Expanding Brackets

Expanding Brackets
In algebra, expanding brackets means to remove them. Brackets can be removed through multiplication. If there is a factor next to the brackets, we treat whatever is inside the brackets as a "package" and multiply everything in it.

EXAMPLE: Expand $4(x + 1)$

$$4(x + 1) = 4 \times (x + 1) = (4 \times x) + (4 \times 1) = \mathbf{4x + 1}$$

RECALL: Distributive Law

$$a \times (b + c) = (a \times b) + (a \times c)$$

$$a(b+c) = ab + ac$$

Instructions: Expand the expressions below, simplifying where possible.

1 $3(x + 4) + 9(x + 3)$	**2** $6(c + 5) + 3(5 - c)$
3 $8(j - 5) + 7(j + 3)$	**4** $7(m - 4) - 6(4 - m)$

5 | $2r(r + 3) + 7r(r + 9)$

6 | $11x(11x - 8) + 8x(6 - x)$

7 | $5(3x^2 - 6x) + 7x(y + 12)$

8 | $8(7c^2 + 3c) - 6c(c + 10)$

9 | $9s(s - 9s^2) + 7s(11 - 2s)$

10 | $7d^2(d + 6) - 8(e^2 - d^3)$

11 | $11t(4t + 7) + 4t(4t^2 + 6t)$

12 | $9e(8e + e^2) - 5e^2(12 - 3e)$

13 | $3p(7p - 6g) + 12(4pg + p^2)$

14 | $8j(j^2 - 3j^3) + j(8j - 14j^3)$

15

$4d(7d + e^2) + 8e(5e - 3de)$

16

$12o(o^2 - 8) - 4(o^3 + o)$

17

$6k(7 - 8k^2) + 8(8k^2 + 3k)$

18

$8m(7n + 6n^2) - m(7n^2 - 9)$

19

$7r(7r^2d - r) + 9r^2(5rd + 2)$

20

$13u(2u - v^3) + 4v^2(vu - 3)$

21

$11r(r + s^2) + 8s(7rs + 5s)$

22

$7f^2(7f + 8g) + 9g(8f^2 - 3)$

23

$6p(4q + 9p^2) - 5p(5p^2 - 7q)$

24

$9n^2(4m - 5n^2) + 8(6n^4 - 1)$

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EXAMPLE: Expand $4(x + 1)$
$4(x + 1) = 4 \times (x + 1) = (4 \times x) + (4 \times 1) = \mathbf{4x + 1}$

RECALL: Distributive Law
a × (b + c) = (a × b) + (a × c)
a(b+c) = ab + ac

Instructions: Expand the expressions below, simplifying where possible.

1	$7(i + 4) + 5(2i + 5)$	2	$8(c + 5) - 3(5 - 3c)$
3	$6k(3k - 8) + 4k(9 - k)$	4	$4r(r^2 + 3) + 8r(r + 4)$

5	$5c(5d - 8c) + 4(c^2 - cd)$	6	$12x(5x - 6) + 2x(7 - 3x)$
7	$4e(e^2 + 6e^3) + 3(3e^2 - 2e^4)$	8	$8o^2(4o - 8) - 6(5o^2 + 8o^3)$
9	$7(5f^2 - 7f) - 3f(4f + 12)$	10	$6c(4c + c^2) - 5c^2(11 - 3c)$
11	$4a(3a - 7a^2) + 7a(10 - 6a)$	12	$2e^2(4f - 5e^2) + 4(12e^4 - 6)$
13	$12s(6s + 7) + 4s(5t^3 + 6s)$	14	$7(5u^3 - 6v) + 7(3v + 11u^3)$

15	$9t(t^2 + 3t^3) - t(3t - 9t^2)$	16	$6w(7w^2v - 1) + 4(vw^3 + w)$
17	$8d^2(4d - 5c^2) + 8c^2(1 - d^2)$	18	$5q(4r + 9s^2) - 4s(3qs - 9)$
19	$13k(k^2j - j) + 7k^2(6 - jk)$	20	$11e(e^2 - 9d^2) + 7e(d^2 - e^2)$
21	$9x^2(y + xy) - 11y(2x^3 + x^2)$	22	$7n(6n + m^2) - 5m^2(3n - 1)$
23	$7g(8o - g^2) - 5g^2(5o - 8g)$	24	$6c(7d - 9d^3) + 5d^2(dc + d^2)$