# Factoring Lab

Name:

**Instructions:** Factor each of the polynomials given on a separate sheet of paper (show your work) and then evaluate each factor for $x = 1$. The two values you obtain should then be exchanged for the letters of the alphabet from the following code table and then placed in the blanks provided for that problem. For example, $x^2 + 3x + 2 = (x + 2)(x + 1)$, $1 + 2 = 3$ and $1 + 1 = 2$, so the two letters are M and N. Fill in the table on the following page to assist you. The first one is done for you. *Note:* Problems 11, 13 and 22 have 3 blanks and 3 factors.

1. $x^2 - 9x - 22$
2. $x^2 + 14x + 13$
3. $3x^2 - 7x - 26$
4. $x^2 + 7x - 44$
5. $x^2 - 6x - 27$
6. $x^2 - 9x - 22$
7. $2x^2 - 11x - 40$
8. $x^2 + 7x - 30$
9. $x^2 - 49$
10. $x^2 - 17x + 66$
11. $3x^3 - 10x^2 - 77x$
12. $x^2 + 7x - 44$
13. $x^3 - 10x^2 + 21x$
14. $5x^2 - 12x + 7$
15. $x^2 + 14x + 49$
16. $x^2 - x - 6$
17. $x^2 - 16x + 55$
18. $x^2 + 10x + 24$
19. $2x^2 - 7x - 49$
20. $x^2 + 21x + 104$
21. $x^2 - 8x + 15$
22. $x^3 + 3x^2 - 18x$
23. $x^2 + 9x + 14$
24. $4x^2 + 17x + 15$
25. $x^2 - 8x + 15$
26. $x^2 + 7x - 30$
27. $6x^2 - 11x - 7$
28. $x^2 + 4x - 32$
29. $x^2 - 8x + 7$
30. $x^2 + 4x - 21$
31. $2x^2 + 21x + 49$
32. $x^2 - 11x + 28$
33. $x^2 - 3x - 88$
34. $x^2 + x - 56$
35. $2x^2 + 11x + 14$
36. $x^2 - 9$
37. $x^2 - x - 6$
38. $x^2 - 64$
39. $x^2 - 49$
40. $x^2 - x - 42$
41. $x^2 + 3x - 70$
42. $-3x^2 + 11$

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -10 | -9 | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

$\underline{\quad}_{1}\ \underline{\quad}_{1}\ \underline{\quad}_{2}\quad \underline{\quad}_{2}\ \underline{\quad}_{3}\ \underline{\quad}_{3}\quad \underline{\quad}_{4}\ \underline{\quad}_{4}\ \underline{\quad}_{5}\quad \underline{\quad}_{5}\ \underline{\quad}_{6}\ \underline{\quad}_{6}$

$\underline{\quad}_{7}\ \underline{\quad}_{7}\ \underline{\quad}_{8}\ \underline{\quad}_{8}\ \underline{\quad}_{9}\quad \underline{\quad}_{9}\ \underline{\quad}_{10}\ \underline{\quad}_{10}\ \underline{\quad}_{11}\ \underline{\quad}_{11}\ \underline{\quad}_{11}$

$\underline{\quad}_{12}\ \underline{\quad}_{12}\ \underline{\quad}_{13}\ \underline{\quad}_{13}\ \underline{\quad}_{13}\quad \underline{\quad}_{14}\ \underline{\quad}_{14}\ \underline{\quad}_{15}\ \underline{\quad}_{15}\ \underline{\quad}_{16}\ \underline{\quad}_{16}\ \underline{\quad}_{17}$

$\underline{\quad}_{17}\quad \underline{\quad}_{18}\ \underline{\quad}_{18}\ \underline{\quad}_{19}\ \underline{\quad}_{19}\ \underline{\quad}_{20}\ \underline{\quad}_{20}\quad \underline{\quad}_{21}\ \underline{\quad}_{21}\ \underline{\quad}_{22}\ \underline{\quad}_{22}$

