**POWERS & EXPONENTS~NOTES**

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| **POWER** | **WORDS** |
|  | 2 to the first power |
|  | 2 to the second power or 2 squared |
|  | 2 to the third power or 2 cubed |
|  | 2 to the fourth power or 2 to the fourth |
|  | 2 to the nth power or 2 to the nth |

**Power** – numbers using an exponent and base

**Base** – the common factor in a power

**Exponent** – the number of times the base is used as a factor

**Write & Evaluate Powers**

*EXAMPLES*

Write each expression using exponents.

1.) 2.)

Evaluate each expression.

3.) = \_\_\_\_\_\_\_\_\_\_\_ 4.) = \_\_\_\_\_\_\_\_\_\_\_\_\_

5.) Evaluate the expression below if a = 3 and b = 5.

**Product of Powers**

Rule: To multiply powers with the same base, add their exponents.

Example:

*Simplify using the Laws of Exponents.*

|  |  |
| --- | --- |
| 1.) = | 2.) |
| 3.) | 4.) |

**Quotient of Powers**

Rule: To divide powers with the same base, subtract their exponents.

Example:

NOTE: The difference of the original exponents is the exponent in the final quotient.

*Simplify using the Laws of Exponents.*

|  |  |
| --- | --- |
| 1.) = | 2.) |
| 3.) | 4.) |

**Power of a Power**

Rule: To find the power of a power, multiply the exponents.

Example: (read as, “six to the fourth to the fifth power) =

NOTE: The product of the original exponents, 4 and 5, is the final power of 20.

*Simplify using the Laws of Exponents.*

|  |  |
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| 1.) = | 2.) = |
| 3.) = | 4.) = |

