1. Cells x^2 and 12 are set; middle is 7x. How do you split 7x?

Numbers x12 = 12, add to 7: 3 and 4

Answer: 3x and 4x

2. Finish: sides of the box for x^2 + 7x + 12?

Rows (x + 3), columns (x + 4)

Answer: (x + 3)(x + 4)

3. Box-factor x^2 + 9x + 20.

Split 9x as 4x + 5x

Answer: (x + 4)(x + 5)

4. Box-factor x^2 - 2x - 15.

Split -2x as -5x + 3x

Answer: (x - 5)(x + 3)

5. Box-factor x^2 - 10x + 21.

Split as -3x and -7x

Answer: (x - 3)(x - 7)

6. Box-factor 2x^2 + 11x + 5.

ac = 10; split 11x as 10x + x

Answer: (2x + 1)(x + 5)

7. Box-factor 3x^2 + 8x + 4.

ac = 12; split 8x as 6x + 2x

Answer: (3x + 2)(x + 2)

8. A box has cells x^2, -6x, 6x, -36. What is factored, and what is special?

Middle cells cancel

Answer: x^2 - 36 = (x+6)(x-6)

9. Box-factor 4x^2 + 8x + 3. ★ challenge

ac = 12; split 8x as 6x + 2x

Cells: 4x^2, 6x, 2x, 3

2x(2x + 3) + 1(2x + 3)

Answer: (2x + 1)(2x + 3)

10. The box for a mystery trinomial has sides (x + a)(x + b) with cell sum x^2 + 12x + 32. Find a and b, then

a x b = 32, a + b = 12: 4 and 8

Zeros flip signs

Answer: a=4, b=8; zeros -4 and -8