Factoring ac Method

$$ax^2 + bc + c, \quad a \neq 1$$

Strategy

1. Find the product of ac
2. Find factors of ac whose sum is b
3. Rewrite trinomial a polynomial with four terms using those factors
4. Group the first two terms and the last two terms and factor using D-Prop
5. Factor again using the D-Prop

Example Factor $3x^2 + x - 24$

1. Mult ac; $3(-24) = -72$.
2. Factors of 72, sum = 1, 9 and –8 $\Rightarrow$

–72
72 –1
36 –2
24 –3
18 –4
9 –8
6 –12

3, $3x^2 + 9x - 8x - 24$

4 . $3x^2 + 9x - 8x - 24$

5. $3x(x + 3) - 8(x + 3)$

$(x + 3)(3x - 8)$

Factor each expression.

1. $3x^2 + 8x + 5$
2. $2x^2 + 5x - 3$
3. $3x^2 + 8x + 4$
4. $3x^2 - 10x + 8$
5. $2x^2 - 5x + 3$
6. $3x^2 - x - 4$
7. $3x^2 + 10x + 3$
8. $2x^2 - x - 21$
9. $5x^2 - 11x + 2$

10. $4x^2 + 4x - 15$

11. $6x^2 - 19x + 15$

12. $3x^2 + 7x + 2$

13. $2x^2 - x - 15$

14. $3x^2 - 7x - 6$

15. $2x^2 + x - 6$

16. $2x^2 - 5x - 12$

17. $6x^2 - 7x - 5$

18. $4x^2 + 7x + 3$

19. $2x^2 + 3x + 1$

20. $2x^2 + x - 6$

