Concepts in Spatial Mathematics

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Introduction

Everything that we do has to do with the manipulation of sets. Our bank account is a set of pennies or of dollar bills. Our wages are a set of a certain amount of money per an hour.

How many times do we use percentages in our lives? We see it all the time on sports shows. We see it all the time at work. We see it all the time in our schools.

What is a percentage mean? It represents the elements that are still left in a set after other elements that are supposed to be in the set are missing. If you have a set of 2 Dollars and 1 Dollar is missing, then the set contains 50% of what it is supposed to contain.

Everything that happens in our schools deal with Sets. It happens when we take an exam. The total number of answers that were right divided by the number of questions that you were responsible to understand is a grade. A grade is a percentage of the knowledge that you have against the knowledge that you are supposed to have in a course.

We are mostly dealing with sets in one way or the other when we are using addition and subtraction in one way or another. We increase the amount of money in our bank account when we make a deposit of money into the account. That means that we are increasing the number of elements in the set. The elements are in the form of money. The set is in the form of a bank account.

A battery is a set. It is a set of electrons and protons. The electrons and protons in a battery are transferred out of the battery and into a circuit which is a set that steals electrical elements from a battery.

We also talk about particles as part of sets. Protons, Neutrons, and Electrons rule our lives. We find thousands of sets that hold Protons, Neutrons, and Electrons. The Volume of Sets that Hold these types of particles are basically batteries and generators. A pitcher of water is a set of Proton Particles. Proton Particles are gases or fluids that exist in a volume such as a soda bottle or a pitcher that is full of water.

Our world deals with the way that we manipulate sets that contains particles of Protons, Neutrons, and Electrons. We have to use sets of particles responsibly. Scientists and engineers work with thousands of different types of sets and different types of particles. We should only use sets that employ particles to help Humanity. Using sets with particles that are meant to injure or to destroy human life is not fair to God. God did not create us to manipulate Sets of Particles of Protons, Neutrons, and Electrons in a way that would cause people to become sick or to die.

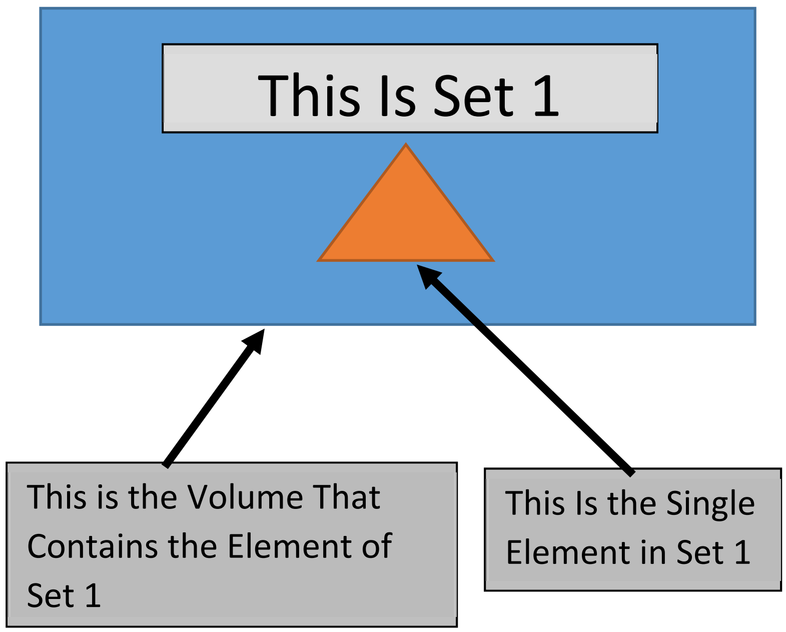
We should understand the different types of distance. We discuss linear distance, angular distance, and rotational distance in this presentation. One of the main goals of mathematics is to understand the concept of distance.

What is distance? It is a set of dots that will separate you from where you are to a point in the universe that is very important to you. Distance can help you to understand what strategy you can employ to get from where you are to where you have to finally arrive. There are millions of dots between ourselves and where we want to exist or where we want to contact. Understanding distance is a big part of Spatial Mathematics. We hope that you will enjoy our presentation.

Working with Sets

What Is a Set?

A set consists of at least one element and a volume that stores that element. Let us look at a Set that has one element in a simple volume.



What Is a Real Number?

The Number That Represents Set 1 is: $\frac{X}{Y} = 1$

The Variable "Y" Represents the Number of Elements That Are Required to Exist in the Set.

