

TouchCounts in K-1:
Prescribed Learning Outcomes in the BC Curriculum

Sarah Wong
Simon Fraser University
September 2015

This table provides teacher questions, prompts, and student suggestions for using the *TouchCounts* app (www.touchcounts.ca) to address the Prescribed Learning Outcomes (PLOs) relating to Number in the British Columbia curriculum for kindergarten and Grade 1. The PLOs track those of *Mathematics K to 7: Integrated Resource Package 2007* from the BC Ministry of Education (<http://www.bced.gov.bc.ca/irp/pdfs/mathematics/2007mathk7.pdf>).

Kindergarten Number Outcomes

	Prescribed Learning Outcomes	<i>TouchCounts</i> ' Teacher Questions or Prompts
K	A1. Say the number sequence by 1s starting anywhere from 1 to 10 and from 10 to 1 [C, CN, V]	<ul style="list-style-type: none"> • How high can you go? • Can you put <i>X</i> on the shelf? • Can you make 4 at once each time to get 5, 10 on the shelf? • Teacher puts <i>X</i> on shelf. Can you get to <i>Y</i>? • What number comes after this one? • What number comes before this one?
K	A2. Recognize, at a glance, and name familiar arrangements of 1 to 5 objects or dots [C, CN, ME, V]	<ul style="list-style-type: none"> • Can you make 2,3,4, or 5 at once? • Can you make <i>X</i> to look like what you see on a dice? • Can you make <i>X</i> to look like what you see on a five frame? • How else can you arrange <i>X</i>? • Build a set and ask how many are there?

K	<p>A3. Relate a numeral, 1 to 10, to its respective quantity</p> <p>[CN, R, V]</p>	<ul style="list-style-type: none"> • How many taps did you make to get X on the shelf? • Show me X • How did you make X? • How many are there? • Can you hold X and how do you know it's X?
K	<p>A4. Represent and describe numbers 2 to 10, concretely and pictorially</p> <p>[C, CN, ME, R, V]</p>	<ul style="list-style-type: none"> • Can you make two equal rows of X? • How many more do you need to get to 5? 10? • Can you break up X into two parts? • How many are in each part? • Can you break up X into two equal parts? • How many ways can you break up X? • Can you combine the numbers to make X?
K	<p>A5. Compare quantities, 1 to 10, using one-to-one correspondence</p> <p>[C, CN, V]</p>	<ul style="list-style-type: none"> • Which circle has more? • Which circle has fewer? • Can you make a group that has more? • Can you make a group that has less?

Grade 1 Number Outcomes

	Prescribed Learning Outcomes	Questions or Prompts
1	A1. Say the number sequence, 0 to 100, by	
	<ul style="list-style-type: none"> • 1s forward and backward between any two given numbers 	<ul style="list-style-type: none"> • How high can you go? • Can you put X on the shelf? • Can you make 4 at once each time to get 5, 10 on the shelf? • Start with X. Can you get to Y? • What number comes after this one? • What number comes before this one?
	<ul style="list-style-type: none"> • 2s to 20, forward starting at 0 	<ul style="list-style-type: none"> • Can you count using two fingers at the same time? What do you notice? • Can you put 2,4,6,8,10...on the shelf? • Can you put 10 (or 20) on the shelf in different ways?
	<ul style="list-style-type: none"> • 5s and 10s to 100, forward starting at 0 <p>[C, CN, V, ME]</p>	<ul style="list-style-type: none"> • Can you count using five fingers at the same time? • Can you count using ten fingers at the same time? • Can you put 5,10,15,...on the shelf? • Can you put 10, 20, 30... on the shelf?

1	<p>A2. Recognize, at a glance, and name familiar arrangements of 1 to 10 objects or dots</p> <p>[C, CN, ME, V]</p>	<ul style="list-style-type: none"> • Can you make 2,3,4, or 5 at once? • Can you make X to look like what you see on a dice? • Can you make X to look like what you see on a ten frame? • How else can you arrange X? • Build a set and ask how many there are. • How do you know there are X? • What shape does the set make?
1	<p>A3. Demonstrate an understanding of counting by</p> <ul style="list-style-type: none"> • indicating that the last number said identifies “how many” 	<ul style="list-style-type: none"> • What’s the biggest number you can make? • How many are there? • How do you know how many there are?
	<ul style="list-style-type: none"> • showing that any set has only one count 	<ul style="list-style-type: none"> • How many are there? • How do you know how many there are?
	<ul style="list-style-type: none"> • using the counting on strategy • using parts or equal groups to count sets <p>[C, CN, ME, R, V]</p>	<ul style="list-style-type: none"> • Teacher puts X on the shelf. Can you get to Y? • Show two groups. How do you know this makes X? • Which group has more? less? Are they equal? • Can you make a set of X? How many are there? Can you break X up? Now how many are there on the screen? • Can you break X up into equal groups?

