


Name Review for Test Date Answer Key

**Binomial Theorem for Expansion - Independent Practice Worksheet**

Expand the binomials using the Binomial Theorem.

- $(2x + 3y)^4$
- $(6x + 4y)^5$
- $(3x - 3y)^3$
- $(5x + 4y)^2$
- $(2x - 2y)^4$
- $(6x + 7y)^3$
- $(8x + 4y)^2$
- $(x + y)^7$
- $(4x - 3y)^4$
- $(5x + 2y)^3$



$$2. \frac{(6x + 4y)^5}{(x + y)^5}$$

$${}^5C_0 \quad {}^5C_1 \quad {}^5C_2 \quad {}^5C_3 \quad {}^5C_4 \quad {}^5C_5$$

$$1x^5 + 5x^4y^1 + 10x^3y^2 + 10x^2y^3 + 5x^1y^4 + 1y^5$$

$$1(6x)^5 + 5(6x)^4(4y)^1 + 10(6x)^3(4y)^2 + 10(6x)^2(4y)^3 + 5(6x)^1(4y)^4 + 1(4y)^5$$

$$1(7776x^5) + 5(1296x^4)(4y^1) + 10(216x^3)(16y^2) + 10(36x^2)(64y^3) + 5(6x)(256y^4) + 1(624y^5)$$

$$7776x^5 + 25920x^4y^1 + 34560x^3y^2 + 23040x^2y^3 + 7680xy^4 + 1024y^5$$

$$3. \frac{(3x - 3y)^3}{(x + y)^3}$$

$${}^3C_0 \quad {}^3C_1 \quad {}^3C_2 \quad {}^3C_3$$

$$1x^3 + 3x^2y^1 + 3xy^2 + 1y^3$$

$$1(3x)^3 + 3(3x)^2(-3y)^1 + 3(3x)(-3y)^2 + 1(-3y)^3$$

$$1(27x^3) + 3(9x^2)(-3y) + 3(3x)(9y^2) + (-27y^3)$$

$$27x^3 - 81x^2y + 81xy^2 - 27y^3$$

5.  $(2x - 2y)^4$

$(x+y)^4$

${}^4C_0 \quad {}^4C_1 \quad {}^4C_2 \quad {}^4C_3 \quad {}^4C_4$

$1x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + 1y^4$

$1(2x)^4 + 4(2x)^3(-2y) + 6(2x)^2(-2y)^2 + 4(2x)(-2y)^3 + 1(-2y)^4$

$1(16x^4) + 4(8x^3)(-2y) + 6(4x^2)(4y^2) + 4(2x)(-8y^3) + 1(16y^4)$

$16x^4 - 64x^3y + 96x^2y^2 - 64xy^3 + 16y^4$

8.  $(x+y)^7$

${}^7C_0 \quad {}^7C_1 \quad {}^7C_2 \quad {}^7C_3 \quad {}^7C_4 \quad {}^7C_5 \quad {}^7C_6 \quad {}^7C_7$

$1x^7 + 7x^6y + 21x^5y^2 + 35x^4y^3 + 35x^3y^4 + 21x^2y^5 + 7xy^6 + 1y^7$

Done! :)

$$\begin{aligned}
 & 9. (4x - 3y)^4 \\
 & (x+y)^4 \\
 & {}^4C_0 \quad {}^4C_1 \quad {}^4C_2 \quad {}^4C_3 \quad {}^4C_4 \\
 & 1x^4 + 4x^3y^1 + 6x^2y^2 + 4x^1y^3 + 1y^4 \\
 & 1(4x)^4 + 4(4x)^3(-3y)^1 + 6(4x)^2(-3y)^2 + 4(4x)^1(-3y)^3 + 1(-3y)^4 \\
 & 1(256x^4) + 4(64x^3)(-3y) + 6(16x^2)(9y^2) + 4(4x)(-27y^3) + 1(81y^4) \\
 & 256x^4 - 768x^3y + 864x^2y^2 - 432xy^3 + 81y^4
 \end{aligned}$$

$$\begin{aligned}
 & 10. (5x + 2y)^3 \\
 & (x+y)^3 \\
 & {}^3C_0 \quad {}^3C_1 \quad {}^3C_2 \quad {}^3C_3 \\
 & 1x^3 + 3x^2y^1 + 3x^1y^2 + 1y^3 \\
 & 1(5x)^3 + 3(5x)^2(2y)^1 + 3(5x)^1(2y)^2 + 1(2y)^3 \\
 & 1(125x^3) + 3(25x^2)(2y) + 3(5x)(4y^2) + 1(8y^3) \\
 & 125x^3 + 150x^2y + 60xy^2 + 8y^3
 \end{aligned}$$