The Variable "X" Represents the Number of Elements that Exist in the Set.

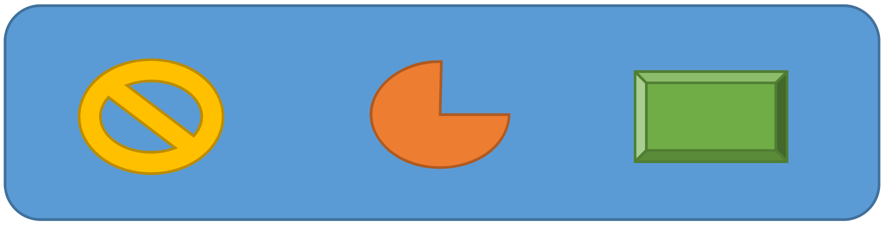
$$\text{Set 1} = \frac{\text{The Number of Elements in a Set}}{\text{The Number of Elements That Are Required to Exist in the Set}}$$

$$= \frac{\text{1 Element In the Set}}{\text{1 Element Required to Be In the Set}} = \frac{X}{Y} = \frac{1}{1} = 1$$

Therefore, the Real Number That Represents Set 1 is Equal to 1. The Real Number 1 Represents All Sets in Which the Required Number of Elements Exist in the Volume of the Set.

What Is a Percentile Number?

This Is Set 1-B



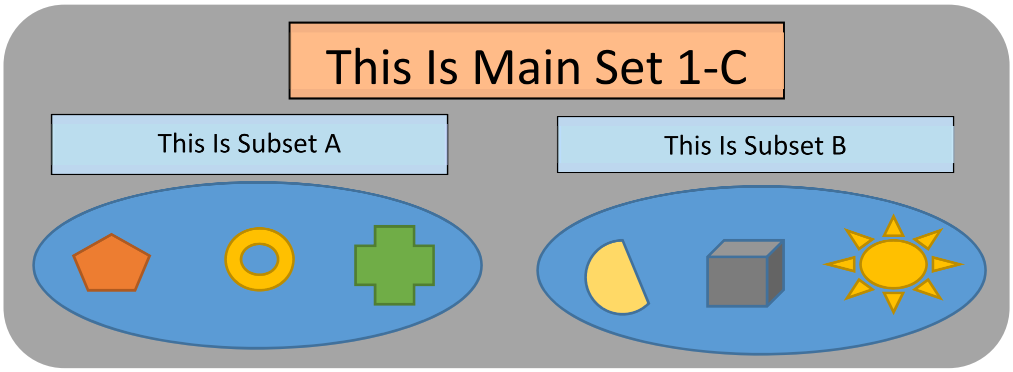
Set 1-B Requires 6 Element to Exist in Its Volume. Only 3 Elements Currently Exist in Set 1-B. A Percentile Number Represents Any Set Where the Number of Required Elements Is Greater Than the Number of Elements That Exist in the Set’s Volume.

Percentile Number = $\frac{X}{Y}$ **Where Y > Greater Than X And Both X and Y are Greater than Zero.**

Percentile Number for Set 1-B = $\frac{\text{3 Existing Elements}}{\text{6 Required Elements}} = .5 = 50\%$

What Is a Subset?

A Subset is a group of elements within a set that only contains part of the total number of Elements that actually exist in Main Set. The Main Set 1-C contains two subsets with 3 Elements in each subset.



What Is a Whole Number?

A Whole Number represents a Set In which the total number of elements in the set exceeds the number of elements that are required to exist in the Set.

The Number of Elements that are required to exist in Set 1-C are 3 Elements. The Set Contains 6 Elements. What is the Whole Number that represents Set 1-C?

$$\textbf{Set 1-C} = \frac{\textbf{The Number of Elements That Reside in The Set}}{\textbf{The Number of Elements That Are Required to Reside in the Set}}$$

$$\textbf{Set 1-C} = \frac{\textbf{\# of Elements in Subset A + \# of Elements In Subset B}}{\textbf{\# of Elements In Subset A}}$$

$$\textbf{Set 1-C} = \frac{\textbf{3 Elements + 3 Elements}}{\textbf{3 Elements}} = \frac{\textbf{6 Elements}}{\textbf{3 Elements}} = \textbf{2}$$

