

Test on Monomial and polynomial operations.

Name _____

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

1. $(x^2 y^4 z^2)(x^3 y^7 z)$

1. $\frac{x^5 y^{11} z^3}{1}$

2. $(3a^2 b^3 c^4)(11a^2 b^6 c^3)$

2. $\frac{33A^4 B^9 C^7}{1}$

3. $(-7xy^8 z^5)(3x^2 y^3 z^3)$

3. $\frac{-21x^3 y^{11} z^8}{1}$

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

4. $\frac{42e^8 f^{13} g^{10}}{1}$

5. $(3x^3 y^7 z^5)^4$ $3^4 x^{12} y^{28} z^{20}$

5. $\frac{81x^{12} y^{28} z^{20}}{1}$

6. $\left(\frac{3e^3 f^{-2} g^8}{36e^7 f^3 g^2}\right)$ $\frac{1}{12e^4 f^5 g^6}$

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

7. $\left(\frac{12m^7 x^{-6} y^3}{27m^3 x^{-11} y^{-2}}\right)$ $\frac{4M^4 x^5 y^5}{9}$

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

8. $\left(\frac{35a^{-2} b^2 c^5}{14a^2 b^{-3} c^{-3}}\right)^2 = \left(\frac{5 B^5 C^8}{2A^4}\right)^2 = \frac{25 B^{10} C^{16}}{4A^8}$

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

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

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

$$10. \left(\frac{10x^{-2}y^9z^6}{42x^6y^{-4}z^{-9}} \right)^2 \quad \left(\frac{5}{21} x^8 y^{13} z^{15} \right)^2$$

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

$$11. (-2a^3b^{-7}c^4)^3 \quad -2^3 A^9 B^{-21} C^{12}$$

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

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

$$12. 24x^5y^3 + 28x^6y^3 - 28x^4y^2$$

$$13. 6a^3b^2(3a^4b + 5a^3b - 7ab)$$

$$13. 18A^7B^3 + 30A^6B^3 - 42A^4B^3$$

$$14. 5e^3f(3e^3f^3 + 4e^2f^2 - 5ef)$$

$$14. 15E^6F^4 + 20E^5F^3 - 25E^4F^2$$

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

$$15. \frac{(4.32 \times 10^{13}) - (5.63 \times 10^9) - (2.53 \times 10^7)}{(5.27 \times 10^{-13}) \cdot (1.17 \times 10^{-9})}$$

$$15. 7.01 \times 10^{34}$$

$$16. \frac{(6.29 \times 10^6) \cdot (1.28 \times 10^{-13}) \cdot (6.77 \times 10^{-7})}{(2.72 \times 10^{-5}) + (1.7 \times 10^{-5})}$$

$$16. 1.23 \times 10^{-8}$$

$$17. \frac{(2.347 \times 10^4) + (9.729 \times 10^5) - (6.114 \times 10^4)}{(4.711 \times 10^8) - (4.573 \times 10^9)}$$

$$17. \underline{-2.28 \times 10^{-4}}$$

$$18. (4.2 \times 10^{13})(9.7 \times 10^{-5})$$

$$18. \underline{4.07 \times 10^9}$$

$$19. (6.13 \times 10^{-9})(9.41 \times 10^{22})$$

$$19. \underline{5.77 \times 10^{14}}$$

Combine like terms with indicated operation.

$$20. (A^2 + AB - 5B^2) + (3A^2 - AB + B^2)$$

$$\begin{array}{r} 3A^2 - AB + B^2 \\ \hline 4A^2 \quad -4B^2 \end{array}$$

$$20. \underline{4A^2 - 4B^2}$$

$$21. (7x^2 + 3xy - 8y^2) - (5x^2 - 4xy + 3y^2)$$

$$\begin{array}{r} -5x^2 + 4xy - 3y^2 \\ \hline 2x^2 + 7xy - 11y^2 \end{array}$$

$$21. \underline{2x^2 + 7xy - 11y^2}$$

$$22. (x^2 - 3x) - (2x^2 + 5x)$$

$$\begin{array}{r} -2x^2 - 5x \\ \hline -x^2 - 8x \end{array}$$

$$22. \underline{-x^2 - 8x}$$

$$23. -\frac{1}{4}m(8m+12) - 3(2m^2 + 5m - 4)$$

$$\begin{array}{r} -2m^2 - 3m - 6m^2 - 15m + 12 \\ \hline -8m^2 - 18m + 12 \end{array}$$

