

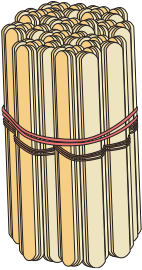
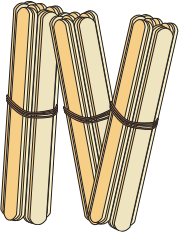
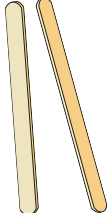
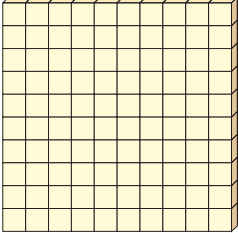
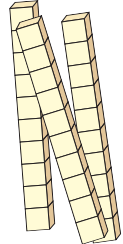

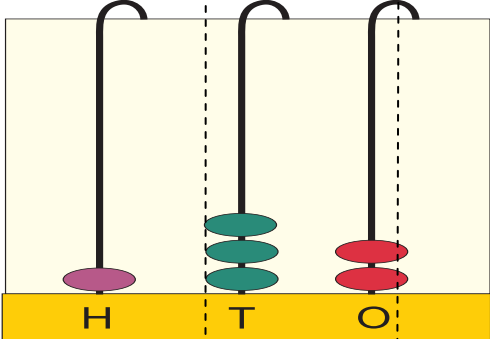
Introduction to Hundreds Tens and Ones Place Value Manipulatives

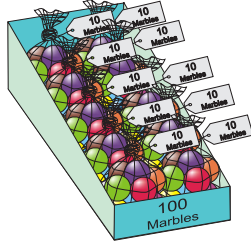
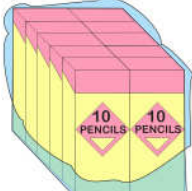


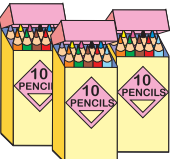





Using manipulatives to represent 3-digit numbers:

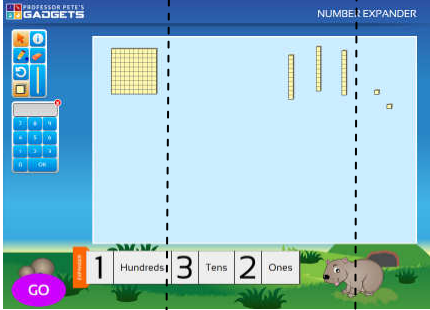
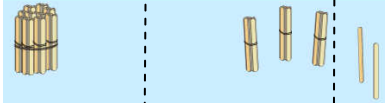




The different manipulatives (concrete materials) that can be used to show place value have their own unique properties.

The table below shows manipulatives which can be extended into the hundred and beyond.

As the place value increases so does the difficulty in representing them. Larger numbers are inherently harder to conceptualize so their use is critical in developing mathematical understanding.

Manipulatives	Hundreds	Tens	Ones	Properties
bundling sticks				<ul style="list-style-type: none"> individual sticks join together to make a ten bundle with a rubber band can be separated and bundled easily 10 bundles of ten can be joined again to make a hundred class can join together 10 hundreds to make a thousand (use hair ties or "scrunchies")
base ten blocks				<ul style="list-style-type: none"> groups of ten and hundred are easily manipulated (do not break apart) need to exchange or trade 10 ones for 1 ten and 10 tens to make 1 hundred (higher level of understanding required) can show large numbers easily and quickly shows places into the hundreds and thousands with consistent representations
abacus				<ul style="list-style-type: none"> the abacus is the most abstract representation for base ten numbers; beads do not show the value of different places beads are not easily dropped or lost large numbers may be represented and manipulated quickly and easily some abacuses allow for trading or exchanging of 10 ones for 1 ten later the abacus can be used to display decimal fractions

Manipulatives	Hundreds	Tens	Ones	Properties
<p>sets of objects</p> <ul style="list-style-type: none"> marbles pencils gum 	  	  	  	<ul style="list-style-type: none"> real objects from everyday life helps students see the common idea of grouping and handling groups individual items join together to make a ten group then a hundred that can be handled both individually or as a set of 10 ones or 10 tens can be separated and ungrouped for demonstration larger numbers can be shown and can be easily recognised as such N.B. make sure the group does have 100, as it is easy with some items to have a different number, which could cause confusion; also check the package/box does contain 10 tens or 100
Virtual Manipulatives	Hundreds	Tens	Ones	Properties
<p>Software (Professor Pete's Gadgets)</p> <ul style="list-style-type: none"> Odometer <p>(http://profpete.com.au/gadget/odometer/)</p>				<ul style="list-style-type: none"> should be used after students are familiar with the concepts and if possible the actual item can show numbers accurately and quickly allow students to self correct as the screen displays the correct number allows for whole class seeing exactly the same number allows for counting quickly and accurately (no errors) allows for counting in 2s and 5s in any place can extend well beyond hundreds, tens and ones to millions and even decimal places

Virtual Manipulatives	Hundreds	Tens	Ones	Properties
<ul style="list-style-type: none"> Number Expander (http://profpete.com.au/gadget/number-expander/) 	     			<ul style="list-style-type: none"> shows Base Ten Blocks (MAB) and Bundling Sticks should be used after students are familiar with the concepts and if possible the physical materials can show numbers accurately and quickly (no accidental dropped counters or cubes, or bundles with only 9 in them) allow students to self correct as the screen displays the correct number allows for whole class seeing exactly the same number allows for counting quickly and accurately (no errors) allows for quick and easy ungrouping of hundreds to tens, tens to ones, hundreds to ones. allows for Place Value Blocks (MABs) to be grouped and ungrouped, something that is not possible with real blocks