

Name: \_\_\_\_\_

Block: \_\_\_\_\_

## 2.2 Practice – The Zero Exponent Law and Powers of Ten

1. Evaluate each power.

a)  $4^0$

b)  $23^0$

c)  $(-6)^0$

d)  $1^0$

e)  $-1^0$

f)  $-(-1)^0$

2. Write each number as a power of 10.

a) 10 000

b) 1 000 000

c) one billion

d) ten

e) 1

3. Represent the following numbers in **scientific notation**.

a) 700 000 000 000

b) 8100

c) 77 077

d) 54 300 000 000 000

e) 0.000 000 12

f) 0.000 103 4

g) 641 000

h) 0.005

i) 0.000 000 000 72

4. Write each number in **standard form**.

a)  $8 \times 10^5$

b)  $9.95 \times 10^7$

c)  $2.206 \times 10^3$

d)  $4.00530008 \times 10^8$

e)  $3.6 \times 10^{-4}$

f)  $1.23 \times 10^{-7}$

g)  $9.05 \times 10^{13}$

h)  $6.005 \times 10^{-2}$

5. a) Complete this table for a base of 10.

Exponent	Power	Standard Form
6	$10^6$	
5		
4		
3		
2		
1		
0		

b) Use patterns to describe **why** the power with an exponent of 0 is equal to 1.

### 2.2 Practice - Answers

1. a) 1      b) 1      c) 1      d) 1      e) -1      f) -1  
 2. a)  $10^4$       b)  $10^6$       c)  $10^9$       d)  $10^1$       e)  $10^0$   
 3. a)  $7 \times 10^{11}$       b)  $8.1 \times 10^3$       c)  $7.7077 \times 10^4$       d)  $5.43 \times 10^{13}$       e)  $1.2 \times 10^{-7}$       f)  $1.034 \times 10^{-4}$   
 g)  $6.41 \times 10^5$       h)  $5 \times 10^{-3}$       i)  $7.2 \times 10^{-10}$   
 4. a) 800 000      b) 99 500 000      c) 2206      d) 400 530 008      e) 0.000 36      f) 0.000 000 123  
 g) 90 500 000 000 000      h) 0.060 05  
 5. a)

Exponent	Power	Standard Form
6	$10^6$	1 000 000
5	$10^5$	100 000
4	$10^4$	10 000
3	$10^3$	1000
2	$10^2$	100
1	$10^1$	10
0	$10^0$	1

b) In the 2<sup>nd</sup> column, the exponents are decreasing by 1 each time. In the 3<sup>rd</sup> column, the number of zeros after the 1 decreases by 1; each time we divide by 10 to get the number below, and in the last row:  $10 \div 10 = 10^0 = 1$