Outdoor Magic Number Squares
A problem solving challenge involving the physical manipulation of data.

Background
A magic number square is a grid in which every row, column and diagonal adds up to the same number (the magic number.) It is a novel way for students to problem solve through trial and error, consolidate number bonds and work as a team.

15 is the magic number for a 3x3 magic square in which the numbers 1-9 are all used only once.

34 is the magic number for a 4x4 magic square in which the numbers 1-16 are all used only once.

Equipment
- Sticks
- Chalk
- Small tokens such as pine cones, pebbles, shells, conkers or seeds

Activity
1. Small groups draw a 3x3 grid with chalk or create one out of sticks.

2. Can the pupils see how the grid size is related to the numbers used within it with reference to square numbers?

3. Challenge them to create a magic number square in which each row, column and diagonal of the grid will add up to 15.

4. Collect 45 individual loose tokens (that is the total of 3 columns each adding up to 15.)

5. With trial and error the tokens must be arranged so that the numbers 1-9 each only appear once in the grid.

Solution

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

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