Lesson 1.1 – Prime Factorization

Standard: Number Sense 1.4 – Determine the prime factors of all numbers through 50 and write the numbers as the product of their prime factors by using exponents to show multiples of a factor.

Lesson Objective: Students will be able to factor all prime numbers out a composite number.

**Vocabulary:**

**Factor -** Any of the numbers that when multiplied together form a product.

**Prime –** A number that has exactly two factors, 1 and itself.

Example – 2, 3, 5, 7

**Composite** – A number that has more than two factors.

 Example – 4 (2 x 2), 8 (4 x 2)

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| --- | --- | --- | --- |
| Numbers | Arrays | Factors | Prime? |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| 11 |  |  |  |
| 12 |  |  |  |
| 13 |  |  |  |
| 14 |  |  |  |
| 15 |  |  |  |
| 16 |  |  |  |
| 17 |  |  |  |
| 18 |  |  |  |
| 19 |  |  |  |
| 20 |  |  |  |

**EXPONENTS**

**Base** – Number used as a repeated factor.

**Exponent** – Number that shows how many times the base is used as a factor.

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|  |  |  |
| --- | --- | --- |
| **Step 1:** Identify the exponents and base. ExponentMacintosh HD:Users:kyleyanogoss:Downloads:exponent.png  | **Step 2:** Write the base as repeated factor.8 x 8 x 83 factors | **Step 3:**Multiply8 x 8 x 8 =  |

**Guided practice - Exponents**

1.)$10^{3}$ 2.) $5^{4}$

**Whiteboard – CFU - Exponents**

1.) $10^{6}$ 2.) $2^{10}$

3.) $4^{3}$

**Prime Factorization**

**Option 1**: Writing ARRAYS

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| **Find the prime factorization of 30**Step 1: Find all the arrays that work for 30Step2: Find all the different prime numbersStep 3: Then write it as an exponent  |

**Option 2:** Using FACTOR TREES

**Guided Practice – Arrays & Factor Trees**

1.) 35 2.) 32

3.) 65 4.) 225

**Whiteboards - CFU – Arrays & Factor Trees**

1.) 20 2.) 25

3.) 68 4.) 144