

## 1.11 Binomial Theorem

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

Hour: \_\_\_\_\_ Date: \_\_\_\_\_

Expand the binomials on #1 - 4.

1.  $\binom{5}{0} \binom{10}{5} \binom{15}{10} \binom{10}{5} \binom{5}{0}$

$$(x - 2k)^5 = x^5 + 5x^4 \cdot (-2k)^1 + 10x^3 \cdot (-2k)^2 + 10x^2 \cdot (-2k)^3 + 5x \cdot (-2k)^4 + (-2k)^5$$

$$\left[ x^5 - 10x^4k + 40x^3k^2 - 180x^2k^3 + 80xk^4 - 32k^5 \right]$$

(4 6 4)

2.  $(3b + m)^4$

$$(3b)^4 + 4(3b)^3(m) + 6(3b)^2(m)^2 + 4(3b)(m)^3 + m^4$$

$$\left[ 81b^4 + 108b^3m + 54b^2m^2 + 12bm^3 + m^4 \right]$$

3.  $\binom{3}{0} \binom{3}{1} \binom{3}{2} \binom{3}{3}$

$$(5p - 2x)^3 = (5p)^3 + 3(5p)^2(-2x) + 3(5p)(-2x)^2 + (-2x)^3$$

$$\left[ 125p^3 - 150p^2x + 60px^2 - 8x^3 \right]$$

(1 6 15 20 15 6 1)

4.  $\binom{6}{0} \binom{6}{1} \binom{6}{2} \binom{6}{3} \binom{6}{4} \binom{6}{5} \binom{6}{6}$

$$y^6 + 6y^5(4a) + 15(y^4)(4a)^2 + 20y^3(4a)^3 + 15y^2(4a)^4 + 6y(4a)^5 + (4a)^6$$

$$\left[ y^6 + 24y^5a + 240y^4a^2 + 1280y^3a^3 + 3840y^2a^4 + 6144ya^5 + 4096a^6 \right]$$

5. What is the coefficient of the term containing  $b^4$  when the expression  $(b + 6)^7$  is expanded?

$$35(b^4)(6)^3$$

$$[7560]b^4$$

6. What is the coefficient of the term containing  $g^6$  when the expression  $(2g - 1)^9$  is expanded?

$$84(2g)^6(-1)^3$$

$$-1792$$