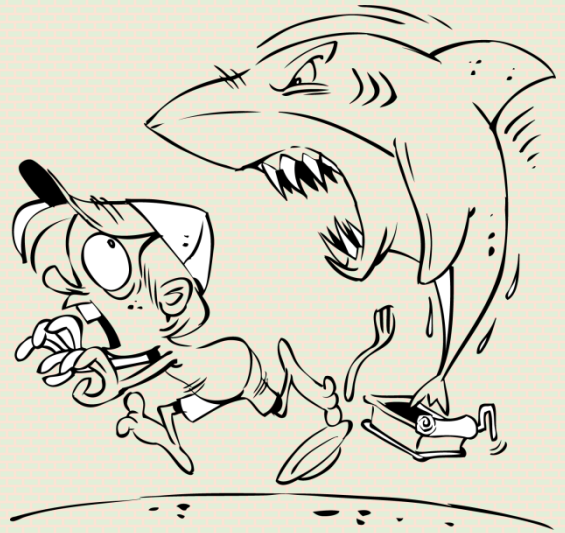# BINOMIAL THEOREM FOR EXPANSION

Binomial Theorem for Expansion is used to expand the powers of a binomial expression.

Formula of binomial expansion is:

$$(1 + x)^n = \sum_{k=0}^{n} \binom{n}{k} x^k$$

Example

$(a+b)^2 = a^2+2ab+b^2$

Using Binomial Theorem for Expansion

EXAMPLE

EXPAND $(3x-4)^3$

WE KNOW THAT: $(a+b)^3 = a^3+3a^2b+3ab^2+b^3$ Using Binomial Theorem of Expansion

Putting   a=3x and b=-4

So, $(3x-4)^3 = (3x)^3+3(3x)^2(-4)+3(3x)(-4)^2+(-4)^3$ Putting a=3x and b=-4

$= (3^3 \cdot x^3)+3(3^2 \cdot x^2)(-4)+3(3x)(16)+(-64)$ Using $(ab)^2 = a^2 \cdot b^2$

$= 27x^3+3(9x^2)(-4)+(144x)-64$

$= 27x^3+(-108x^2)+144x-64$

$= 27x^3-108x^2+144x-64$

Meets: Common Core Standard High School – HSA-APR.C.5