocks and asked, "How many?" he or she counts by pointing and assigning one number to each block: "One, two, three, four, five," and recognizes that the total is "five."</p>
<p>Counting-based comparisons of collections larger than three</p>	<p>Once children can use small-number recognition to compare small collections, they can use meaningful object counting to determine the larger of two collections (e.g., "seven" items is more than "six" items because you have to count further).</p> <p>A child is ready for the next step when he or she is shown two different collections (e.g., nine bears and six bears) and can count to determine which is the larger one (e.g., "nine" bears is more).</p>
<p>Number-after knowledge</p>	<p>Familiarity with the counting sequence enables a child to have <u>number-after knowledge</u>—i.e., to enter the sequence at any point and specify the next number instead of always counting from one.</p> <p>A child is ready for the next step when he or she can answer questions such as, "What comes after five?" by stating "five, six" or simply "six" instead of, say, counting "one, two, ... six."</p>
<p>Mental comparisons of close or neighboring numbers</p>	<p>Once children recognize that counting can be used to compare collections and have number-after knowledge, they can efficiently and mentally determine the larger of two adjacent or close numbers (e.g., that "nine" is larger than "eight").</p> <p>A child has this knowledge when he or she can answer questions such as, "Which is more, seven or eight?" and can make comparisons of other close numbers.</p>
<p>Number-after equals one more</p>	<p>Once children can mentally compare numbers and see that "two" is one more than "one" and that "three" is one more than "two," they can conclude that any number in the counting sequence is exactly one more than the previous number.</p> <p>A child is ready for the next step when he or she recognizes, for example, that "eight" is one more than "seven."</p>