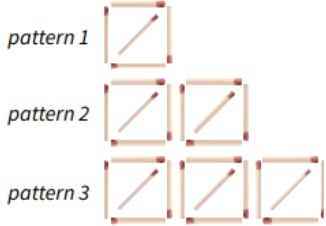
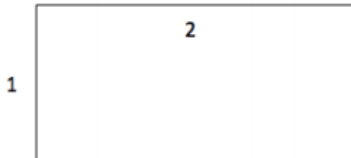
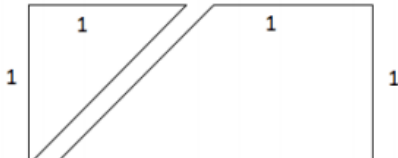


<p>Day 1 6174</p>	<p>Choose any four-digit number whose digits are not equal and arrange the digits to form the largest possible number.</p> <p>Now reverse this number and subtract it from the larger number.</p> <p>Take the digits that make up your answer and again rearrange them to form the largest possible number.</p> <p>Reverse this new number and subtract it from the larger.</p> <p>Continue this process.</p> <p>An example is shown below.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>8421...1248...7173</p> <p>7731...1377...6354</p> <p>6543...3456...3087</p> <p>8730...0378...8352</p> <p>8532...2358...6174</p> </div> <ol style="list-style-type: none"> 1. If you begin with any four-digit number whose digits are not all equal, will the above process always product 6174? 2. What happens when this process is applied to three-digit numbers whose digits are not all equal? Is there a special number in this case? 3. What happens when the process is applied to five-digit numbers? Is there a special number in this case? 4. You may wish to continue this investigation for numbers with more digits.
<p>Day 2 What's the Connection?</p>	<p>If $5 + 3 = 835$ and $2 + 4 = 642$ and $7 + 0 = 707$</p> <p>Then what is $6 + 1$?</p> <p>$6 + 1 =$ <input style="width: 50px; height: 20px; border: 1px solid black;" type="text"/></p>

<p>Day 3 Patterns with matchsticks</p>	<p>Raxa is making patterns with matchsticks.</p> <p>1. How many matchsticks are used to make: pattern 1, pattern 2, pattern 3.</p> <p>2. Without the help of a diagram, find the number of matchsticks required to make: pattern 4, pattern 10, pattern n.</p> <p>3. Which pattern will have: a) 21 matches b) 81 matches</p> <p>Investigate other patterns with matchsticks.</p> <div style="text-align: right;">  <p>pattern 1</p> <p>pattern 2</p> <p>pattern 3</p> </div>
<p>Day 4 Wrecked angle</p>	<p>Start with a 2 by 1 rectangle. Cut out these two shapes.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p>What new shapes can you make with them? Name them and write down about their properties.</p>

Day 5
Matchstick
patterns

For this investigation you will need a 16-pin board or
use the squares of dots below.
How many ways can you bisect it into two identical parts?
Keep a record of your findings.
Investigate dividing the board into three equal parts.

