Learning Center

Schoolcraft College

Jump Start

Session 1

Place Value

Hundred millions	Ten millions	Millions	Hundred Thousands	Ten thousands	Thousands	Hundreds	Tens	Ones	Decimal point	Tenths	Hundredths	Thousandths	Ten thousandths	Hundred Thousandths	Millionths
7	1	5	3	6	2	4	8	9	.	1	0	5	6	9	3

Name the place values in the number 123,456.7890

The 4 is in the _____ place.

The 2 is in the _____ place.

The 7 is in the _____ place.

The 0 is in the _____ place.

Rounding

To round to a specific place value:

1. _____
2. _____
3. _____
4. _____

Ex: Round 724,186.598

Tenth _____

Thousand _____

Whole number _____

Hundredth _____

Simplifying Fractions

To simplify a fraction, factor the numerator (top) and the denominator (bottom), then remove any unnecessary “ones”

$\frac{15}{35} =$

$\frac{24}{56} =$

Converting Fractions: Equivalent fractions

To convert a fraction, multiply by a “version of one”

Convert $\frac{2}{3}$ to 15ths

Convert $\frac{3}{25}$ to 100ths

Mixed Numbers and Fractions Greater than 1

Converting mixed number to fraction

$2\frac{3}{4} =$

$5\frac{7}{8} =$

Converting fraction to mixed number

$\frac{13}{5} =$

$\frac{33}{8} =$

Addition

The answer to an addition problem is called the _____

General rule for addition:_____

_____

Adding whole numbers:

$21 + 57 =$

$2{,}814 + 298 =$

Adding fractions:

$\frac{3}{5} + \frac{1}{5} =$

$\frac{1}{6} + \frac{5}{8} =$

Adding decimals:

$1.25 + 14.6 =$

$4.3 + 2.8137 =$

Subtraction

The answer to a subtraction problem is called the _____

General rule for subtraction:_____

_____

Subtracting whole numbers:

$368 - 92 =$

$2{,}500 - 684 =$

Subtracting fractions:

$\frac{5}{8} - \frac{3}{8} =$

$\frac{2}{3} - \frac{1}{4} =$

Subtracting decimals:

$17.6 - 2.03 =$

$45 - 6.72 =$

Multiplication

The answer to a multiplication problem is called the _____

General rule for multiplication:_____

_____

Three ways to show multiplication:

Multiplying whole numbers:

$25 \times 43 =$ $306 \times 32 =$

Potential shortcut: Multiplying with zeros

$200 \times 4{,}000 =$ $5{,}000 \times 60 =$

Multiplying fractions

$\frac{10}{9} \times \frac{3}{5} =$ $\frac{14}{25} \times \frac{15}{21} =$

Multiplying decimals

$5.2 \times .83 =$ $20.6 \times 1.4 =$

Division

The answer to a division problem is called the _____

General rule for division:_____

_____

Three ways to show division:

Dividing whole numbers:

$256 \div 8 =$ $806 \div 4 =$

Potential shortcut: dividing by powers of 10

$28.3 \div 10 =$ $28.3 \div 100 =$ $28.3 \div 1{,}000 =$

Dividing fractions

$\frac{4}{5} \div \frac{3}{7} =$ $\frac{6}{7} \div \frac{2}{3} =$

Dividing decimals

$54 \div 0.5 =$ $0.316 \div 0.08 =$

Story Problems

When do we add?

- We add when we want to find a _____ or the result of an _____.

When do we subtract?

- We subtract when we want to find a _____ or the result of a _____.

When do we multiply?

- We multiply when we know how much for _____ and want to find out how much for _____.

When do we divide?

- We divide when we want to split an amount into _____.

Identify the <u>operation</u> you would use to solve the following problems. Then solve.

1. Mary's internet connection can transfer information at a rate of 18.1 megabytes per second (Mbps). How many total megabytes will be transferred in 40 seconds?

2. A large bag of peanuts weighs 2.25 pounds. A small bag of peanuts weighs 1.33 pounds. How much more does the large bag weigh?

3. Mike's goal is to jog 21 miles this week. If he is comfortable jogging 1½ miles at a time, how many times will he have to go jogging to reach his goal?

4. During a two-day trip, a trucker had to buy 17.63 gallons of gas on the first day and 24.8 gallons of gas on the second day. How many total gallons of gas did the trucker have to buy?

Proportions

Proportions relate two equivalent ratios (fractions).

To solve a proportion_____

$\frac{x}{3} = \frac{28}{42}$ $\frac{5}{8} = \frac{15}{x}$

Percents

Percent means out of 100

15% = = =

As a proportion:

12% of 50 is what number?

15% of what number is 9?

3 is what percent of 20?

Converting Between Number Types

Whole number to fraction $7 =$	Whole number to decimal $7 =$
Fraction to decimal $\frac{2}{5} =$ $\frac{3}{11} =$	Decimal to fraction $0.483 =$ $2.0091 =$
Fraction to percent $\frac{11}{20} =$	Decimal to percent $0.82 =$
Percent to Fraction $8\% =$ $150\% =$	Percent to decimal $8\% =$ $16.75\% =$

Scientific Notation

Scientific notation is a way of writing very large or very small numbers more concisely.

A number is in scientific notation if it is in the form:

$A \; x \; 10^n$ where A is a number that is at least 1 but smaller than 10 and n is an integer

Ex: The number $3.406 \; x \; 10^5$ is equivalent to the number 340,600

To write a regular number in scientific notation, move the decimal to just behind the first non-zero digit. Then value of n will be equal to the number of places you had to move the decimal point. For numbers larger than 10, n will be positive. For numbers smaller than 1, n will be negative.

Write the following in scientific notation:

a) 1,209,000

b) .000827

To convert back from scientific notation, reverse the process. Move the decimal point a number of spaces equal to the value of n, to the right for positive values of n and to the left for negative values of n.

Write the following as decimals or

a) $4.06 \; x \; 10^6$

b) $7.3 \; x \; 10^{-4}$

Inequalities

An inequality is used to describe a whole group of numbers.

$<$_____

$\leq$ _____

$>$_____

$\geq$_____

We can visualize the inequality on a number line:

Interval Notation

Interval notation is another way to describe a whole group of numbers. An interval has a lower and upper boundary. We use __ or ___ if the boundary number is not included, and we use __ or ___ if the boundary number is included. We read them from left to right as starting at a lower bound and ending at an upper bound.

Ex: The interval $(2, 7]$ represents

Ex: If we wanted to describe all the numbers greater than or equal to -2 and less than 5, we would write it in interval notation as

Note: > or < relate to (or), while $\geq$ or $\leq$ relate to [or]