$$23. \underline{-8m^2 - 18m + 12}$$

$$24. \frac{2}{7}y(14y+28) - \frac{2}{3}(6y^2 + 3y - 12)$$

$$\begin{array}{r} 4y^2 + 8y - 4y^2 - 2y + 8 \\ \hline 6y + 8 \end{array}$$

$$24. \underline{6y + 8}$$

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

$$25. (4x - 3)(3x + 7)$$

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

$$26. (3m - 2)(3m + 2)$$

$$9m^2 - 4$$

$$27. (7p - 12)(7p + 12)$$

$$49p^2 - 144$$

$$28. (9x - 2)(x + 1)$$

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

$$29. (3b + 5)(3b + 5)$$

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

$$30. (4w + 5)^2$$

$$(4w + 5)(4w + 5)$$
$$16w^2 + 40w + 25$$

$$31. (5r - 9)(5r + 9)$$

$$25r^2 - 81$$

$$32. (9f + 2)^2$$

$$(9f + 2)(9f + 2)$$
$$81f^2 + 36f + 4$$

$$25. \underline{12x^2 + 19x - 21}$$

$$26. \underline{9m^2 - 4}$$

$$27. \underline{49p^2 - 144}$$

$$28. \underline{9x^2 + 7x - 2}$$

$$29. \underline{9b^2 + 30b + 25}$$

$$30. \underline{16w^2 + 40w + 25}$$

$$31. \underline{25r^2 - 81}$$

$$32. \underline{81f^2 + 36f + 4}$$

Double Distributions

33. $(3m-5)(2m^2-5m+4)$

$$\begin{array}{r} -10m^2 + 25m - 20 \\ 6m^3 - 15m^2 + 12m \end{array}$$

$$6m^3 - 25m^2 + 37m - 20$$

34. $(e-f)(e^2-2ef+f^2)$

$$\begin{array}{r} -e^2f + 2ef^2 - f^3 \\ e^3 - 2e^2f + ef^2 \end{array}$$

$$e^3 - 3e^2f + 3ef^2 - f^3$$

35. $(n-4)(n+3)(n-2)$

$$(n-4)(n^2+n-6)$$

$$-4n^2 - 4n + 24$$

$$n^3 + n^2 - 6n$$

$$n^3 - 3n^2 - 10n + 24$$

36. $(2x-1)(x+1)(x+3)$

$$(2x-1)(x^2+4x+3)$$

$$-x^2 - 4x - 3$$

$$2x^3 + 8x^2 + 6x$$

$$2x^3 + 7x^2 + 2x - 3$$

33. $6m^3 - 25m^2 + 37m - 20$

34. $e^3 - 3e^2f + 3ef^2 - f^3$

35. $n^3 - 3n^2 - 10n + 24$

36. $2x^3 + 7x^2 + 2x - 3$

Solve using a system of equations and matrices on the calculator.

37. Henry's Custom Kitchen Supplies sells handcarved wooden forks and spoons. It costs the store \$1.70 to make a fork and \$1.30 to make a spoon. The store can sell the forks for \$5.60 and the spoons for \$5.40. Last month the store spent \$37.90 on the material to make the forks and spoons. They sold all of the products for \$147.20. How many forks and Spoons did Henry make last month.

item	Number of Items	cost	price
forks	x	1.70	5.60
spoons	y	1.30	5.40
Total		37.90	147.20

$$1.70x + 1.30y = 37.90$$

$$5.60x + 5.40y = 147.20$$

FORKS: 7
SPOONS: 20

38. Crazy Larry's Fruit Mart sells variety packs of healthy snacks. A small pack contains three bananas, two apples, and one orange for \$1.80. The medium pack contains four bananas, three apples, and three orange for \$3.05. The large pack contains six bananas, five apples, and four orange for \$4.65.

Fruit	price (variables)	price of each fruit (solution)
bananas	x	.20
apples	y	.45
oranges	z	.30

$$3x + 2y + z = 1.80$$

$$4x + 3y + 3z = 3.05$$

$$6x + 5y + 4z = 4.65$$

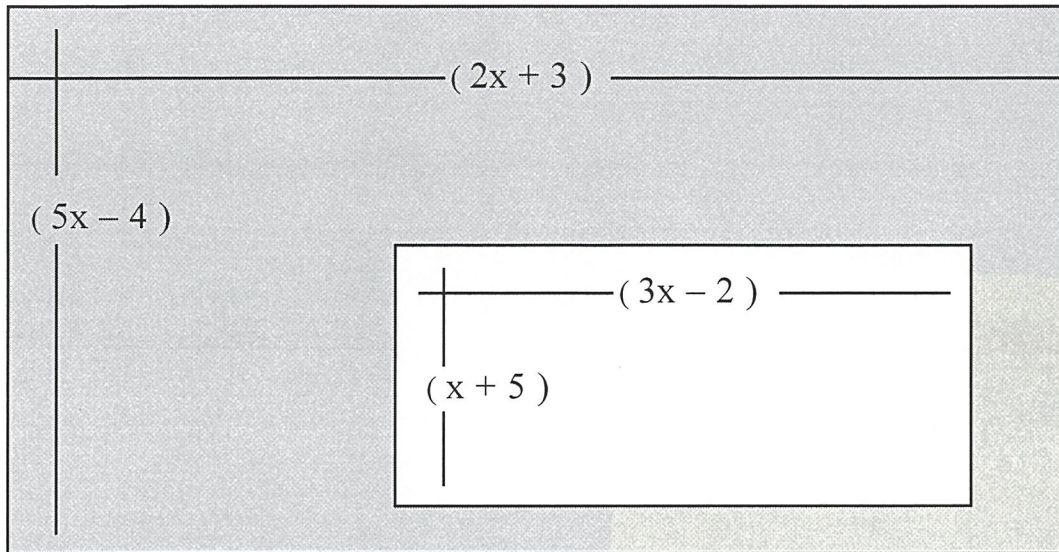
Determine the price for each piece of fruit then report, **what price** Larry should charge for the giant fruit box that will contain **seven bananas, seven apples, and five oranges?**

$$7[.20] + 7[.45] + 5[.30] = ?$$

$$6.05 = ?$$

\$6.05

39. Find the area of the shaded region.



BIG RECTANGLE

$$(5x - 4) \begin{array}{l} 15x \\ -8x \end{array} (2x + 3)$$

$$10x^2 + 7x - 12$$

LITTLE RECTANGLE

$$(3x - 2) \begin{array}{l} 15x \\ -2x \end{array} (x + 5)$$

$$3x^2 + 13x - 10$$

BIG (-) LITTLE

$$10x^2 + 7x - 12$$

$$-3x^2 - 13x + 10$$

$$7x^2 - 6x - 2$$

39. $7x^2 - 6x - 2$