

NAME Kuy DATE _____ SCORE _____

Polynomials; Using the Laws of Exponents; Multiplying Polynomials

Simplify.

1. $3x^3 + 9 + 7x^2 - x^3$ $2x^3 + 7x^2 + 9$

2. $3xy^3 - x^3y - 2x^3y - 2xy^3$ $xy^3 - 3x^3y$

3. $7m - 6 - (2m + 5)$ $5m - 11$

4. $4(2y^2 - 3y) + 3(y^2 + 6y - 1)$ $11y^2 + 6y - 3$

5. $2(3n^2 + 4) - 9(n^2 - 2)$ $-3n^2 + 26$

6. $4a(x + y) + 5a(x - y) + ay$ $9ax$

Simplify each expression. Assume that variable exponents represent positive integers.

7. $3m^2 \cdot 2m$ $6m^3$

8. $2r \cdot 3r^2 \cdot 5r^3$ $30r^6$

9. $(a^3)^2$ a^6

10. $(5z^6)^3$ $125z^{18}$

11. $(-b^3c^4)^5$ $-b^{15}c^{20}$

12. $d^2(3de - 5d^2)$ $3d^3e - 5d^4$

13. $4m(3a^2m)$ $12a^2m^2$

14. $3x(4xyz^3)^2$ $48x^3y^2z^6$

15. $(nc)^d(nd)^{d+c}$ n^{d^2+2d}

16. $x^3(x^5-1)^3$ x^{33}

17. $5x^a \cdot 3x^2$ $15x^{a+2}$

18. $y^a \cdot y^b \cdot y^c$ y^{a+b+c}

19. $w^{3c-b} \cdot w^{c+b}$ w^{4c}

20. $(m^{2e-3b} \cdot m^{3b-e})^t$ m^{et}

Multiply.

21. $(3a + 1)(a - 2)$ $3a^2 - 5a - 2$

22. $(2r - 5)(r + 2)$ $2r^2 - r - 10$

23. $(s + 3)(s - 3)$ $s^2 - 9$

24. $(2b + 1)(3b - 2)$ $6b^2 - b - 2$

25. $(c - 5)^2$ $c^2 - 10c + 25$

26. $(2t - 3)(3t + 5)$ $6t^2 + t - 15$

27. $(5x + 7y)(5x - 7y)$ $25x^2 - 49y^2$

28. $(2d + 3)^2$ $4d^2 + 12d + 9$

29. $(3f - 2g)^2$ $9f^2 - 12fg + 4g^2$

30. $(2x^2 + 1)(3x^2 - 2)$ $6x^4 - x^2 - 2$

31. $5(e + 3h)^2$ $5e^2 + 30eh + 45h^2$

32. $2(3j - k^2)(3j + k^2)$ $18j^2 - 2k^4$

33. $(m - 1)(m + n + 2)$ $m^2 + mn + m - n - 2$

34. $(3x^2 - 2y^3)^2$ $9x^4 - 12x^2y^3 + 4y^6$

35. $(a^2 - 3)(a^2 + b - 3)$ $a^4 + a^2b - 6a^2 - 3b + 9$

36. $m^2(n - 2)^2$ $m^2n^2 - 4m^2n + 4m^2$

What Happened to the Man Who Invested in a Paper Towel Company and a Revolving Door Factory?

Simplify each expression. Find the answer below and notice the two letters next to it. Write these letters in the two boxes above the exercise number at the bottom of the page.

- 1 $7x^2 + 3x - x^2$ $6x^2 + 3x$
- 2 $(7x^2)(3x)(-x^2)$ $-21x^5$
- 3 $(-2x^3)(5x)(-8x^4)$ $80x^8$
- 4 $x(3x^2)^3$ $27x^7$
- 5 $-4x(-5x)^2 - 100x^3$
- 6 $(2x^4)(-6x^3) + (9x)(3x^6)$ $15x^7$

Answers:

- IN $80x^{11}$ OR $-100x^3$
 SW $27x^7$ ED $6x^2 + 3x$
 EC $-21x^5$ LA $36x^7$
 HE $15x^7$ OU $80x^8$

- 7 $a^2 + b + a^2 + b^2 + b$ $2a^2 + b^2 + 2b$
- 8 $(-2a^3b)^4$ $16A^{12}B^4$
- 9 $a^2(6a^3b)(ab^5)$ $6A^6B^6$
- 10 $(4ab^3)(-5b^6)(2a^2)$ $-40A^3B^9$
- 11 $(3a^4b)(5ab^2) - (a^5b^2)(9b)$ $6A^5B^3$
- 12 $(7a^2b^2)^2 + (ab)^4 - 50$ $50A^4B^4 - 50$

Answers:

- OU $6a^6b^6$ LD $2a^2 + b^2 + 2b$
 ER $6a^7b^4$ RN $-40a^3b^9$
 TB $16a^{12}b^4$ ND $50a^4b^4 - 50$
 EH $6a^5b^3$ TO $-40a^4b^6$

- 13 $(8x^2y)(x^4y^3)^2$ $8X^{10}y^7$
- 14 $2x(-5y^6)^3 - 250xy^{18}$
- 15 $(xy^2)^3(x^2y)^2 + (x^3y^4)(x^2y^2)^2$ $2X^7y^8$
- 16 $(-x^2)^5(-2x^2y^3)^3$ $8X^{16}y^9$
- 17 $(4xy^7)(2x^4y) - (5x^3y^3)(-8x^2y^5)$ $48X^5y^8$
- 18 $(3x^2)(3y^2) + 3x^2y - (3xy)^2 - 3xy^2$ $3X^2y - 3Xy^2$

Answers:

- SO $18x^6y^9$ TU $48x^5y^8$
 WA $8x^{10}y^7$ EF $-250xy^{18}$
 HA $8x^{12}y^8$ IP $3x^2y - 3xy^2$
 AR $2x^7y^8$ OU $8x^{16}y^9$

H	E	W	A	S	W	I	P	E	D	O	U	T	B	E	F	O	R	E	H	E	C	O	U	L	O	T	U	R	N	A	R	O	U	N	D
6	13	4	18	1	16	8	14	5	11	2	9	7	17	10	15	3	12																		

Key