**Exponential Notation**

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| **Exponential Notation** | is repeated **­­­­­­­­­­­**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Base** | the number being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ repeatedly |
| **Exponent** | The exponent tells you how many times to write down the \_\_\_\_\_\_\_\_\_\_\_\_\_\_as a \_\_\_\_\_\_\_\_ |
|  |  23**Base-The number being multiplied repeatedly** **Exponent**  |

|  |  |
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| Examples | 1. 23 =
 |
|  | 1. 43  =

  |
|  | 1. 52 =
 |
|  | 1. 33 =
 |
| **Reading Exponents** | 45 - Can be read as “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” |
|  | \_\_\_\_\_\_\_\_\_\_\_ – Can be read as “eight to the 6th power” |
| **2 Special Exponents** | 72 - Can be read as “seven to the 2nd power or “\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”Any exponent of \_\_\_\_\_\_\_\_\_ means **“**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” |
|  | 53 – Can be read as “five to the 3rd power or “ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”Any exponent of\_\_\_\_\_\_\_\_ means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” |
| **Special Base** | If 10 is the base, look at the following:101=10102=100103= 104= 105= If 10 is the base here is how to find the answer: * write a\_\_\_\_
* look at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* the exponent tells you how many \_\_\_\_\_\_\_\_\_\_\_\_\_\_to write after the one.
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| **Practice** | **Write the following in exponential notation:** |
|  | 1. 4 x 4 x 4 x 4 x 4 x 4 =
 |
|  | 1. 3 x 3 x 3 =
 |
|  | 1. 2 x 2 x 2 x 2 x 2 =
 |
|  | **Write the following in expanded notation:** |
|  | 1. 64 =
 |
|  | 1. 76 =
 |
|  | **Simplify the following:** |
|  | 1. 53 =
 |
|  | 1. 42 =
 |
|  | 1. 106 =
 |
|  | 1. 112 =
 |
|  | 1. 24 =
 |
| **Write the following in words and then simplify:** |
|  | 1. 83 (Can be written in 2 different ways)
 |
|  | 1. 22 (Can be written in 2 different ways)
 |
| **Here is a challenge…** |
|  | Draw a picture to represent 32?

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**Exponential Notation**

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| **Exponential Notation** | is repeated **multiplication** |
| **Base** | the number being **multiplied** repeatedly |
| **Exponent** | The exponent tells you how many times to write down the **base** as a **factor** |
|  |  23**Base-The number being multiplied repeatedly** **Exponent**  |

|  |  |
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| Examples | 1. 23 = 2 ∙ 2 ∙ 2

 = 4 ∙ 2 = 8 |
|  | 1. 43 = 4 ∙ 4 ∙ 4

 = 16 ∙ 4 = 64 |
|  | 1. 52 = 5 ∙ 5

 = 25  |
|  | 1. 33 = 3 ∙ 3 ∙ 3

 = 9 ∙ 3 = 27 |
| **Reading Exponents** | 45 - Can be read as “four to the 5th power” |
|  | 86 – Can be read as “eight to the 6th power” |
| **2 Special Exponents** | 72 - Can be read as “seven to the 2nd power or **seven squared**”Any exponent of two means “squared” |
|  | 53 – Can be read as “five to the 3rd power or **five cubed**”Any exponent of three means “cubed” |
| **Special Base** | If 10 is the base, look at the following:101=10102=100103=1,000104=10,000105=100,000If 10 is the base here is how to find the answer: * write a **1**
* look at the **exponent**
* the exponent tells you how many **zeros** to write after the one.
 |
| **Practice** | **Write the following in exponential notation:** |
|  | 1. 4 x 4 x 4 x 4 x 4 x 4 =
 |
|  | 1. 3 x 3 x 3 =
 |
|  | 1. 2 x 2 x 2 x 2 x 2 =
 |
|  | **Write the following in expanded notation:** |
|  | 1. 64 =
 |
|  | 1. 76 =
 |
|  | **Simplify the following:** |
|  | 1. 53 =
 |
|  | 1. 42 =
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|  | 1. 106 =
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| **Write the following in words and then simplify:** |
|  | 1. 83 (Can be written in 2 different ways)
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| **Here is a challenge…** |
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