Add (+) You add when you need to: • Combine quantities • Find a total	**Subtract (-)** You subtract when you need to: • Find a difference • Take away a quantity • Compare to find out “how many more”, “how much less”, or “how much is left”.
Multiply **x • (2)(4)** You multiply when you need to: • Put together a number of equal amounts to find a total • Add the same number repeatedly • Find a “part of” a whole item or group	**Divide** **÷ 4/8 (fraction)** You divide when you need to : • Split a quantity into equal parts • Find how many equal parts are in a whole

Whole Numbers

Whole numbers are made of up the following ten digits:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Place Value (whole numbers)

millions	Hundred thousands	ten thousands	thousands	hundreds	tens	ones
7	9	0	5	6	3	4

Rounding Whole Numbers

769 rounded to the nearest ten is 770.

- Find the digit you want to round to and circle it.
- Look at the digit to the right of the circled digit and underline it.
- If the underlined digit is 5 or more, you raise the circled digit to the next number. If the circled digit is less than 5, do not change it.
- Change all the digits to the right of the circled digit to "0".

Comparing Whole Numbers

> means *is greater than*
23 **>**16 23 is greater than 16

< means *is lesser than*
56<79 56 is less than 79

= means *is equal to*
65 = 65 65 is equal to 65

Adding Whole Numbers (sum, total)

When the column of digits is greater than 9, you must regroup or carry to the next column.

$$\begin{array}{r} {\scriptstyle 1\quad\quad 1\quad} \\ 2\,8\,3\,4 \\ +\;5\,7\,2\,9 \\ \hline 8\,5\,6\,3 \end{array}$$

Subtracting Whole Number (difference)

When the digit on the bottom is greater than the digit on the top, you must regroup or borrow before you subtract.

$$\begin{array}{r} {\scriptstyle \quad\quad 6\;16} \\ 5\,9\,\cancel{7}\,\cancel{6} \\ -\;\;6\,6\,9 \\ \hline 5\,3\,0\,7 \end{array}$$

Multiplying Whole Numbers (product)

Multiply the top row of digits by the digit in the tens place to get a partial product. Then do the same thing with the other digits. When done, add the partial products together. **Line up each partial product under the digit you multiplied it by.

$$\begin{array}{r} {\scriptstyle \quad\quad 2\quad} \\ {\scriptstyle \quad\quad 1\quad} \\ {\scriptstyle \quad\quad 5\;5} \\ \times\quad\quad 4\;3 \\ \hline {\scriptstyle \quad 1\;6\;5\quad} \\ {\scriptstyle 2\;2\;0\;\times} \\ \hline 2\,3\,6\,5 \end{array}$$

Dividing Wh

quotient

divisor | dividend

$$\begin{array}{r} {\scriptstyle 1\;0\;6\;0\quad} \\ 6\,\overline{)\,6\;1\;2\;0\quad} \\ {\scriptstyle 6\quad\quad\quad} \\ \hline {\scriptstyle 0\;1\quad\quad} \\ {\scriptstyle \quad 0\quad\quad} \\ \hline {\scriptstyle \quad 1\;2\quad} \\ {\scriptstyle \quad 1\;2\quad} \\ \hline {\scriptstyle \quad 0\;0\;0} \end{array}$$

Order of Operations

Please	Parentheses
Excuse	Exponents
My	Multiplication
Dear	Division
Aunt	Addition
Sally	Subtraction

**multiplication or division from left to right
** addition or subtraction from left to right

Associative Property of Addition and Multiplication

You can add or multiply numbers (three or more) in any order and you will get the same answer.

$(3 \cdot 6) \cdot 5 = 3 \cdot (6 \cdot 5)$ $(4 + 8) + 10 = 4 + (8 + 10)$

$90 = 90$ $22 = 22$

Commutative Property of Addition and Multiplication

You can add or multiply numbers (two) in any order and you will get the same answer.

$16 + 6 = 6 + 16$ $25 \cdot 4 = 4 \cdot 25$

$22 = 22$ $100 = 100$

Distributive Property

You distribute by multiplying the factor by each term in the parentheses.

$3(x + 6) = (3)(x) + (3)(6) = 3x + 18$

$9(6 – y) = (9)(6) – (9)(y) = 54 – 9y$

Fraction

A fraction is a part of a whole. It has two numbers (numerator and denominator) separated by a fraction bar.

$$\frac{6}{10}$$ 6 → numerator, 10 → denominator

Proper Fraction

- A proper fraction shows a quantity that is less than one.
- The numerator is smaller than the denominator.

$$\frac{6}{10} \qquad \frac{1}{3} \qquad \frac{23}{60}$$

Improper Fraction

- An improper fraction shows a quantity that it more than one.
- The numerator is larger than the denominator.

$$\frac{99}{10} \qquad \frac{42}{8} \qquad \frac{9}{2}$$

Mixed Number

A mixed number is a combination of a whole number and a proper fraction.

$$7\frac{1}{3}$$