

Practice Test

$$16. \left(\frac{3m^6}{9n^3} \right)^4 = \left(\frac{m^6}{3n^3} \right)^4$$

$$\frac{m^{24}}{81n^{12}}$$

$$19. \underline{\frac{2}{5}x^2} - \underline{\frac{1}{2}x^3} + \underline{x^2} - \underline{\frac{1}{3}x^3} + 7$$

$$1\frac{2}{5}x^2 - \frac{5}{6}x^3 + 7$$

$$\frac{7}{5}x^2 - \frac{5}{6}x^3 + 7$$

$$\frac{3 \cdot 1}{3 \cdot 2} - \frac{1 \cdot 2}{3 \cdot 2}$$

$$-\frac{3}{6} - \frac{2}{6}$$

$$-\frac{5}{6}$$

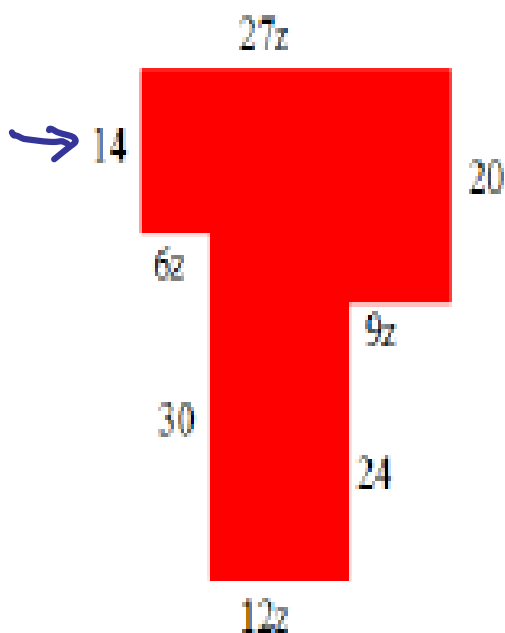
$$23. \quad (63x^2 + 7) - (50x^2 + 9)$$

$$\underline{63x^2 + 7} \quad - \quad \underline{50x^2 + 9}$$

$$13x^2 - 2$$

$$10. \quad \frac{(-4)^8}{(-4)^5} = (-4)^3 = -64$$

27



$$\begin{aligned} & \underline{14} + \underline{27z} + \underline{20} + \\ & \underline{9z} + \underline{24} + \underline{12z} \\ & + \underline{30} + \underline{6z} \end{aligned}$$

$$88 + 54z$$

The perimeter of the figure is $88 + 54z$ units.

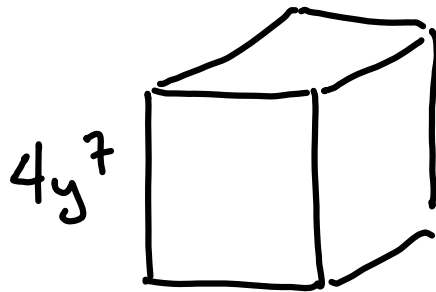
$$34. \quad \frac{1}{2}x^2 \left(\frac{8}{1}x^2 - \frac{4}{1}x + \frac{1}{1} \right)$$

$$4x^4 - 2x^3 + \frac{1}{2}x^2$$

$$32. \quad 2x(3x+7) \quad 6x^2 + 14x$$

9.

$$V = 64y^{21} \text{ ft}^3$$



$$V = 4y^7 \cdot 4y^7 \cdot 4y^7$$

$$V = (4y^7)^3$$

$$4. \quad (-4)^{11} = -4^{11}$$

$$(-4)^{10} \neq -4^{10}$$

$$\hookrightarrow = 4^{10}$$

$$30. \quad (9r^2s - 4rs - 5 + 3r^2s^2) -$$

$$(12sr^2 - 11 - 11r^2s^2)$$

$$\underline{9r^2s} - \underline{4rs} - \underline{5} + \underline{3r^2s^2} \quad - \underline{12sr^2} + \underline{11} + \underline{11r^2s^2}$$

$$- 3r^2s - 4rs + 6 + 14r^2s^2$$

$$28. \quad (\underline{4a} + \underline{9b} - \underline{9}) + (\underline{-19a} - \underline{7b} + \underline{6})$$

$$-15a + 2b - 3$$

$$1. \quad \underline{-1}^2 = -1 \quad \xrightarrow{\quad} \quad \underline{(-1)}^2 = (-1)1 = -1$$

$$(-1)^2 = (-1)(-1) = 1$$

$$2. \quad (-1)^1 = -1$$

26. Subtract $(5y^2 - 3y - 7)$ from the sum of $(2y^2 + 8)$ and $(2y + 6)$

$$[(2y^2 + 8) + (2y + 6)] - (5y^2 - 3y - 7)$$

$$\underline{2y^2} + \underline{2y} + \underline{14} \quad - \quad \underline{5y^2} + \underline{3y} + \underline{7}$$

$$-3y^2 + 5y + 21$$

$$25 \quad (\underline{5x^2} + \underline{3x} - \underline{2}) + (\underline{3x^2} + \underline{2x} + \underline{10}) - (8x^2 - 11)$$

$$\underline{8x^2} + \underline{5x} + \underline{8} \quad - \underline{8x^2} + \underline{11}$$

$$5x + 19$$

36.

