**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=10  102=100  103=  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?   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |

**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=10  102=100  103=1,000  104=10,000  105=100,000  If 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 = |
|  | 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?   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |