

Finding Pathways via Pascal's Method Iterative Processes

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Pascal's Method

Recall that Pascal's Triangle was built using an iterative process.

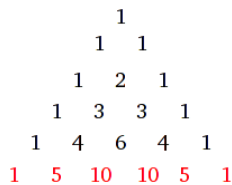
Each term in the triangle was the sum of the two terms immediately above it.

We can use the same process (adding the two previous terms) to solve a variety of problems.

Counting Paths in an Array

Example

In how many ways can the word PASCAL be constructed, moving downward?

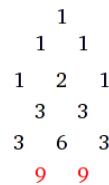


Using the RoS, there are 32 ways to spell PASCAL.

Counting Paths in an Array

Example

In how many ways can the word PASCAL be constructed, moving downward?

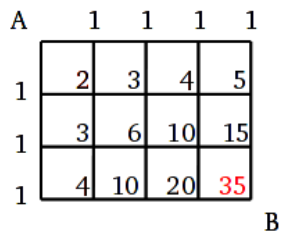


There are 18 ways to spell PASCAL.

Counting Paths on a Grid

Example

How many paths lead from A to B, moving only east and south?

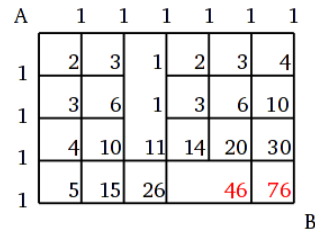


There are 35 paths from A to B.

Counting Paths on a Grid

Example

How many paths lead from A to B, moving only east and south?

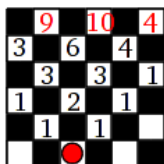


There are 76 paths from A to B.

Counting Paths on a Checkerboard

Example

In how many ways can the checker move to the top row, if it can only move diagonally forward?



There are 23 paths from *A* to *B*.

Counting Paths on a Checkerboard

Example

In how many ways can the checker move to the top row, if it can jump over an opposing piece?



There are 13 paths from *A* to *B*.

Questions?

