**POWERS & EXPONENTS**

exponent of 3

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

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

base of 5

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

|  |  |
| --- | --- |
| **POWER** | **STANDARD**  **FORM** |
|  | 1,000 |
|  | 100 |
|  | 10 |
|  | 1 |
|  | 0.1 |
|  | 0.01 |
|  | 0.001 |

Any number raised to the zero power is 1.

Any number raised to the 1st power is itself.

|  |  |  |
| --- | --- | --- |
| **POWER** | **WORDS** | **STANDARD**  **FORM** |
|  | 2 to the zero power | 1 |
|  | 2 to the first power | 2 |
|  | 2 to the second power or 2 squared | 4 |
|  | 2 to the nth power or 2 to the nth |  |

**Product of Powers**

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

Example:

NOTE: The sum of the original exponents is the exponent in the final product.

**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.

**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.*

|  |  |
| --- | --- |
| 1.) = | 2.) |
| 3.) | 4.) |
| 5.) = | 6.) = |
| 7.) = | 8.) = |
| 9.) = | 10.) |
| 11.) | 12.) |
| 13.) = | 14.) = |
| 15.) = | 16.) = |
| 17.) | 18.) |