### 2.2 Powers of Ten and the Zero Exponent

Math 9 Chapter 2.2 Powers of Ten and the Zero Exponent
Notes
Name $\qquad$
$\qquad$
Blk $\qquad$
Complete the table

| Power | Standard Form | Words |
| :---: | :---: | :---: |
| $10^{6}$ | $1,000,000$ | onemillion |
| $10^{5}$ | 100,000 | onehundred thousand |
| $10^{4}$ | 10000 | ten thousand |
| $10^{3}$ | 1000 | one thousand |
| $10^{2}$ | 100 | one hundred |
| $10^{1}$ | 10 | ten |
| $10^{0}$ | 1 | one |

Using the pattern developed from the table, what is $10^{0}$ ?

$$
10^{\circ}=1
$$

What is the Zero Exponent Law?
A power with an integer base, other than 0 , and an exponent $O$ is equal to one $n^{0}=1 \quad n \neq 0$ Ex 1
Evaluate each expression:
a) $2^{0}=1$
b) $(-2)^{0}=1(-2)^{0}$
c) $-2^{0} \mathrm{~F}=(-1) \cdot\left(2^{0}\right)=-7$

Ex 2
Write as a power of 10 :
a) $1000=10^{3} \quad 10 \times 10 \times 10=1000$
b) $500=5 \times 100=5 \times 10^{2}$
c) $2000000=2 \times 1000,000=2 \times 10^{6}$
c) $4=4 \times 1=4 \times 10^{0}$
d) $100000000=10^{8}$

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Reflection: Why is $(-4)^{0}$ equal to 1 but $-4^{0}$ equals -1 ?

Writing Numbers Using Powers of Ten
Example

1. Write 3452 using powers of ten

Use a place value chart

| Thousands | Hundreds | Tens | Ones |
| :---: | :---: | :---: | :---: |
| 3 | 4 | 5 | 2 |

 final answer
2. Write 152300 ling power of ten


$$
\left(1 \times 10^{5}\right)+\left(5 \times 10^{4}\right)+\left(2 \times 10^{3}\right)+\left(3 \times 10^{2}\right)
$$



Assignment p 61 \#4.6,, 10$] \leftarrow H \omega f_{n} 2.2$

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