

ALGEBRAIC EXPANSION

Name: _____ () Class: _____ Date: _____

EXPAND AND SIMPLIFY THE FOLLOWING ...

TYPE ONE

a. $x(x - y)$

b. $x(2x - 3 + y)$

c. $3(4 + 5x)$

d. $xy(x + y)$

e. $2(x + 3y) + 2(2x - 2y)$

f. $3(y + 2) + y(2 + y)$

g. $3x - 2(x - 2)$

h. $5(x + 2) - 4(x - 3)$

i. $2y(x + y) - x(3y - x)$

j. $3(a - 10) - (6a + 13)$

TYPE TWO

a. $(2 + 3x)(4x + 5)$

b. $(a + 2)(a + 5)$

c. $(3x - 2)(x + 4)$

d. $(4x - 2)(3x + 1)$

e. $(x + 2)(x^2 - 5x + 3)$

f. $(x + 2y - 3)(x + 2y + 3)$

g. $(2x - 1)(5 - x) + 2(x + 2)(x - 1)$

h. $(2p^2 + p - 2)(p^3 - p + 3)$

i. $3n(5n - 6)(4n + 3)$

j. $3(3p - 2)(p + 1)$

TYPE THREE

a. $(3a + 2b)^2$

b. $(2x + y)^2$

c. $(a + 2)^2$

d. $(x - 3z)^2$

e. $(3a - 4b)^2$

f. $(1 - 7k)^2$

g. $2(1 - 3x)^2$

h. $(a + 4)^2 - 3$

i. $\left(-3x + \frac{1}{2}y\right)^2$

j. $\left(\frac{x}{2} - \frac{y}{4}\right)^2$

Challenge Yourself !

a. $(2k + 1)(k + 2) - (k + 3)^2$

b. $n^2 - (n - 2)(n + 2)$

c. $(x - 2)^2 - x + 1$

d. $2(5x + 2) - 3(2x - 3)$

e. $(2x - 5)(x + 8) - 2(x + 2)(x - 3)$

f. $(2a + 5b)^2 - (a + 3b)(a - 6b)$

g. $3 - [4t - 5(t - 6)]$

h. $-7s [(4s - 3) - (5s + 2)]$

Application Questions

1. Given that $p^2 + q^2 = 39$ and $pq = 3$, calculate the value of $(p + q)^2$.

2. Evaluate $4(a + b)^2$ given that $a^2 + b^2 = 15$ and $ab = -2$.

3. If $x^2 - y^2 = 80$ and $x + y = 20$, calculate the value of $x - y$.

4. Given that $(a + b)^2 = 256$ and $6ab = 54$, calculate the value of $4(a^2 + b^2)$.

5. Given that $x^2 + y^2 = 42$ and $xy = -16$, calculate the value of $(x - y)^2$.
