

2.5 – Binomial Expansions (Using Combinations)

- **binomial** → a _____ which include _____
- **binomial expansion** → a binomial raised to nth power such as $(a + b)^n$, where n is a whole number, where the _____, the _____ and the _____, and the _____
- There are three ways to show a binomial expansion:
 - 1.) Box Method → Organize way to expand a binomial but can be time consuming.
 - 2.) Pascal's Triangle → Systemic way to expand a binomial and contains multiple patterns
 - 3.) Combinations → Condensed way to expand a binomial and contains easier patterns
- Let's look at a simple example: $(x + 4)^3$ → Produce the answer through the 3 different methods:

| Box Method | Pascal's Triangle | Combinations |
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Examples: Complete each problem below by expanding the binomial through combinations.

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| 1.) Expand: $(2x + 5)^4$ | 2.) Find 3 rd term: $(x^3 - 2)^7$ | 3.) Find middle term: $(3x^2 - 4y^4)^{10}$ |
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