

## **Math Assignment 3**

**Lyndsay Devison and Carolyn Broadhurst**

**For: Prof. Dan Jarvis**

**EDUC 4274**

**Thursday, February 5, 2009**

<b>1. Lesson Plan Information</b>	
<b>Subject/Course:</b> Math – Number Sense and Numeration	<b>Name:</b> Lyndsay Devison and Carolyn Broadhurst
<b>Grade Level:</b> 3	<b>Date:</b> Thursday, February 5, 2009
<b>Topic:</b> Two Digit Subtraction	<b>Time and Length of Period:</b> 8:50-9:50 (1 hour)

<b>2. Expectation(s) and Learning Skills</b>
<p><b>The students will:</b></p> <p>Solves problems involving the addition and subtraction of two-digit numbers using a variety of mental math strategies.</p> <p><b>Today, students will:</b> Listen to “Shark Swimathon” and discuss strategies to solve two-digit subtraction problems. They will also have the opportunity to solve a problem posed by the teacher.</p>

<b>3. Pre-assessment</b>
<p><b>A. (i) Students</b></p> <ul style="list-style-type: none"> <li>- have learned and practiced solving problems with two digit addition</li> <li>- have learned and practiced solving problems with one digit subtraction</li> </ul> <p><b>(ii) Differentiation of content, process, and/or product (may be accommodations and/or modifications)</b></p> <ul style="list-style-type: none"> <li>- pair students who have difficulty up with strong math students.</li> <li>- spend extra time with students who are having difficulty.</li> </ul>
<p><b>B. Learning Environment</b></p> <ul style="list-style-type: none"> <li>- students at the carpet for discussion and reading the book</li> <li>- students at desks in pairs to solve problem</li> <li>- students at carpet for sharing</li> </ul>
<p><b>C. Resources/Materials</b></p> <ul style="list-style-type: none"> <li>- whiteboard and markers</li> <li>- “Shark Swimathon” by Stuart Murphy</li> <li>- problem on the overhead transparency</li> <li>- ledger paper</li> <li>- markers</li> <li>- base ten blocks</li> </ul>

4. Content (The What)	Teaching/Learning Strategies (The How)
<p><b>A. Introduction (motivational steps/hook/activation of students' prior knowledge)</b></p> <p>(5 min.)</p> <p>Show the students the cover of the book and ask them what they think the story will be about. Ask students if they have ever played on a team or worked together with other people to accomplish a common goal.</p>	
<p><b>B. Content for New Learning</b> (15 min.)</p> <p>Before reading: Introduction of the story "Shark Swimathon" by Stuart Murphy. The story is about a group of sharks that are trying to go to the state swim meet. They need to swim 75 laps in order to go. They count their laps each day and subtract that number from their total laps left to swim.</p> <p>During Reading: Traditional method – Start in the ones column to subtract and then move to the tens column to subtract. Ex. 45</p> $\begin{array}{r} 45 \\ -23 \\ \hline 22 \end{array}$ <p>Students may need to take from the tens column to move 10 over to the ones column in order to subtract a larger number.</p> $\begin{array}{r} 6 \\ \text{Ex. } 12 \\ -3 \ 4 \\ \hline 3 \ 8 \text{ (answer is 38)} \end{array}$ <p>After Reading: Discuss the strategy that the coach used to keep track of the laps and different strategies that could be used for subtraction:</p>	<p><b>B. Teaching/Learning Strategies for New Learning</b></p> <p>Tell the children the name of the book, author and a brief description of what the story is about. Write an example on the whiteboard, ex. 45-23. Ask students: "How might you solve this question?" "Let's see how the sharks in our story solved their subtraction problems."</p> <p>Stop at each page that shows how the coach is subtracting the laps from the total. "Let's see how coach subtracted these numbers." Show the students the example from the book. Ask students: "What method did the coach use to subtract the number of laps that the sharks swam?"</p> <p>"After seeing how coach subtracted two digit numbers, could you solve this question any other way?" Provide examples of numbers to subtract and have students come up to solve them using their preferred method of</p>

