

Name: KeyBinomial Expansion Practice #2

Expand the following binomials:

1.  $(a+b)^3$

$$a^3 + 3a^2b + 3ab^2 + b^3$$

2.  $(2+x)^5$

$$32 + 80x + 80x^2 + 40x^3 + 10x^4 + x^5$$

3.  $(y+4)^7$

$$y^7 + 28y^6 + 336y^5 + 2240y^4 + 8960y^3 + 21504y^2 + 28672y + 16384$$

4.  $(6+x)^6$

$$46656 + 46656x + 19440x^2 + 4320x^3 + 540x^4 + 36x^5 + x^6$$

5.  $(x-y)^5$

$$x^5 - 5x^4y + 10x^3y^2 - 10x^2y^3 + 5xy^4 - y^5$$

6.  $(x-2y)^9$

$$x^9 - 18x^8y + 144x^7y^2 - 672x^6y^3 + 2016x^5y^4 - 4032x^4y^5 + 5376x^3y^6 - 4608x^2y^7 + 2304xy^8 - 512y^9$$

7.  $(-x+4y)^4$

$$x^4 - 16x^3y + 96x^2y^2 - 256xy^3 + 256y^4$$

8.  $(2m-3q)^6$

$$64m^6 - 576m^5q + 2160m^4q^2 - 4320m^3q^3 + 4860m^2q^4 - 2916mq^5 + 729q^6$$

9. Find the sum of the 12<sup>th</sup> row of Pascal's Triangle.

$$1 + 12 + 66 + 220 + 495 + 792 + 924 + 792 + 495 + 220 + 66 + 12 + 1 = 4096$$
  
or  $2^{12} = 4096$

10. Name some patterns that are found in Pascal's Triangle.