$\underline{\quad}_{22}\ \underline{\quad}_{23}\quad \underline{\quad}_{23}\ \underline{\quad}_{24}\ \underline{\quad}_{24}\quad \underline{\quad}_{25}\ \underline{\quad}_{25}\ \underline{\quad}_{26}\ \underline{\quad}_{26}\ \underline{\quad}_{27}\ \underline{\quad}_{27}$

$\underline{\quad}_{28}\ \underline{\quad}_{28}\ \underline{\quad}_{29}\quad \underline{\quad}_{29}\ \underline{\quad}_{30}\ \underline{\quad}_{30}\ \underline{\quad}_{31}\quad \underline{\quad}_{31}\ \underline{\quad}_{32}\ \underline{\quad}_{32}$

$\underline{\quad}_{33}\ \underline{\quad}_{33}\ \underline{\quad}_{34}\ \underline{\quad}_{34}\ \underline{\quad}_{35}\ \underline{\quad}_{35}\ \underline{\quad}_{36}\ \underline{\quad}_{36}\ \underline{\quad}_{37}\quad \underline{\quad}_{37}\ \underline{\quad}_{38}$

$\underline{\quad}_{38}\ \underline{\quad}_{39}\ \underline{\quad}_{39}\ \underline{\quad}_{40}\ \underline{\quad}_{40}\ \underline{\quad}_{41}\ \underline{\quad}_{41}\ \underline{\quad}_{42}$ .

— Albert Einstein

# Factoring Lab

Name:

| Polynomial | Factors | Numbers | Letters |
|---|---|---|---|
| 1. $x^2 - 9x - 22$ | $(x - 11)(x + 2)$ | $1 - 11 = -10$, $1 + 2 = 3$ | A, N |
| 2. $x^2 + 14x + 13$ | | | |
| 3. $3x^2 - 7x - 26$ | | | |
| 4. $x^2 + 7x - 44$ | | | |
| 5. $x^2 - 6x - 27$ | | | |
| 6. $x^2 - 9x - 22$ | | | |
| 7. $2x^2 - 11x - 40$ | | | |
| 8. $x^2 + 7x - 30$ | | | |
| 9. $x^2 - 49$ | | | |
| 10. $x^2 - 17x + 66$ | | | |
| 11. $3x^3 - 10x^2 - 77x$ | | | |
| 12. $x^2 + 7x - 44$ | | | |
| 13. $x^3 - 10x^2 + 21x$ | | | |
| 14. $5x^2 - 12x + 7$ | | | |
| 15. $x^2 + 14x + 49$ | | | |
| 16. $x^2 - x - 6$ | | | |
| 17. $x^2 - 16x + 55$ | | | |
| 18. $x^2 + 10x + 24$ | | | |
| 19. $2x^2 - 7x - 49$ | | | |
| 20. $x^2 + 21x + 104$ | | | |
| 21. $x^2 - 8x + 15$ | | | |

| | | | |
|---|---|---|---|
| 22. $x^3 + 3x^2 - 18x$ | | | |
| 23. $x^2 + 9x + 14$ | | | |
| 24. $4x^2 + 17x + 15$ | | | |
| 25. $x^2 - 8x + 15$ | | | |
| 26. $x^2 + 7x - 30$ | | | |
| 27. $6x^2 - 11x - 7$ | | | |
| 28. $x^2 + 4x - 32$ | | | |
| 29. $x^2 - 8x + 7$ | | | |
| 30. $x^2 + 4x - 21$ | | | |
| 31. $2x^2 + 21x + 49$ | | | |
| 32. $x^2 - 11x + 28$ | | | |
| 33. $x^2 - 3x - 88$ | | | |
| 34. $x^2 + x - 56$ | | | |
| 35. $2x^2 + 11x + 14$ | | | |
| 36. $x^2 - 9$ | | | |
| 37. $x^2 - x - 6$ | | | |
| 38. $x^2 - 64$ | | | |
| 39. $x^2 - 49$ | | | |
| 40. $x^2 - x - 42$ | | | |
| 41. $x^2 + 3x - 70$ | | | |
| 42. $-3x^2 + 11$ | | | |