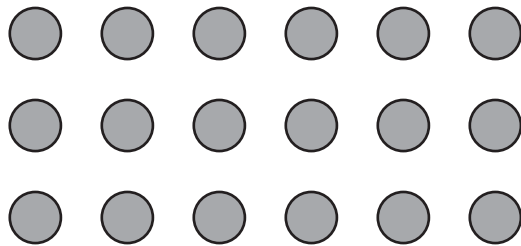


array



An arrangement of objects, pictures,
or numbers in columns and rows.

Associative Property of Addition

The property which states that the way in which addends are grouped does not change the sum. It is also called the *Grouping Property of Addition*.

$$\textit{Example: } (3 + 4) + 5 = 3 + (4 + 5)$$

Associative Property of Multiplication

The property which states that the way in which factors are grouped does not change the product. It is also called the *Grouping Property of Multiplication*.

Example: $(6 \times 7) \times 9 = 6 \times (7 \times 9)$

breaking apart

A mental math strategy used to add and subtract.

$$\begin{array}{r} \textit{Example:} \quad 28 = 20 + 8 \\ \quad \quad \quad + 35 = \underline{30 + 5} \\ \quad \quad \quad \quad \quad \quad 50 + 13 = 63 \end{array}$$

$$\text{So, } 28 + 35 = 63$$

clustering

An estimation strategy for finding sums.

Example: Estimate $125 + 101 + 92$
 $100 + 100 + 100 = 300$

Commutative Property of Addition

The property which states that the order of addends does not change the sum. It is also called the *Order Property of Addition*.

Example: $2 + 4 = 4 + 2$

Commutative Property of Multiplication

The property which states that the order of factors does not change the product. It is also called the *Order Property of Multiplication*.

Example: $3 \times 5 = 5 \times 3$

compensation

Adding one amount to an addend and subtracting an equal amount from another addend to add mentally.

Example: $38 \rightarrow \text{add 2 to make 40} \rightarrow 40$
 $\begin{array}{r} + 56 \\ \hline \end{array} \rightarrow \text{subtract 2 to compensate} \rightarrow \begin{array}{r} + 54 \\ \hline 94 \end{array}$

So, $38 + 56 = 94$

doubles

A strategy for finding products.

Example: Since $2 \times 3 = 6$

Then $4 \times 3 = 6 + 6$

So $4 \times 3 = 12$

equal

Having the same value.

equation

A mathematical sentence with an equal sign.

Examples: $3 + 1 = 4$

$2x + 5 = 9$

estimate

A number close to an exact amount,
or to find an answer by rounding.

expression

A number or group of numbers with operation symbols.
An expression may have a variable.

fact family

Facts that are related, using the same numbers.

Examples:

$$1 + 4 = 5$$

$$4 + 1 = 5$$

$$5 - 1 = 4$$

$$5 - 4 = 1$$

$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

$$15 \div 3 = 5$$

$$15 \div 5 = 3$$

front-end estimation

A method of estimating sums, differences, products, and quotients using front digits.

Example:

Step 1

Add the front-end digits.

$$\begin{array}{r} 473 \\ + 128 \\ \hline 500 \end{array}$$

Step 2

Adjust the estimate.

$$\begin{array}{r} 473 \\ + 128 \\ \hline 600 \end{array}$$

76 + 28 is
about 100 more.

473 + 128 is about 600.

function table

A table of ordered pairs that follows a rule.

Rule: $t = p \times 2$	
Input (p)	Output (t)
4	8
6	12
10	20

inequality

Two expressions that are not equal.
The symbols $>$, $<$, and \neq show an inequality.

inverse operations

Opposite operations. Addition is the inverse operation of subtraction. Multiplication is the inverse operation of division.

multiple

A number that is the product of the given number and another number.

Example: 5, 10, 15, and 20 are all multiples of 5.

order of operations

The order in which operations must be performed in order to arrive at a correct answer.

- First, do operations in parentheses.
- Then do multiplication and division in order from left to right.
- Finally, do addition and subtraction in order from left to right.

parentheses ()

Parentheses are used to show which operations should be done first.

Examples:

$(5 \times 2) - 1$	$5 \times (2 - 1)$
$10 - 1$	5×1
9	5

Property of One for Multiplication

The property which states that the product of 1 and any number is that number.

Example: $4 \times 1 = 4$

regroup

To use place value to exchange equal amounts when renaming a number.

remainder

The number that is left after one whole number is divided by another.

Example: $5 \overline{)27}$ 5 R2 ← remainder

square number

The product of a number and itself.

Example: $3 \times 3 = 9$
9 is a square number.

variable

A letter or a symbol that represents a number in an algebraic expression.

Example: In $5 \times b = 10$,
 b is a variable worth 2.

Zero Property of Addition

The property which states that the sum of any number and 0 is that number.

Examples:

$$9 + 0 = 9$$

$$0 + 5 = 5$$

Zero Property of Multiplication

The property which states that the product of any number and 0 is 0.

Examples:

$$9 \times 0 = 0$$

$$0 \times 5 = 0$$