Strand: Pattern and algebraic reasoning
Band: Primary years
Standard: 3
Year Level: 5

Key Idea
Students identify, describe, construct, represent and predict patterns and relationships when working with data, measuring and calculating. They relate these patterns and relationships to their everyday lives. [F] [Id] [T] [KC1] [KC2] [KC6]

Students employ everyday language and mathematical symbols to represent and communicate their generalisations about mathematical situations and structures. [Id] [C] [KC2]

Outcome
3.9 Describes and generalises relationships between measurable attributes as patterns and explains the impact of varying one aspect of the relationship. [F] [T] [KC1] [KC2]
3.10 Analyses, creates and generalises numerical and spatial patterns and solves problems with such patterns. [T] [C] [KC6]
3.11 Uses mathematical representations to make connections and analyse change. [In] [T]

Task/Activities
1. Explore patterns with matches, showing sequence of repeated shapes.
2. Identify number of matches required to make each pattern which forms the sequence.
3. Use a table to display this discovery.
4. Write a formula to show this.

Examples of evidence towards achievement of outcomes
Students:
- Explore a range of repetitive patterns.
- Relate table to design.
- Use mathematical language and symbols to document findings.
- Identify and write a formula.
Patterning and Algebra

Pattern:

1st  2nd  3rd  4th

Number of matches needed

4   8   12  16

Table:

<table>
<thead>
<tr>
<th>Pattern Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>……</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of matches</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>……</td>
</tr>
</tbody>
</table>

Formula:

Number of matches needed = pattern number x 4

Dee-Yee made this matchstick pattern:

1st  2nd  3rd

Draw the next member.

Make the table.

Write the formula for finding the number of matchsticks.