

Expand Brackets - PDF Copy

The presentation contains the slides below with the objective of showing how to: **Expand (multiply out) brackets in expressions like: $(x + 3)(x + 2)$ or $(x + 3)(x - 2)$ or $(x - 3)(x + 2)$ or $(x - 3)(x - 2)$.** There is an explanation of the technique with questions and answers plus a 'Who Wants to be a Millionaire' type question of the classic mistake when squaring terms in brackets.

Expand Brackets

Objective
Expand (multiply out) brackets in expressions like:

$(x + 3)(x + 2)$
 $(x + 3)(x - 2)$
 $(x - 3)(x + 2)$
 $(x - 3)(x - 2)$

Grade C Topic

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1

How to multiply out a double set of brackets

Multiply the terms like this...

$(x + 3)(x + 2)$
 $\rightarrow x(x + 2) + 3(x + 2)$

Once you get the idea, you will not need these lines of working

$\rightarrow x \times x + 2 \times x + 3 \times x + 3 \times 2$
 $\rightarrow x^2 + 2x + 3x + 6$
 $\rightarrow x^2 + 5x + 6$

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2

How to multiply out a double set of brackets

$(x + 3)(x + 2)$

You can just think of it like this...

$\rightarrow x^2 + 2x + 3x + 6$
 $\rightarrow x^2 + 5x + 6$

Tidy up the middle

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Try these...

1. $(x + 4)(x + 3)$
 $\rightarrow x^2 + 3x + 4x + 12$
 $\rightarrow x^2 + 7x + 12$

2. $(x + 2)(x + 6)$
 $\rightarrow x^2 + 6x + 2x + 12$
 $\rightarrow x^2 + 8x + 12$

3. $(x + 7)(x + 2)$
 $\rightarrow x^2 + 9x + 14$

4. $(x + 6)(x + 3)$
 $\rightarrow x^2 + 9x + 18$

5. $(x + 10)(x + 1)$
 $\rightarrow x^2 + 11x + 10$

6. $(x + 5)(x + 7)$
 $\rightarrow x^2 + 12x + 35$

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An example of a double bracket containing a negative sign

$(x - 3)(x + 4)$

We multiply out the brackets in the same way but we do have to take the + and - signs into account like this...

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$(x - 3)(x + 4)$

$-3 \times x = -3x$
 $-3 \times 4 = -12$

When we multiply, opposite signs give a minus and the same signs give a plus so...

$\rightarrow x^2 + 4x - 3x - 12$
 $\rightarrow x^2 + x - 12$

Tidy up the middle

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Try these...

1. $(x + 2)(x - 5)$
 $\rightarrow x^2 - 5x + 2x - 10$
 $\rightarrow x^2 - 3x - 10$

2. $(x - 6)(x - 2)$
 $\rightarrow x^2 - 2x - 6x + 12$
 $\rightarrow x^2 - 8x + 12$

3. $(x + 8)(x - 2)$
 $\rightarrow x^2 + 6x - 16$

4. $(x - 7)(x + 2)$
 $\rightarrow x^2 - 5x - 14$

5. $(x - 4)(x - 5)$
 $\rightarrow x^2 - 9x + 20$

6. $(x - 3)(x - 6)$
 $\rightarrow x^2 - 9x + 18$

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What is $(x + 3)^2$?

A: $2x + 6$
B: $x^2 + 6x + 9$
C: $x^2 + 3x + 9$
D: $x^2 + 9$

Do not make this classic mistake

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Multiply out the brackets

- $(x + 2)^2$
- $(x + 4)^2$
- $(x + 5)^2$
- $(x + 6)^2$
- $(x + 10)^2$
- $(x - 2)^2$
- $(x - 4)^2$
- $(x - 6)^2$
- $(x - 8)^2$
- $(x - 10)^2$

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Multiply out the brackets

- $(x + 2)^2 \rightarrow x^2 + 4x + 4$
- $(x + 4)^2 \rightarrow x^2 + 8x + 16$
- $(x + 5)^2 \rightarrow x^2 + 10x + 25$
- $(x + 6)^2 \rightarrow x^2 + 12x + 36$
- $(x + 10)^2 \rightarrow x^2 + 20x + 100$
- $(x - 2)^2 \rightarrow x^2 - 4x + 4$
- $(x - 4)^2 \rightarrow x^2 - 8x + 16$
- $(x - 6)^2 \rightarrow x^2 - 12x + 36$
- $(x - 8)^2 \rightarrow x^2 - 16x + 64$
- $(x - 10)^2 \rightarrow x^2 - 20x + 100$

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