One Bracket, Twice

EX11-V1 · storyboard · EX11 Factor out a common bracket. Read each picture with its sentences.

Picture 1

Factor $n(2n+1)+5(2n+1)$.

$$nB + 5B \qquad B = (2n+1)$$

$$= (n+5)B \qquad \text{like } 3x + 5x = 8x$$

$$= \boxed{(n+5)(2n+1)}$$

Check: $n = 1$: $\quad 3 + 15 = 18 = 6 \cdot 3$ ✓

1. Factor n times the bracket 2n + 1, plus five times the same bracket.
2. Call the bracket B.
3. Then it is n B plus five B.
4. Just like three x plus five x, that is n + 5, times B.
5. Put the bracket back: n + 5, times 2n + 1.
6. Check with n = 1: three plus fifteen is 18, and six times three is 18 too.

Picture 2

Factor $3(2d+7)-5d(2d+7)$.

$$(3-5d)(2d+7)$$

the minus stays with $5d$

7. Now factor three times the bracket 2d + 7, minus five d times the same bracket.
8. Take out the bracket.
9. What is left is three, minus five d: the minus sign stays with it.

Picture 3

Trap $n(2n+1)+5(2n+1)$

$\times\ 5n(2n+1)$

✓ $(n+5)(2n+1)$

10. Watch for the trap: multiplying instead of adding.
11. It is not five n times the bracket.
12. The parts are added: n + 5.

Picture 4

Trap $3(2d+7) - 5d(2d+7)$

$\times$ $(3+5d)(2d+7)$

✓ $(3-5d)(2d+7)$

13. And keep the sign.
14. Three plus five d is wrong: the minus belongs to five d, so it is three minus five d.