NH Adult Education Lesson Plan Template

Teacher Name: Bridget Barker  
Location of Adult Education Center: Exeter

Lesson: Generalize and Analyze Patterns  
Unit: Algebraic Thinking

Standards: Adult Ed Math Guidebook, pp. 193-195: Algebraic Thinking, Expressions and Equations:
3a. Generate a number pattern that follows a given rule
3b. Identify apparent features of a pattern that were not explicit in the rule itself
6c. Use variables to represent numbers and write expressions to solve real world or mathematical problems
6n. Identify, represent, and generalize patterns using expressions and equations

Purpose of Instruction:
• What key concepts or procedures will be taught?
  Students will be taught how to generalize a pattern using an algebraic expression.
• What purposes or objectives will I explicitly communicate to students?
  I can analyze a pattern to find the rule that it follows.
  I can write an algebraic expression to generate a pattern.

Materials Needed:
• What materials will be needed?
  Pattern handouts
• What advance preparation is needed?
  Choose patterns to introduce and practice which will fit with particular class.
  Figure out all of the expressions to represent each pattern.

Introduction & Explanation:
• How will I get and hold students’ attention?
  I will use real-life examples from students jobs and/or interests to look for patterns:
    ❖ http://www.thirteen.org/get-the-math/category/the-challenges/ (videos showing math and giving a challenge in: restaurant, music, videogames, fashion, basketball)
    ❖ Landscaping - how to estimate jobs; will it cost less if you have more than one in a neighborhood?
    ❖ Catering - how do you estimate a party for 10 people, 25 people, or 100 people without figuring out every detail every time and not lose money or overestimate and not get the job?
    ❖ Tree work - cost of cutting down a whole tree vs a few limbs or a few trees?

• How will I tie lesson objectives to student interests and previous classroom activities?
  Lesson shows how to use algebra equations to estimate cost in various business connected to student interests and/or jobs. Extends their foundational math skills (numbers and operations) to algebra.
• What questions might I ask to stimulate student thinking?
  Is there a way to predict what the cost of the job will be without having to do figure it out for every amount/size (depending on the scenario used)? Is there a pattern?
How will I introduce and explain key skills and concepts (e.g. inductive method, mini-lecture, demonstration, notes, etc.)?

Inductive method: Class will work through the first pattern using trial and error. Whole group work with a few more patterns and then small group work on other patterns. Groups will report out and we’ll test to see if the equations work.

Modeling:

- How will I model this skill or strategy for my students (e.g. exemplars, demonstrations, discussions)?
  I will model the first few patterns as needed after the students have a chance to try them out.

- How will I break complex skills or bodies of information into understandable components?
  I will use this handout with them and will give them individual copies of all of the patterns that we will use in class. The handout walks them through the steps for figuring out a pattern.

Guided Practice:

- How will students practice using the skill or concept targeted by the standard?
  They will work in small groups to try finding the rule for other patterns.

- How will I gradually withdraw support as students become capable of independent performance?
  I will have them try more patterns first in small groups with my assistance as needed and then on their own.

Evaluation of Student Understanding:

- How will I evaluate students’ understanding and their readiness to move forward?
  By their success with more complex patterns and their ability to figure them out with less or no assistance from me. (I will be walking around and asking questions to check understanding.)

- How will I correct misunderstandings and reinforce learning?
  I will ask questions to guide their thinking, redirect them to the process outline, and reteach as needed.

- What activities will I suggest for enrichment and remediation?
  I would have them try this challenge.

Reflection, Closure, & Connection:

- How will I engage students in reflecting on what they have learned?
  I would have them try to solve this challenge.

- What will I use to draw ideas together for students at the end?
  I will go back to the initial questions about how to accurately estimate jobs and link to spreadsheets.

- What lessons can I preview for students that will follow as a result of this lesson?
  There would be more practice with these types of problems and then we would look at how they relate to other algebra problems.
Here's a sample form filled in for this pattern:

Name: [Name]
Pattern: [Pattern]
Date: [Date]

1. Draw the next step:

2. Draw a table with step 27:

<table>
<thead>
<tr>
<th>Step 27</th>
<th># of squares</th>
<th>A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>