$$\left(x + \frac{2}{7}\right) \left(x - \frac{1}{7}\right)$$

$$x^2 - \frac{1}{7}x + \frac{2}{7}x - \frac{2}{49}$$

$$x^2 + \frac{1}{7}x - \frac{2}{49}$$

37.

$$(6x^2 + 5)(7x^2 + 2)$$

$$42x^4 + 12x^2 + 35x^2 + 10$$

$$42x^4 + 47x^2 + 10$$

31.

$$-7n^4 \cdot 3n^2 = -21n^6$$

40.

$$(2a - 9)(8a^2 + 6a - 2)$$

$$16a^3 + 12a^2 - 4a$$

$$-72a^2 - 54a + 18$$

$$16a^3 - 60a^2 - 58a + 18$$

36. $(6a + 7)(6a + 5)$

38. $(x - 10)(x + 10)$

42. $(x^3 - 2)(5x + y)$

44. $(x - 2)(x^2 - 4x + 2)$

48. $(11x - 7y)(11x + 7y)$

54. $(x^5 + 5)(x^2 - 8)$

62. $\left(\frac{2}{3}a - b^2\right)\left(\frac{2}{3}a - b^2\right)$

70. $(3x + 5)(3x - 5)$

74. $\left(\frac{a}{2} + 4y\right)\left(\frac{a}{2} - 4y\right)$

78. $(b + 3)(2b^2 + b - 3)$

5.5: Negative Exponents & Scientific Notation

Look at division

Negative Exponents

If a is a real number other than 0 and n is an integer, then

$$a^{-n} = \frac{1}{a^n}$$

Negative Exponents

If a is a real number other than 0 and n is an integer, then

$$a^{-n} = \frac{1}{a^n} \quad \text{and} \quad \frac{1}{a^{-n}} = a^n$$

Ex: (p 343)

2. 6^{-2}

8. $\left(\frac{1}{8}\right)^{-2}$

16. $\frac{r^{-5}}{s^{-2}}$

22. $4^{-2} - 4^{-3}$

24. $\frac{-1}{y^{-6}}$

Summary of Exponent Rules

If m and n are integers and a , b , and c are real numbers, then:

Product rule for exponents: $a^m \cdot a^n = a^{m+n}$

Power rule for exponents: $(a^m)^n = a^{m \cdot n}$

Power of a product: $(ab)^n = a^n b^n$

Power of a quotient: $\left(\frac{a}{c}\right)^n = \frac{a^n}{c^n}$, $c \neq 0$

Quotient rule for exponents: $\frac{a^m}{a^n} = a^{m-n}$, $a \neq 0$

Zero exponent: $a^0 = 1$, $a \neq 0$

Negative exponent: $a^{-n} = \frac{1}{a^n}$, $a \neq 0$

Ex: (p 343)

$$46. \frac{-5x^4y^5}{15x^4y^2}$$

$$48. (-5a^4b^{-7})(-a^{-4}b^3)$$

$$52. \left(\frac{a^5b}{a^7b^{-2}}\right)^{-3}$$

$$56. \frac{5^{-1}z^7}{5^{-2}z^9}$$

$$58. \frac{6^{-5}x^{-1}y^2}{6^{-2}x^{-4}y^4}$$

$$60. \left(\frac{r^{-2}s^{-3}}{r^{-4}s^{-3}}\right)^{-3}$$

$$68. \frac{(a^6b^{-2})^4}{(4a^{-3}b^{-3})^3}$$

5.6: Dividing Polynomials

Dividing a Polynomial By a Monomial

Divide each term of the polynomial by the monomial.

$$\frac{a + b}{c} = \frac{a}{c} + \frac{b}{c}, \quad c \neq 0$$

Ex: (p 350)

2. $\frac{15x^2 - 9x^5}{x}$

4. $\frac{8x^3 - 4x^2 + 6x + 2}{2}$

8. $\frac{6x^5 + 3x^4}{3x^4}$

34. $\frac{m^3n^2 - mn^4}{mn}$