<p>Left to right – start in the tens column to subtract numbers</p> <p>Ex. <math>72 - 34 = 42</math>    <math>72 - 30 = 42</math></p> <p style="margin-left: 20px;"> <math>\begin{array}{r} 72 \\ -34 \\ \hline 42 \end{array}</math>    <math>\begin{array}{r} 72 \\ -30 \\ \hline 42 \end{array}</math>    <math>\begin{array}{r} 72 \\ -4 \\ \hline 68 \end{array}</math> </p> <p>Same change – you must do the same thing to each number if you change it.</p> <p>Ex. <math>72 - 34 = 38</math>    <math>68 - 30 = 38</math></p> <p style="margin-left: 20px;"> <math>\begin{array}{r} 72 \\ -34 \\ \hline 38 \end{array}</math>    <math>\begin{array}{r} 68 \\ -30 \\ \hline 38 \end{array}</math> </p>	<p>solving the question. Describe how each student is solving the question. Inform students that there are a variety of ways to subtract two-digit numbers.</p>
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**5. Consolidation/Recapitulation Questions (Check for understanding/scaffolded practice)**

(5 min.)

Ask the students what strategies have been used to subtract two digit numbers?

**6. Application (Moving from guided, scaffolded practice to increasingly independent practice and understanding / gradual release of responsibility)**

(25 min.)

Introduce the problem on the overhead:

“Miss Devison is travelling to Huntsville to visit her family for the weekend. Huntsville is 73 km away from North Bay. She decides to stop in Sundrige for lunch at her favourite little restaurant. She had travelled 44 km before she stopped. How many more kilometres does she need to drive after lunch to get to Huntsville? Show your solution in two different ways. Explain your work.”

After presenting the problem, ask a student to repeat back what they are supposed to be doing. Next, ask the students if there are any questions. Have the students work in pairs and write their answer of the ledger paper in marker in order to show the rest of the class. Provide base ten blocks for those who would like to use them. Once the students are finished solving the problem, have students come up to share how they solved the problem. Display their work on the blackboard and group like-minded answers.

## 7. Lesson Conclusion

(10 min)

Ask questions to reflect on problem solving:

- What strategy did you use to solve this problem?
- How do you know if your answer is correct?
- Is there another way to solve this problem?

## 8. Assessment (collection of data) / Evaluation (interpretation of data)

Observation and anecdotal notes on which strategies are used and students accuracy.

### **Brief Summary of the Book “Shark Swimathon” by Stuart Murphy ISBN**

**006446735X:**

This story is about a group of sharks that want to go to the state swim meet. In order to get there they have to be able to swim 75 laps. Each day the sharks swim laps, trying to swim 75 as fast as they can. At the end of the day the coach tallies up how many laps the sharks have swam, and subtracts it from the number of laps left to swim. Each time the coach subtracts, the students can see how he did it. The coach also explains how he subtracted the numbers.

### **Critique of the book:**

After reading the Hellwig, Monroe, and Jacob’s (2000) article on making informed decisions when choosing books for mathematics instruction, we decided that “Shark Swimathon” by Stuart Murphy would be a high-quality choice. The book is able to successfully show students how to subtract 2-digit numbers while connecting it to a real life event. Although sharks may not really swim laps in a pool, students are able to see themselves in the sharks. They might have gone through a similar experience and can see why subtraction is an important concept to know. Here are our rankings for “Shark Swimathon” based on Hellwig, Monroe, and Jacob’s (2000) five categories for evaluating mathematic books:

### Accuracy

We would give the accuracy of this book a rank of 5 because it covers the math concept well and correctly. Throughout the book the students can see how the coach subtracts two digit numbers and an explanation for how he did it. We really liked that the back of the book includes examples of other ways to subtract and activities for students, presenting more than one way of approaching the questions. The only reason the book did not deserve a rate of 6 is because it did not promote deeper thinking.

### Visual and Verbal Appeal

We would rate the visual and verbal appeal of this book as a 5. The pictures draw the student's in and keeps them entertained. The illustrator does this by using bright colours. The pictures also match the content of the story, moving the plot forward rather than distracting from it. One thing that stood out in our minds as visually appealing was how the illustrator incorporated the subtraction. It is like the coach's clipboard is zoomed in and the students can see what he is writing. The only reason we would not give the book a rating of 6 is because the story is somewhat predictable and drags on. However it is good that the students get to see more than one example of how the coach subtracts his two digit number.

