

Test on Monomial and polynomial operations.

Name \_\_\_\_\_

Use the rules for exponents to simplify each of the following.

1.  $(x^4 y^5 z^2)(x^3 y^2 z)$

1.  $\frac{x^7 y^7 z^3}{1}$

2.  $(5a^2 b^3 c^5)(4a^2 b^4 c^3)$

2.  $20A^4 B^7 C^8$

3.  $(-7xy^8 z^3)(3x^2 y^3 z^3)$

3.  $\frac{-21x^3 y^{11} z^6}{1}$

4.  $(5e^3 f^7 g^2)(2e^3 f^4 g^5)(7e^2 f^2 g^3)$

4.  $70E^8 F^{13} G^{10}$

5.  $(4x^3 y^2 z^5)^4$

5.  $\frac{256x^{12} y^8 z^{20}}{1}$

6.  $\left(\frac{3e^3 f^{-2} g^8}{36e^7 f^3 g^2}\right)$

6.  $\frac{1}{12e^4 f^5 g^6}$

7.  $\left(\frac{12m^7 x^{-6} y^3}{27m^3 x^{-11} y^{-2}}\right)$

7.  $\frac{4M^4 x^5 y^5}{9}$

8.  $\left(\frac{35a^{-2} b^2 c^5}{14a^2 b^{-3} c^{-3}}\right)^2$

$\frac{5 B^5 C^8}{2A^4}$

8.  $\frac{25 B^{10} C^{16}}{4A^8}$

9.  $\left(\frac{42a^{-11} bc^5 d^{11}}{35a^{11} b^{-7} c^{-3} d^5}\right)^0$

9.  $\frac{1}{1}$

$$10. \left( \frac{10x^{-2}y^9z^6}{42x^6y^{-4}z^{-9}} \right)^2$$

$$\frac{5}{21x^8} y^{13} z^{15}$$

$$10. \frac{25}{441x^{16}} y^{26} z^{30}$$

$$11. (-2a^3b^{-7}c^4)^3$$

$$11. \frac{-8A^9 C^{12}}{B^{21}}$$

$$12. 4x^3y^2(6x^2y + 7x^3y - 7x)$$

$$12. \frac{24x^5y^3 + 28x^6y^3 - 28x^4y^2}{1}$$

$$13. 5a^3b(2a^4b^3 + 8a^3b^2 - 3a^2b)$$

$$13. \frac{10A^7B^4 + 40A^6B^3 - 15A^5B^2}{1}$$

$$14. 6a^3b^2(3a^4b + 5a^3b - 7ab)$$

$$14. \frac{18A^7B^3 + 30A^6B^3 - 42A^4B^3}{1}$$

$$15. 5e^3f(3e^3f^3 + 4e^2f^2 - 5ef)$$

$$15. \frac{15E^6F^4 + 20E^5F^3 - 25E^4F^2}{1}$$

Use **Scientific Notation** to answer each of the following, round **final answer** to the nearest hundredth.

$$16. \frac{(4.32 \times 10^{13}) - (5.63 \times 10^9) - (2.53 \times 10^7)}{(5.27 \times 10^{-13}) \cdot (1.17 \times 10^{-9})}$$

$$16. \frac{7.01 \times 10^{34}}{1}$$

$$17. \frac{(6.29 \times 10^6) \cdot (1.28 \times 10^{-13}) \cdot (6.77 \times 10^{-7})}{(2.72 \times 10^{-5}) + (1.7 \times 10^{-5})}$$

$$17. \frac{1.23 \times 10^{-8}}{1}$$

$$18. \frac{(2.347 \times 10^4) + (9.729 \times 10^5) - (6.114 \times 10^4)}{(4.711 \times 10^8) - (4.573 \times 10^9)}$$

$$18. \frac{-2.28 \times 10^{-4}}{1}$$

$$19. \frac{(8.27 \times 10^7) \cdot (4.13 \times 10^{-11}) \cdot (6.22 \times 10^{-5})}{(9.98 \times 10^{-11}) \cdot (2.13 \times 10^9)}$$

$$19. \underline{9.99 \times 10^{-7}}$$

$$20. (4.2 \times 10^{13})(9.7 \times 10^{-5})$$

$$20. \underline{4.07 \times 10^9}$$

$$21. (6.13 \times 10^{-9})(9.41 \times 10^{22})$$

$$21. \underline{5.77 \times 10^{14}}$$

Combine like terms with indicated operation.

