

Starter  
 Homework Questions  
 Calendar Math  
 1.4 Binomial Theorem  
 HW 1.4 Binomial Theorem Worksheet

Aug 31-2:46 PM

The process in statistics of forming conclusions about the population of interest.

Includes proper methods of sampling the practices of statistics to analyze data.

**Inference**

Since 20% of the 250 teens in our sample text while driving, infer that 20% of all teens in Utah text while driving.

20% of all teens text while driving.

Sep 1-9:51 AM

The process of selecting our sample in a way that all are equally likely to be chosen.

**Non-Biased**

**Random Sampling**

40 people are randomly selected from our population using a random digits generator.

Every 5<sup>th</sup> person is selected to be in our sample.

Sep 1-9:57 AM

Homework Questions...

2)  $3m^4 - 30m^2$

$3m^2(m^2 - 10)$

Aug 31-2:46 PM

$x^3 - 36x$

$x(x^2 - 36)$

$x(x-6)(x+6)$

$(x+6)(x-6)$

Sep 1-10:03 AM

**Binomial Theorem:** a formula for finding any power of a binomial without multiplying at length.  $(x+2)(x+2)(x+2)(x+2)(x+2)$

$(x+2)^5$

Calculator: nCr or n choose r

**Pascal's Triangle:** is a triangle of numbers where each number is the two numbers above it added together (except for the edges, which are all "1").

1  
 1 1  
 1 2 1  
 1 3 3 1  
 1 4 6 4 1  
 1 5 10 10 5 1

Aug 31-2:09 PM

$$\begin{aligned}
 (a+b)^0 &= 1 \\
 (a+b)^1 &= a+b \\
 (a+b)^2 &= a^2 + 2ab + b^2 \\
 (a+b)^3 &= a^3 + 3a^2b + 3ab^2 + b^3 \\
 (a+b)^4 &= a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4 \\
 (a+b)^5 &= a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5
 \end{aligned}$$

Sep 1-10:13 AM

Examples

1)  $(x+4)^4$

$x^4$	$16x^3$	$96x^2$
$256x$	$256$	

$a: x$   
 $b: 4$   
 $a^4 \cdot x^4$   
 $4a^3b \cdot 4(x)^3(4) = 16x^3$   
 $6a^2b^2 \cdot 6(x^2)(16) = 96x^2$   
 $4ab^3 \cdot 4(x)(64) = 256x$   
 $b^4 \cdot 256$

$x^4 + 16x^3 + 96x^2 + 256x + 256$

Aug 31-2:50 PM

Homework

5)  $(2n^4 - 1)^5$

$a: 2n^4$   
 $b: -1$   
 $a^5 \cdot (2n^4)^5 = 32n^{20}$   
 $5a^4b \cdot 5(2n^4)^4(-1) = 5(16n^{16})(-1) = -80n^{16}$   
 $10a^3b^2 \cdot 10(2n^4)^3(-1)^2 = 10(8n^{12}) = 80n^{12}$   
 $10a^2b^3 \cdot 10(2n^4)^2(-1)^3 = -10(4n^8) = -40n^8$   
 $5ab^4 \cdot 5(2n^4)(-1)^4 = 5(2n^4) = 10n^4$   
 $b^5 \cdot (-1)^5 = -1$

$32n^{20} - 80n^{16} + 80n^{12} - 40n^8 + 10n^4 - 1$

Aug 31-2:51 PM

$(5x+1)^2$

$a: 5x$   
 $b: 1$   
 $1a^2 \cdot (5x)^2 = 25x^2$   
 $2ab \cdot 2(5x)(1) = 10x$   
 $1b^2 \cdot (1)^2 = 1$

$25x^2 + 10x + 1$

Sep 1-10:38 AM

find coef of  $mn$  - coef of  $a \cdot b$

$(9m+3n)^2$

$2ab \cdot 2(9m)(3n) = 18m(3n) = 54mn$   
 $a: 9m$   
 $b: 3n$

$54$

Sep 1-10:42 AM

7) c. of  $y$   $(y-2)^3$

$3ab^2 \cdot 3(y)(-2)^2 = 3(y)(4) = 12y$   
 $a: y$   
 $b: -2$

$12$

Sep 1-10:45 AM