Pascal's Patterns
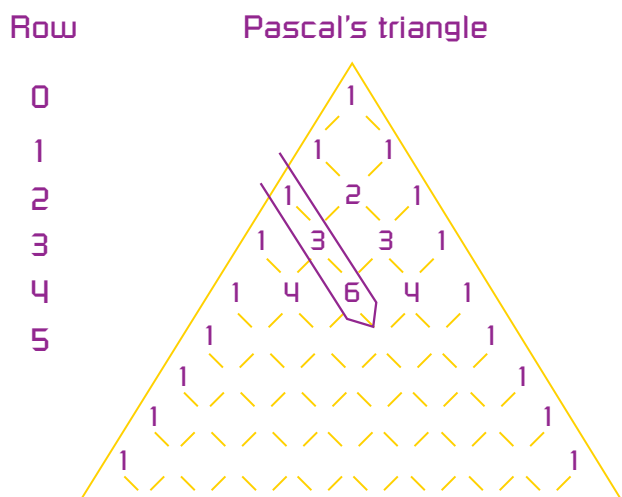
You need: a photocopy of Pascal's triangle (see copymaster), a classmate
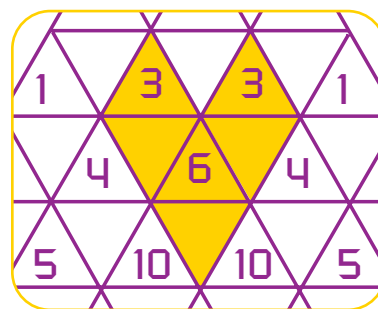
Pascal's triangle is a grid of numbers in a triangle pattern.
It is made in the following way:
- The first and the last number in each row is always 1.
- The numbers in between are formed by adding the two numbers above.

Row — Pascal's triangle

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Row        Pascal's triangle
 0                 1
 1              1     1
 2           1     2     1
 3        1     3     3     1
 4     1     4     6     4     1
 5   1                          1
   1                              1
 1                                  1
1                                     1
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1. Copy the Pascal's triangle above and complete the next four rows.
   Check your numbers from the Pascal's triangle photocopy.

2. The numbers along the arrow in the diagram above are 1, 3, and 6.
   a. List the next six numbers on this arrow line.
   b. Describe the pattern they make. You can use numbers, words, or diagrams.

3. Using your copies of Pascal's triangle, colour in the following numbers and discuss
   with a classmate the pattern that they each make:
   a. odd numbers
   b. multiples of 3
   c. multiples of 5
   d. multiples of a prime number.
   Discuss with your classmate whether there are any
   reasons for the patterns.

With your classmate, investigate what happens to the patterns in question **3a–d** as you
extend Pascal's triangle.