### Connections

We believe the book deserves a ranking of 5 in terms of the connections students can make to it. Although the story is about sharks, students can still make a connection to the feelings the sharks go through. Most students are able to think of a time that they have worked with someone to reach a common goal. The way the author weaves the subtraction questions into the book allows students to concentrate on how the story progresses. The students are able to develop a genuine interest in the sharks and if they will meet their goal.

### Audience

We would give the book a rank of 4 for its ability to present concepts in a way that appeals to a variety of ages and skill levels. The story is intended mainly for grade 3 students because of its direct connection to the curriculum. The book is part of a series of stories written by Stuart Murphy. However, we do think that a variety of ages can enjoy the book because of its easy read, colourful pictures and interesting storyline. We also think this book would appeal to a variety of cultures and both genders because it is about sharks, not people. Students do not see only one race or one gender, they see sharks.

### “Wow” Factor

In terms of the “wow” factor, we would have to rank this book as a 3. It does not provide that extra “something” that Hellwig, Monroe and Jacob (2000) suggest are characteristics of the “wow” factor. The book does not appear to bring any new ideas or stimulate critical thinking about the math concept. It is also a fairly predictable book that some may see as boring. For a book to have the “wow” factor is dependent on the reader. This is a very subjective category; what is great for one person may not be the same for another.

Criteria/Level	Level 4	Level 3	Level 2	Level 1
<b>Level of Completeness</b>	Assignment has all required components in greater detail (book abstract, expectations, exploratory student activity/ task, questions, book critique, self-assess)	Assignment has all required components (children's book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)	Assignment has some required components (children's book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)	Assignment has few required components (children's book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)
<b>Questions</b>	Includes before/during/after questions; discussion questions are likely to interest learners and foster conceptual understanding. Most are open-ended and exploratory in nature.	Includes before/during/after questions; discussion questions are likely to interest learners and foster conceptual understanding. Some are open-ended and exploratory in nature.	Includes one/few of before/during/after questions; some discussion questions may interest learners and foster conceptual understanding. One/few are open-ended and exploratory in nature.	Lacks before/during/after questions; discussion questions are not likely to interest learners and foster conceptual understanding. None are open-ended and exploratory in nature.
<b>Quality of Writing</b>	The lesson has very few spelling/grammar errors. Overall writing quality is excellent and articulate. Activity is clearly defined and clear connections made to the expectations.	The lesson is mostly free of spelling/grammar errors. Overall writing quality is clear and articulate. Activity is clearly defined and clear connections made to the expectations.	The lesson has a number of spelling/grammar errors. Overall writing quality is unclear and satisfactory. Activity is unclearly defined and lacks connections made to the expectations.	The lesson has many spelling/grammar errors. Overall writing quality is poor and unsatisfactory. Activity is missing/unclear and lacks connections made to the expectations.
<b>Book Critique</b>	Critique of the book is very well-written, and is based on HMJ article. Each of five categories is treated separately and includes much detail.	Critique of the book is well-written, and is based on HMJ article. Each of five categories is treated separately and in adequate detail.	Critique of the book is somewhat articulate, and is based on HMJ article. Categories are not treated separately and lacks specificity.	Critique of the book is poorly written, and/or not based on HMJ article. Categories are not treated separately

**Comments:**

**Overall Assessment: 20 / 20%**

We believe we deserve a mark of 20 because we have fulfilled all the components of the assignment and more. We put a lot of time and effort into completing this assignment. We worked well together to finish this assignment in a timely and fair manner.

## References

Hellwig, Stacey J., Monroe, Eula Ewing, and Jacob, James S. (2000). Making Informed Choices: Selecting Children's Trade Books for Mathematics Instruction. Retrieved January 26, 2009 from <http://www.nipissingu.ca/faculty/danj/DOCS/HELLWIG%20ON%20SELECTING%20TEXTS.pdf>