Lesson/Unit of Study Title
Equivalence – Open Number Sentences

Grade 3
ASSESSMENT FOR LEARNING
SEATING PLAN TOOL

Date
March 6, 2012

Mathematics Lesson Task/Problem:
**Before** - What’s the missing number?

$6 + 5 = [] + 4$  <3 different ways record>

**During** -

$16 + 15 = 17 + []$  <include comparison>

**After** (Practice) –

$4 + [] = 5 + 7$ ; $6 + 5 = 4 + []$ ; $5 + 7 = [] + 6$

$16 + 15 = [] + 17$ ; $17 + [] = 15 + 16$

Materials: balance scale with weighted number line

Specific Curriculum Expectations
- 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 $6 + 7 = [] + 5$
- 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 $25 - 4 = 15 + []$:

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### Student Names

<table>
<thead>
<tr>
<th>Braeden</th>
<th>Angie</th>
<th>Mya</th>
<th>Dante</th>
<th>Owen</th>
<th>Candace</th>
<th>Leo</th>
<th>Joshua</th>
<th>John Louis</th>
<th>Dave</th>
<th>Anna</th>
<th>Joy</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1, 2</td>
<td>1, 2</td>
<td>3, 4</td>
<td>2</td>
<td>1, 2</td>
<td>2</td>
<td>2, 3</td>
<td>1, 2</td>
<td>1</td>
<td>2</td>
<td>1, 2</td>
</tr>
</tbody>
</table>

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### Mathematical Organizational Criteria
- Calculating total for both sides (adding on to get unknown)
- Calculating total for both sides (subtracting to get unknown)
- Comparing same and different numbers
- Comparing using relational numbers

### Mathematical Annotations
- **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

### Highlights/Summary (Success Criteria)
Ways to find the missing number in an equation:
- adding on
  $16 + 15 = 31 \rightarrow 17 + [] = 31$, so add on $10 + 4 \rightarrow [] = 14$
- subtracting to get the difference
  $16 + 15 = 31 \rightarrow 31 - 17 - 10 = 7 \rightarrow 21 - 17 = 4$
- comparing same and different numbers
  $16 + 15 = 31 + [] \rightarrow 16 + 1 + 14 = 17 + [] \rightarrow 17 + 14 = 17 + [] \rightarrow 17$, same, so $[] = 14$
- comparing using relational numbers
  $17$ is 1 more than 16 → so 15 must be 1 more than $[$, so $[] = 14$
### 3 Key Questions for Analysis of Student Thinking:
- What mathematics is evident in students’ communication (oral, written, modeled)?
- What mathematical language should we use to articulate the mathematics we see and hear from students? (e.g., mathematical actions, concepts, strategies)
- What mathematical connections can be discerned between students’ different solutions (communication)?

| 1. Record what you see students doing and saying, mathematically. |
| 2. How are their solutions similar to and different from your solution? |