1	<p>A4. Represent and describe numbers to 20 concretely, pictorially, and symbolically</p> <p>[C, CN, V]</p>	<ul style="list-style-type: none"> • Show several counters on the screen. Which one says X? • Can you make 2 equal rows of X? • How many more do you need to get to 5? 10? • Can you break up X into two parts? • How many are in each part? • Can you break up X into 2 equal parts? • How many ways can you break up X? • Can you combine the numbers to make X?
1	<p>A5. Compare sets containing up to 20 elements to solve problems using one-to-one correspondence</p> <p>[C, CN, ME, PS, R, V]</p>	<ul style="list-style-type: none"> • Have two students each make a set to compare. Who has more? Who has less? • How many more does s/he have? • How many more do you need to have the same as your partner? • How many taps did you make to get X on the shelf?
1	<p>A7. Demonstrate, concretely and pictorially, how a given number can be represented by a variety of equal groups with and without singles</p> <p>[C, R, V]</p>	<ul style="list-style-type: none"> • Can you make 2 equal rows of X? • Can you break up X into Y parts? How many are in each part? • Can you break up X into groups of Y? How many are leftover? • Can you break up X into 2 equal parts? • How many ways can you break up X? • Can you make two rows where one of the rows has one more than the other?

1	<p>A8. Identify the number, up to 20, that is one more, two more, one less, and two less than a given number</p> <p>[C, CN, ME, R, V]</p>	<ul style="list-style-type: none"> • Show a number, dot card or build the number in Number World. Can you show me one more, two more than X? • Show a number or dot card. Can you show me one less, two less than X? • X is how many less than Y? • I am thinking of a number that is 2 more/less than X. Show me the number on the iPad. • How many counters are there? If I had two more, how many would there be?
1	<p>A9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially, and symbolically by</p>	<ul style="list-style-type: none"> • Students cannot communicate mathematical symbols directly to <i>TouchCounts</i>, so can communicate the math sentence orally or on a sheet of paper.
	<ul style="list-style-type: none"> • using familiar and mathematical language to describe additive and subtractive actions from their experience 	<ul style="list-style-type: none"> • Tell a story where two sets are joined. • Tell a story where some are taken away from a set. • What math sentence goes with your story?
	<ul style="list-style-type: none"> • modelling addition and subtraction using a variety of concrete and visual representations, and recording the process symbolically <p>[C, CN, ME, PS, R, V]</p>	<ul style="list-style-type: none"> • Can model with concrete and visual representations but cannot record the process symbolically. • Look at the set (and the colour of the dots). Can you tell me how the number X was built?

1	<p>A10. Describe and use mental mathematics strategies (memorization not intended), such as</p> <ul style="list-style-type: none"> • counting on and counting back 		<ul style="list-style-type: none"> • Start at X and count on. • Have numbers on the shelf or work in zero gravity mode. Can you count back from X?
	<ul style="list-style-type: none"> • making 10 		<ul style="list-style-type: none"> • Make several sets in Operations World. Combine two sets to make 10. • How many ways can you make 10? • Can you break 10 into two sets? • How many ways can you break 10 apart into two sets? • How many more do I need to make 10?
	<ul style="list-style-type: none"> • doubles 		<ul style="list-style-type: none"> • Make a double using two fingers on one hand and two on the other. (Increase number of fingers used at a time.) • Start with a set. Can you build another set just like this one? • If you joined the two sets, how many would you have? (predict) • Teacher makes several sets. Combine two sets to make a double. How many do you have now? What do you notice about the coloured dots? • What would be the math sentence that goes with this set? (look at the different coloured dots)

	<ul style="list-style-type: none"> • using addition to subtract <p>[C, CN, ME, PS, R, V]</p>		<ul style="list-style-type: none"> • There are X in the set. How many do you need to remove to get Y? If you removed Y, how many would be left in the set?
--	---	--	--

Across activities, teachers can show dot cards, ten frames or numeral cards and ask students to build that number in *TouchCounts*. Also encourage students to think of a problem that they can pose to their partner(s). Ask them: “How would you solve the problem? Did your partner solve the problem in the same way that you did?”