

October 8

# Section 2.2

## Powers of Ten and Zero Exponents

# Use 3 as your base

Exponent	Power	Repeated Multiplication	Standard Form
4	$3^4$	$3 \times 3 \times 3 \times 3$	81
3	$3^3$	$3 \times 3 \times 3$	27
2	$3^2$	$3 \times 3$	9
1	$3^1$ (3)	3	3

0

 $3^0$ 

1



## Zero Exponent Law

(positive/negative)

A power with an integer base, other than 0, and an exponent of 0 is

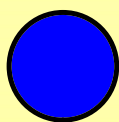
Ex. equal to 1

a)  $52^0 =$  | b)  $628^0 =$  | c)  $10^0 =$  |

d)  $(-4)^0$

e)  $-(-2)^0$

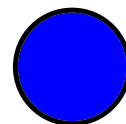
f)  $-4^0$



|

-|

-|



Try this

Evaluate each expression

a)  $5^0 = 1$

b)  $-(5)^0$

-1


c)  $(-5)^0$

1

d)  $-5^0$

-1

Number in Words	Standard Form	Power
One billion	1 000 000 000	$10^9$
One hundred million	100 000 000	$10^8$
Ten million	10 000 000	$10^7$
One million	1 000 000	$10^6$
One hundred thousand	100 000	$10^5$
Ten thousand	10 000	$10^4$
One thousand	1 000	$10^3$
One hundred	100	$10^2$
Ten	10	$10^1$
One	1	$10^0$



three thousand two hundred sixty two

standard  
form

3262

Expanded  
form

$3000 + 200 + 60 + 2$

Power of

$3 \times 10^3 + 2 \times 10^2 + 6 \times 10^1 + 2 \times 10^0$

10

\* When the base of a power is 10, the exponent equals the number of zeros in a given number

Examples:

$$10^3 \rightarrow 1000$$

$$10^5 \rightarrow 100\,000$$

$$10^0 \rightarrow 1$$

Write 96 713 as a power of 10

Expanded form  $90\ 000 + 6\ 000 + 700 + 10 + 3$

Power of

$$9 \times 10^4 + 6 \times 10^3 + 7 \times 10^2 + 1 \times 10^1 + 3 \times 10^0$$

10



Write using powers of 10

a) 3 508       $3000 + 500 + 8$

$$3 \times 10^3 + 5 \times 10^2 + 8 \times 10^0$$

b) 600       $6 \times 10^2$

# Evaluate

$$a) -(-s)^0$$

- |

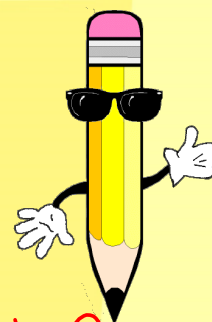
$$b) -326^0$$

- |

$$c) (-51)^0$$

|

# 205 309



Expanded  
Form

$$2\ 00\ 000 + 5\ 000 + 3\ 00 + 9$$

Power  
of 10

$$2 \times 10^5 + 5 \times 10^3 + 3 \times 10^2 + 9 \times 10^0$$

Write in standard form

$$3 \times 10^2 + 6 \times 10^4 + 3 \times 10^0 + 8 \times 10^6$$

$$8 \times 10^6 + 6 \times 10^4 + 3 \times 10^2 + 3 \times 10^0$$

$$8\ 060\ 303$$

# Homework

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#4, 5 > chart  
Power | Evaluate

6, 8, 9 [a, c, e], 10 all

