

Title – Equivalence – Open Number Sentences		MATH PS LESSON PLAN		Grade 3	Date March 7, 2012
Specific Curriculum Expectations <ul style="list-style-type: none"> Grade 2 - Determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies (modeling with concrete materials, using guess and check with and without a calculator); use counters to determine the missing number in the equation $6 + 7 = \square + 5$ Grade 3 - Determine the missing number in equation involving addition and subtraction of one and two-digit numbers using a variety of tools and strategies (e.g., modeling with concrete materials, using guess and check with and without the aid of a calculator) What is the missing number in the equation $25 - 4 = 15 + \square$ 		Lesson Learning Goals <ul style="list-style-type: none"> distinguish between addition expressions and addition equations describe the equal sign as being a symbol to show same quantities check for equivalence of addition expressions using quantity comparisons determine the missing (unknown) number in 2 addend addition equations using different strategies (e.g., addition and subtraction calculation, number comparisons, number relationships) 		Materials balance scale using weighted number line Rationale <ul style="list-style-type: none"> Use grade 2 expectations as the focus of the Before (Activation Task) Use one digit and two digit numbers (grade 2 to 3) to grow from calculations and comparison to number relations for comparison 	
Math Annotations	Before (Activation Task)	During (Lesson Problem)	After (Consolidation)	After (Highlights/Summary) (success criteria)	After (Practice)
concepts - equivalence, addition expression, addition equation, relational numbers (using arrow across to show 1 more than, 1 less than) strategies – adding on, subtracting to get the difference, comparing same and different numbers, comparing using relational numbers (1 more than, 1 less than) -mathematical actions – calculate quantities and compare quantities -models – balance model using weighted number line; numbers in arrays to count quantities and compare, same/difference	What's the missing number? $6 + 5 = \square + 4$ <3 different ways record> <u>Solutions:</u> $6+5= 11$ $\square + 4 = 11$ $\square = 7$ $6+5=11$ $11-4 = 7$ $\square = 7$ $6+1+4 = \square + 4$ 4s same , so $6+1=7$, so make same $\square=7$	$16 + 15 = 17 + \square$ <include comparison> <u>Solutions:</u> $16+15=31$ $17+\square = 31$, so add on $10+4 \rightarrow \square = 14$ $16+15=31$ $31-17=31-10-7$ $21-7=14$ $16+15=17+\square$ $16+ 1+14 = 17 + \square$ $17 + 14 = 17 + \square$ 17s same, so $\square = 14$ 17 is 1 more than 16 so 15 must be 1 more than \square , so $\square=14$	Organization Criteria -1 st - Calculating total for both sides (adding on to get unknown) -2 nd - Calculating total for both sides (subtracting to get unknown) -3 rd - Comparing same and different numbers (changing one number so it looks like the other number) -4 th - Comparing using relational numbers	Ways to find the missing number \square in an equation: <ul style="list-style-type: none"> adding on $16+15=31 \rightarrow 17+\square = 31$, so add on $10+4 \rightarrow \square = 14$ subtracting to get the difference $16+15=31 \rightarrow 31-17=31-10-7 \rightarrow 21-7=14$ comparing same and different numbers $16+15=17+\square \rightarrow 16+ 1+14 = 17 + \square$ $17 + 14 = 17 + \square \rightarrow 17s\ same,$ so $\square = 14$ comparing using relational numbers (1 more than, 1 less than) $17\ is\ 1\ more\ than\ 16 \rightarrow\ so\ 15\ must\ be\ 1\ more\ than\ \square,$ so $\square=14$ 	$4 + \square = 5 + 7$ $6 + 5 = 4 + \square$ $5 + 7 = \square + 6$ $16 + 15 = \square + 17$ $17 + \square = 15 + 16$ practice focus – changing the position of the box, 2 addends for each expression only