8.1 Exponents

3^4 $3 \cdot 3 \cdot 3 \cdot 3$

81

4^1 4

$5^0 = 1$

$a^0 = 1$

$10^3 = 1000$

$10^2 = 100$

$10^1 = 10$

$10^0 = 1$

$10^{-1} = .1$ $\frac{1}{10}$

$10^{-2} = .01$ $\frac{1}{100}$

0^0 undefined

$0^1 = 0$

$0^2 = 0$

$0^3 = 0$

$10^6 = 1,000,000$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$
$13^2 = 169$
$14^2 = 196$
$15^2 = 225$

$1^3 = 1$
$2^3 = 8$
$3^3 = 27$
$4^3 = 64$
$5^3 = 125$
$6^3 = 216$

$1^4 = 1$
$2^4 = 16$
$3^4 = 81$

$1^5 = 1$
$2^5 = 32$

16
x4

36
x6
216

x^3 $x \cdot x \cdot x$

x^2 $x \cdot x$

$x^3(x^2)$ $x \cdot x \cdot x \cdot x \cdot x$

Add exponents x^5

Exponential Form Expanded Form

x^4y^2 $x \cdot x \cdot x \cdot x \cdot y \cdot y$

247

Two hundred forty-seven

$200 + 40 + 7$ 200 40 7

$2 \times 10^2 + 4 \times 10 + 7$

$(x^3)^2$ $x^3 \cdot x^3$

x^6 $x \cdot x \cdot x \cdot x \cdot x \cdot x$

x^6

$x^3 + x^2$ Not like terms

Like terms: same variable raised to the same exponent

$x^3 + x^3$

$2x^3$

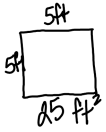
$x + x$ $5 + 5$

5ft 5ft

10ft

$x \cdot x$

x^2



2^{1000} $2 \cdot 2 \cdot 2 \cdot 2$

Product-of-Powers Property

Multiplication of Like Bases

$$x^m \cdot x^n = x^{m+n}$$

$$x^3 \cdot x^2 = x^5$$

$x \cdot x \cdot x \cdot x \cdot x$

coefficient

x $3x$

$2y$ $7z$ Monomials

7 Constant

$4a+3b$ Binomial

x^2+4x+3 Trinomial

$x^5+3x^3+4x^2-x+2$ Polynomial 4 or more terms

$(7x^3y^1)(2x^2y^3)$

$14x^5y^4$

$(-5x^4yz)(2x^3y^2z)$

$-10x^7y^3z^2$

$-5x^4yz + 2x^3y^2z$

$-5x^4yz + 2x^4yz$ Like terms

$-3x^4yz$

$(7mn^3)(-3mn^2)$

$-21m^2n^5$

$(4x^3y^1)(2x^ay^b)$

$8x^{3+a}y^{1+b}$

Evaluate

Find the value of

2^4 $2 \cdot 2 \cdot 2 \cdot 2$

16

Simplify. Leave in exponential form

$2^5 \cdot 2^2$

2^7

Evaluate

2^5

32

128

2^x

$2^1 = 2$

$2^2 = 4$

$2^3 = 8$

$2^4 = 16$

$2^5 = 32$

3^x

$3^1 = 3$

$3^2 = 9$

$3^3 = 27$

$3^4 = 81$

$(9x^2y^3z)(4xyz)$

$36x^3y^4z^2$

p374

18 - 50 E

4^4 $4^2 \cdot 4^2$

$16 \cdot 16$

16

16

$4^3 = 64$

x4

$4^4 = 256$

x 4

1024

$3^4 = 81$

$3^5 = 243$ 243

$3^6 =$