What do I need to know as a teacher in order to be able to teach the concept(s)?
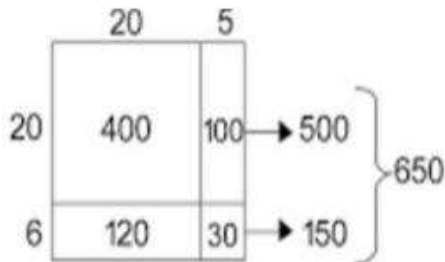
+Vocabulary

Area Model / Rectangular Array

- example: 26 X 25:

Associative Property

- you can multiply regardless of how the numbers are grouped (using parenthesis)
    - 3 x 4 x 2 = (3 x 4) x 2 or 3 x (4 x 2)
    - Does not apply to division! 6 ÷ (4 ÷ 2) is not equal to (6 ÷ 4) ÷ 2

Cartesian Product aka "for each"

- For each ten, there are ten ones; for each hundred there are 10 tens; for each one there are 10 tenths
- I have 3 shirts and 2 shorts. How many outfits do I have? Solution: For each shirt, there are 2 shorts. So there are 6 outfits altogether.

Commutative Property

- two numbers can be multiplied in either order. Example: 3 x 4 or 4 x 3

Composite Number

- A composite number is a positive integer that has at least one positive divisor other than one or the number itself. In other words, a composite number is any integer greater than one that is not a prime number. For example, 9 is divisible by 3 so it is composite. The number 1 is neither prime nor composite.

Distributive Property / Partitioning

- A number in a multiplication expression can be decomposed into two or more numbers. The distributive property can involve:
  - multiplication over addition (e.g., 6 x 47 = (6 x 40) + (6 x 7))
  - multiplication over subtraction (e.g. 4 x 98 = (4 x 100) - (4 x 2))
  - division over addition (e.g. 72 / 6 = (60 / 6) + (12 / 6))
  - division over subtraction (4700 / 4 = (4800 / 4) - (100 / 4))
  - 24 is 2 twelves, 3 eights, 4 sixes, 6 fours, and 12 twos
  - Distributive Law: "the multiplication operation may be applied to a number which has been partitioned without altering the outcome."
  - 3 x 6 = 3 x (2 + 4) = (3 x 2) + (3 x 4)
  - 3 x (4 - 2) = (3 x 4) - (3 x 2)
  - "Distributive Property" Video

Factor

- a factor is a term that exactly divides a given term. Example, 2 is a factor of 2 because you can divide 12 by 2 and end up with an answer that is not a fraction.

Factor-factor-product

- 24 is 2 x 2 x 2 x 3

Greatest Common Divisor/Factor

- The greatest common factor (gcf) is the largest natural number that exactly divides two or more given natural numbers.

Inverse Operation

- "The operation which is 'opposite' mathematically to that being considered. Thus, division is the inverse of multiplication and vice versa."

Iteration

- the act of repeating a process in order to reach a desired goal. For example: using a metre stick in order to measure the length of the classroom; measuring the height of a horse in hands;

Least/Lowest Common Multiple

- The least/lowest common multiple (lcm) is the smallest natural number that is a multiple of two or more given natural numbers.

Multiple

- The result of multiplying a number by an integer (not by a fraction). For example, if you start with the number 3 and multiply it by 4 to get 12, you say that 12 is a multiple of 3. It is also a multiple of 4 because you multiplied 4 by 3 to get 12.

Multiplicative Comparison

- Two quantities compared on the basis of 'as many as'. For example. Paul has 4 apples. Mary has 3 times as many as Paul.

Operation Terms

- 3 x 2 = 6
    - 3 = multiplicand
    - 2 = multiplier
    - 6 = product
- 6 ÷ 2 = 3
    - 6 = dividend
    - 2 = divisor
    - 3 = quotient

Rate

- A rate is a two-term ratio used to compare quantities having different units. Example: 75 km/hr, $10 for 2 books.

Ratio

- A ratio is a comparison of numbers or quantities. Example: 2:1 may mean for every 2 slices of pizza my dad eats, I eat 1.

Prime Number

- A prime number is a natural number that has exactly two factors: one and itself. For example, 11 is prime because it can not be divided by any number other than 11 and 1. The number 1 is neither prime nor composite.

Further Resources:

Math is Fun - Illustrated Mathematics Dictionary – Mathematics Vocabulary & Illustrations
https://www.mathsisfun.com/definitions/index.html

Mathematics Glossary - LearnAlberta.ca
Example Link - Associative Property
http://www.learnalberta.ca/content/memg/division04/associative%20property/index.html