

Remove brackets and simplify :

1. $20 - (4 + 2)$; $a + (b + c)$; $2a + (3a + a)$.
2. $20 + (8 - 3)$; $a + (b - c)$; $6a + (4a - 2a)$.
3. $80 - [60 + 10 - 40 - (20 - 10) + 20] + 30 - (60 + 20)$.
4. $a - b - [c - d - (2c + d - 3b) + (2d - g)]$.
5. $a - x^2 - (x^2 + a) - [x^2 - (a + x) + a]$.
6. $9x^2 - [3y^2 - (x + y^2 - z) + 2x^2 - (3x + z) - 3y^2]$.
7. $(4x + 1) + (4x - 1) + 6x^2 + 1 - (2x^2 + 1) + \frac{6x^2}{4}$.
8. $(3 + x) - (18 - 5x^2) + (x + y) - (x - y)$.
9. $(x^2 + y^2) - (x - y^2) + (x^2 + 1) - (x - 1) - (x^2 - y^2)$.
10. Raise to the second power : x ; x^2 ; y^2 ; xy ; x^2y ; xyz ; xy^2z ; $x + y$; $x - y$; $x + 1$; $x^2 + y^2$; $3a + 2b$.
11. What is the square of the sum of two quantities? What is the square of the difference?
12. Raise to the third power : x^2 ; xy ; xyz ; x^2yz ; $x + y$; $x - y$; $2x + 2$; $3x - 1$; $4a + 2b$.
13. What is the cube of the sum of two quantities? What is the cube of the difference?
14. $(2 - 3y)^2 = ?$ $(3x - 4)^2 = ?$ $(x + 2y)^2 = ?$ $(3x - 6y)^2 = ?$
15. $(1 - x)^2 = ?$ $(2x + y)^2 = ?$ $(3x - 2)^2 = ?$ $(x - 3y)^2 = ?$
16. $(4x + a)^2 = ?$ $(2x - 3)^2 = ?$ $(4a + 3b)^2 = ?$ $(2a - 5)^2 = ?$
17. $(4x + 3y)^2 - (4x - 3y)^2 + (2x + y)^2 - (2x - y)^2$.
18. $(3a + 6b)^2 - (2a + 3b)^2 + (4a - 2b)^2 - (6a + b)^2$.
19. $(a + b)^2 - (a - b)^2 + (2a + 2b)^2 - (2a - 2b)^2$.
20. $(x + 1)^2 + (1 + 2x)^2 - (2x + y)^2 - (2x - 2y)^2$.

Separate into factors :

21. $4a^2$; $8a^2$; $16a^2b$; $12a^2b^2c$; $(a + 1)^2m$.
22. $ax + ay$; $a^2x - ay$; $a^2x^2 - x^2$; $a^2b - a^2x$.
23. $a^2 - b^2$; $a^2 + 2ab + b^2$; $x^2 + 2x + 1$; $x^2 - 1$.
24. $a^3 + 3a^2b + 3ab^2 + b^3$; $a^3 - b^3$; $a^3 + b^3$.
25. $4a^2 + 12ab + 9b^2$; $9x^2 + 54x + 81$; $9x^2 - 81$.
26. $8ab^3 - 4a^2b^2 + 12a^3b$; $16a^2b^2 - 8a^4b^4 + 16a^4b^2$.
27. $4x^2 + 2x + 4xy + 2y$; $8x + 16y + 4xy + 8y^2$.