

Friday 10/11/19

1. Grab Notes & Calc
2. Warm-Up/HW Check
3. Binomial Thm Notes
4. Partner Practice
5. HW

**A SLICE OF APPLE PIE  
IN JAMAICA IS  
\$2.00. IT IS \$2.50 IN  
THE BAHAMAS. THESE  
ARE THE PIE RATES  
OF THE CARIBBEAN**

**Topic:** Binomial Theorem

**Name:** \_\_\_\_\_

**What am I learning today?**

**PEMDAS**

**Warm Up**  
Properties of Exponents

$-1(2^2)$

Simplify

1)  $-2^2 = -4$

2)  $(5x)^4$

$(-2)^2 = 4$   
 $= 5^4 x^4$   
 $= 625 x^4$

$3^6 = 729$

3)  $(3^2)^3$

$(9)^3 = 729$

$1048576 x^5$

$4^{10} x^5 =$

4)  $(4^2 x)^5$

$= (16x)^5$

$= 16^5 x^5$

$= 1048576 x^5$

**Notes**  
Pascal's Triangle

Expand the following binomials:

1)  $(x + 1)^2 = (x+1)(x+1)$

$= x^2 + x + x + 1$   
 $= x^2 + 2x + 1$

2.  $(x - 4)^3 = (x-4)(x-4)(x-4)$

$= (x^2 - 8x + 16)(x-4)$

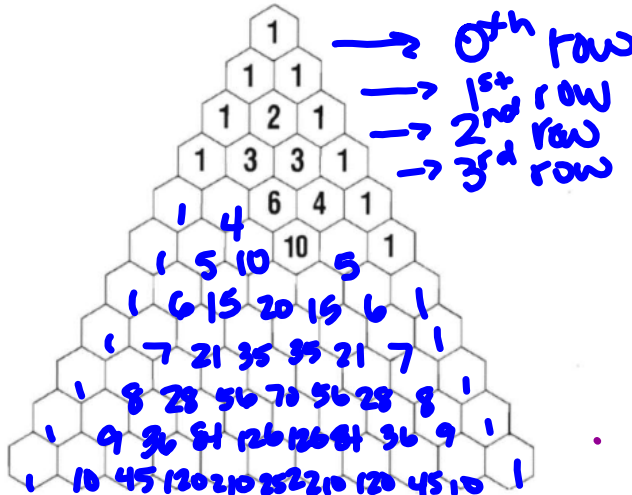
3.  $(x - 4)^7$

$(x-4)(x-4)(x-4)(x-4)(x-4)(x-4)(x-4) = x^7 - 4x^6 - 8x^5 + 32x^4 + 16x^3 - 64x^2 - 12x + 48x - 64$

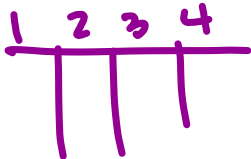
The **Binomial Theorem** is a quick way of expanding (or **multiplying**) a binomial that has been raised to a power.

The first step in expanding a binomial requires a special triangle called **Pascal's** triangle.

This triangle will show us the **COEFFICIENTS** we must use for the theorem.



$(x-4)^7$   
**Steps**



**Steps for expanding a binomial**

We will set up a total of 4 columns.

1) Column 1: Use Pascal's Triangle. Use the exponent to tell you the row number.

2) Column 2: Raise the first term to a power. Start at the highest exponent

3) Column 3: Raise the second term to a power. Start at 0.

4) Multiply across each row. Make sure the answer is in standard form.

**Topic:** Finding Inverses Algebraically

**Date:** \_\_\_\_\_

**Examples**

Ex 1:  $(x + 3)^5 = x^5 + 15x^4 + 90x^3 + 270x^2 + 405x + 243$

TRIANGLE	1 <sup>ST</sup> TERM	2 <sup>ND</sup> TERM	MULTIPLY
1 5 10 10 5 1	$(x)^5$ $(x)^4$ $(x)^3$ $(x)^2$ $(x)^1$ $(x)^0$	$(3)^0$ $(3)^1$ $(3)^2$ $(3)^3$ $(3)^4$ $(3)^5$	$1 \cdot x^5 \cdot 1 = x^5$ $5 \cdot x^4 \cdot 3 = 15x^4$ $10 \cdot x^3 \cdot 9 = 90x^3$ $10 \cdot x^2 \cdot 27 = 270x^2$ $5 \cdot x \cdot 81 = 405x$ $1 \cdot 1 \cdot 243 = 243$

Ex 2:  $(x - 4)^6 = x^6 - 24x^5 + 240x^4 - 1280x^3 + 3840x^2 - 6144x + 4096$

TRIANGLE	1 <sup>ST</sup> TERM	2 <sup>ND</sup> TERM	MULTIPLY
1 6 15 20 15 6 1	$(x)^6$ $(x)^5$ $(x)^4$ $(x)^3$ $(x)^2$ $(x)^1$ $(x)^0$	$(-4)^0$ $(-4)^1$ $(-4)^2$ $(-4)^3$ $(-4)^4$ $(-4)^5$ $(-4)^6$	$1 \cdot x^6 \cdot 1 = x^6$ $6 \cdot x^5 \cdot -4 = -24x^5$ $15 \cdot x^4 \cdot 16 = 240x^4$ $20 \cdot x^3 \cdot -64 = -1280x^3$ $15 \cdot x^2 \cdot 256 = 3840x^2$ $6 \cdot x \cdot -1024 = -6144x$ $1 \cdot 1 \cdot 4096 = 4096$

**Examples (CONT)**

Ex 3:  $(a + b)^4$

Ex 4:  $(5x + 2)^3 = 125x^3 + 150x^2 + 60x + 8$

TRIANGLE	1 <sup>ST</sup> TERM	2 <sup>ND</sup> TERM	MULTIPLY
1 3 3 1	$(5x)^3$ $(5x)^2$ $(5x)^1$ $(5x)^0$	$(2)^0$ $(2)^1$ $(2)^2$ $(2)^3$	$1 \cdot 125x^3 \cdot 1 = 125x^3$ $3 \cdot 25x^2 \cdot 2 = 150x^2$ $3 \cdot 5x \cdot 4 = 60x$ $1 \cdot 1 \cdot 8 = 8$

**Summary**

Summarize the lesson in your own words