Pascal's Triangle

Expand Arrange terms in descending order of x.

$$(x+y)^0 =$$

$$(x+y)^1 =$$

$$(x+y)^2 =$$

$$(x+y)^3 =$$

$$(x+y)^4 =$$

$$(x+y)^5 =$$

Coefficients

$$(x + y)^0$$

$$(x + y)^1$$

$$(x + y)^2$$

$$(x + y)^3$$



$$(x + y)^4$$











$$(x + y)^5$$











Patterns in Pascal's Triangle

There are patterns in Pascal's Triangle and in the expansion of $(a + b)^n$.

- Each term in the expansion of $(a + b)^n$ is the product of a number from Pascal's Triangle, a power of a, and a power of b.
- The coefficients on the terms correspond to the numbers in the n^{th-}row in Pascal's Triangle.
- In the expansion, the exponents of *a* start at *n* and decrease to 0. The exponents of *b* start at 0 and increase to *n*.
- The exponents on *a* and *b* always add to *n*.

Using Pascal's Triangle

1. Expand $(x-2)^5$ using Pascal's triangle.

2. Expand $(5x + 2y)^3$ using Pascal's triangle.