$$22. (\underline{A^2} + AB - 5B^2) + (\underline{3A^2} - AB + B^2)$$

$$4A^2 - 4B^2$$

$$22. \underline{4A^2 - 4B^2}$$

$$23. (\underline{7x^2} + 3xy - 8y^2) - (\underline{5x^2} - 4xy + 3y^2)$$

$$2x^2 + 7xy - 11y^2$$

$$23. \underline{2x^2 + 7xy - 11y^2}$$

$$24. (x^2 - 3x) - (2x^2 + 5x)$$

$$-x^2 - 8x$$

$$24. \underline{-x^2 - 8x}$$

$$25. -\frac{1}{4}m(8m+12) - 3(2m^2+5m-4)$$

$$\underline{-2m^2 - 3m} - \underline{6m^2 - 15m + 12}$$

$$25. \underline{-8m^2 - 18m + 12}$$

$$26. \frac{2}{7}y(14y+28) - \frac{2}{3}(6y^2+3y-12)$$

$$\underline{4y^2 + 8y} - \underline{4y^2 - 2y + 8}$$

$$26. \underline{6y + 8}$$

Use (F.O.I.L.) or the double distributing idea.

27.  $(4x - 3)(3x + 7)$

$$\begin{array}{r} -9x - 21 \\ 12x^2 + 28x \\ \hline \end{array}$$

27.  $12x^2 + 19x - 21$

28.  $(3m - 2)(3m + 2)$

$$\begin{array}{r} -6m - 4 \\ 9m^2 + 6m \\ \hline \end{array}$$

28.  $9m^2 - 4$

29.  $(8g + 3)(2g + 5)$

$$\begin{array}{r} 6g + 15 \\ 16g^2 + 40g \\ \hline \end{array}$$

29.  $16g^2 + 46g + 15$

30.  $(7p - 19)(7p + 19)$

$$\begin{array}{r} -133p - 361 \\ 49p^2 + 133p \\ \hline \end{array}$$

30.  $49p^2 - 361$

31.  $(9x - 2)(x + 1)$

$$\begin{array}{r} -2x - 2 \\ 9x^2 + 9x \\ \hline \end{array}$$

31.  $9x^2 + 7x - 2$

32.  $(3b + 5)(3b + 5)$

$$\begin{array}{r} 15b + 25 \\ 9b^2 + 15b \\ \hline \end{array}$$

32.  $9b^2 + 30b + 25$

33.  $(4w + 5)^2$

$$\begin{array}{r} (4w + 5)(4w + 5) \\ 20w + 25 \\ 16w^2 + 20w \\ \hline \end{array}$$

33.  $16w^2 + 40w + 25$

34.  $(15r - 18)(15r + 18)$

$$\begin{array}{r} -270r - 324 \\ 225r^2 + 270r \\ \hline \end{array}$$

34.  $225r^2 - 324$

$$35. (9f+2)^2 \quad \begin{array}{r} (9F+2)(9F+2) \\ 18F+4 \\ \hline 81F^2+18F \end{array}$$

$$35. \underline{81F^2+36F+4}$$

$$36. (9t-11)(9t+11) \\ \begin{array}{r} -99t-121 \\ \hline 81t^2+99t \end{array}$$

$$36. \underline{81t^2-121}$$

$$37. (3m-5)(2m^2-5m+4) \\ \begin{array}{r} -10m^2+25m-20 \\ \hline 6m^3-15m^2+12m \\ \hline 6m^3-25m^2+37m-20 \end{array}$$

$$37. \underline{6m^3-25m^2+37m-20}$$

$$38. (e-f)(e^2-2ef+f^2) \\ \begin{array}{r} -e^2f+2ef^2-f^3 \\ \hline e^3-2e^2f+ef^2 \end{array}$$

$$38. \underline{e^3-3e^2f+3ef^2-f^3}$$

$$39. (n-2)(n+3)(n-7) \\ \begin{array}{r} \downarrow \quad \begin{array}{r} 3n-21 \\ \hline n^2-7n \end{array} \\ (n-2)(n^2-4n-21) \\ \begin{array}{r} -2n^2+8n+42 \\ \hline n^3-4n^2-21n \end{array} \end{array}$$

$$39. \underline{n^3-6n^2-13n+42}$$

$$40. (x-1)(x+2)(x-3) \\ \begin{array}{r} \downarrow \quad \begin{array}{r} 2x-6 \\ \hline x^2-3x \end{array} \\ (x-1)(x^2-x-6) \\ \begin{array}{r} -x^2+x+6 \\ \hline x^3-x^2-6x \end{array} \end{array}$$

$$40. \underline{x^3-2x^2-5x+6}$$