

Expanding Triple Brackets Mastery

Practice Worksheet (Compact Layout)

I DO

Expand and simplify:

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

WE DO

Expand and simplify:

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

YOU DO 1

Expand and simplify:

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

YOU DO 2

Expand and simplify:

$$(x - 3)(x - 1)(4x + 1)$$

CHALLENGE

Expand and simplify:

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

ANSWERS & WORKED SOLUTIONS

I Do**Step 1:** Expand the first two brackets: $(x - 2)(x + 3) = x^2 + 3x - 2x - 6 = x^2 + x - 6$ **Step 2:** Multiply this quadratic by the third bracket: $(x^2 + x - 6)(2x + 1)$ **Step 3:** Expand: $2x^3 + x^2 + 2x^2 + x - 12x - 6$ **Step 4:** Group like terms. **Answer:** $2x^3 + 3x^2 - 11x - 6$ **We Do****Step 1:** Expand first two brackets: $(x + 1)(x - 4) = x^2 - 4x + x - 4 = x^2 - 3x - 4$ **Step 2:** Multiply by third bracket: $(x^2 - 3x - 4)(3x + 2)$ **Step 3:** Expand: $3x^3 + 2x^2 - 9x^2 - 6x - 12x - 8$ **Step 4:** Group like terms. **Answer:** $3x^3 - 7x^2 - 18x - 8$ **You Do 1****Step 1:** First two brackets: $(x + 2)(x + 5) = x^2 + 7x + 10$ **Step 2:** Multiply: $(x^2 + 7x + 10)(2x - 3)$ **Step 3:** Expand: $2x^3 - 3x^2 + 14x^2 - 21x + 20x - 30$ **Step 4:** Group terms. **Answer:** $2x^3 + 11x^2 - x - 30$

ANSWERS & WORKED SOLUTIONS (CONTINUED)

You Do 2

Step 1: First two brackets: $(x - 3)(x - 1) = x^2 - 4x + 3$

Step 2: Multiply: $(x^2 - 4x + 3)(4x + 1)$

Step 3: Expand: $4x^3 + x^2 - 16x^2 - 4x + 12x + 3$

Step 4: Group terms. **Answer:** $4x^3 - 15x^2 + 8x + 3$

Challenge

Step 1: Write out the brackets: $(2x - 1)(2x - 1)(2x - 1)$

Step 2: Expand the first two: $4x^2 - 2x - 2x + 1 = 4x^2 - 4x + 1$

Step 3: Multiply by the third: $(4x^2 - 4x + 1)(2x - 1)$

Step 4: Expand: $8x^3 - 4x^2 - 8x^2 + 4x + 2x - 1$

Step 5: Group terms. **Answer:** $8x^3 - 12x^2 + 6x - 1$