***Lesson Plan Template for\_\_EE9 summer job\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. “Thinking Through a Lesson Protocol: Successfully Implementi ng High-Level Tasks.”

*Mathematics Teaching in the Middle School 14* (October 2008): 132-138.

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| **PART 1: SELECTING AND SETTING UP A MATHEMATICAL TASK** | |
| What are your mathematical goals for the lesson? (i.e., what do you want  students to know and understand about mathematics as a result of this lesson?) | EE9: Using variables to represent two quantities in a real-world problem that change in relationship to one another. |
| What are your expectations for students as they work on and complete this task?   What resources or tools will students have to use in their  work that will give them entry into, and help them reason through, the task?   How will the students work—  independently, in small groups, or in pairs—to explore this task?   * How will students record and report their work? | Independent  Pairs  Blank Paper  Graph Paper  Pattern Blocks |
| How will you introduce students to the activity so as to provide access to *all*  students while maintaining the cognitive demands of the task? | Bill wants to earn $135 this summer. He already has $42. If he earns $15 a week, at what week will he have enough to reach his goal?  (answer: 6.2 = 7 weeks) |

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| **PART 2: SUPPORTING STUDENTS’ EXPLORATION OF THE TASK** | |
| As students work independently or in small groups, what questions will you ask to—   help a group get started or make progress on the task?   focus students’ thinking on the  key mathematical ideas in the task?   assess students’ understanding of  key mathematical ideas, problem- solving strategies, or the representations?   advance students’ understanding  of the mathematical ideas? | Ask questions according to the type of solution they are using:  Repeated addition  Chart  Graph  Number Line  Equation |
| How will you ensure that students remain engaged in the task?   What assistance will you give or what questions will you ask a  student (or group) who becomes  quickly frustrated and requests more direction and guidance is  solving the task?   What will you do if a student (or group) finishes the task almost  immediately? How will you  extend the task so as to provide additional challenge? | What do you know?  What are you trying to figure out? Can you draw a picture of this?  Can you prove your answer?  Could you create a formula that would allow you to figure out how much money I made on a given week? |

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| **PART 3: SHARING AND DISCUSSING THE TASK** | |
| How will you orchestrate the class discussion so that you accomplish your mathematical goals?   Which solution paths do you want to have shared during the  class discussion? In what order will the solutions be presented? Why?   What specific questions will you ask so that students will—  1. make sense of the  mathematical ideas that you want them to learn?  2. expand on, debate, and question the solutions being shared?  3. make connections among the different strategies that are presented?  4. look for patterns?  5. begin to form generalizations?  What will you see or hear that lets you know that *all* students in the class  understand the mathematical ideas that  you intended for them to learn? | Before participants begin sharing strategies say, “Make sure you pay attention because I will call on someone to explain the strategy that was shared in their own words.”  The following is a suggested progression to present students work:   1. Repeated addition, or a number line 2. Table (T-chart) 3. Graph   How far did you go over from point to point?  How far did you go up from point to point?  Introduce idea of slope and rise over run.  How are the table and the graph similar? How are they different?   1. Equation   Sample questions to ask during the discussion:  Can you explain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’s strategy on your own words?  Did anyone solve it the same way?  Which way is more efficient?  Now Bill wants to buy a baseball bat which costs $382. He already has $135. If he now earns $30 a week, at what week will he have enough to reach his goal?  (answer: 8.2 = 9 weeks)  Higher end students: His brother agrees to pay $150 toward the bat. How many weeks will it take Bill to buy the bat?  (answer: 3.2 = 4 weeks) |

EE 9

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