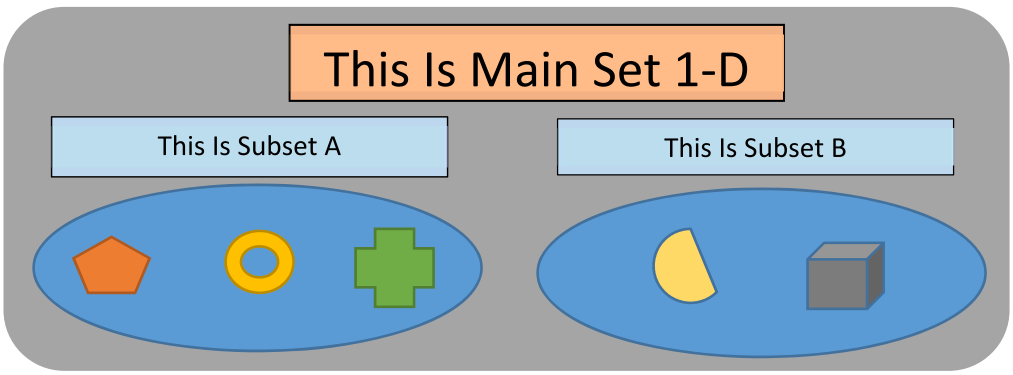
The Whole Number That Represents Set 1-C is 2.

The Whole Number does not contain a percentage or a decimal at this point. We will discuss more scenarios in our next discussion.

Percentile Numbers and Subsets

There are times when a Set with two or more Subsets will have a total number of elements which will be less than the total required number of elements for the entire set. This includes all of the elements in the two subsets. The number that will represent the Set will be a Percentile Number.

The Total Number of Elements that are required to be in Set 1-D is equal to 6 Elements. The total number of elements in both the Subset A and the Subset B is equal to 5 Elements. What is the Percentile Number that represents Set -D?



$$\textbf{Set 1-D} = \frac{\textbf{The Number of Elements That Reside in The Set}}{\textbf{The Number of Elements That Are Required to Reside in the Set}}$$

$$\textbf{Set 1-D} = \frac{\textbf{\# of Elements in Subset A + \# of Elements In Subset B}}{\textbf{8 Elements In Both Subset A and Subset B}}$$

$$\textbf{Set 1-D} = \frac{\textbf{3 Elements + 2 Elements}}{\textbf{6 Elements}} = \frac{\textbf{5 Elements}}{\textbf{6 Elements}} = \textbf{.833 = 83.33\%}$$

The Percentile Number That Represents Set 1-D is 83.33%.

Only 83.33% of the total Elements that are supposed to reside in the Main Set 1-D are actually present in the set.

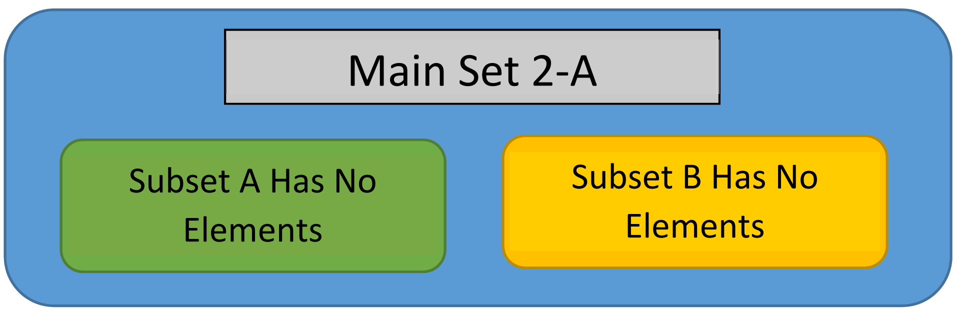
What Is the Null Set?

The Null Set, or the Empty Set, is a situation when no elements that are required to exist in a set actually exist in that set at the present moment. Let's look at the following illustration.

This Is Main Set 2-A

3 Elements Should Reside in Subset A and 3 Elements

Should Reside in Subset B. A Total of 6 Elements Should Reside in Main Set 2-A.



$$\text{Set 2-A} = \frac{\text{The Number or Elements Residing in the Set}}{\text{The Number of Elements Required to Exist in the Set}}$$

$$\text{Set 2-A} = \frac{\text{0 Elements Reside in Set 2-A}}{\text{6 Elements Should Reside in Set 2-A}} = \varnothing$$

The Null Set Illustrates the Absence of Any Elements in Set 2-A.

The Null Set Notation helps us to notate that all of the elements that are supposes to exist in a set are absent from that set.

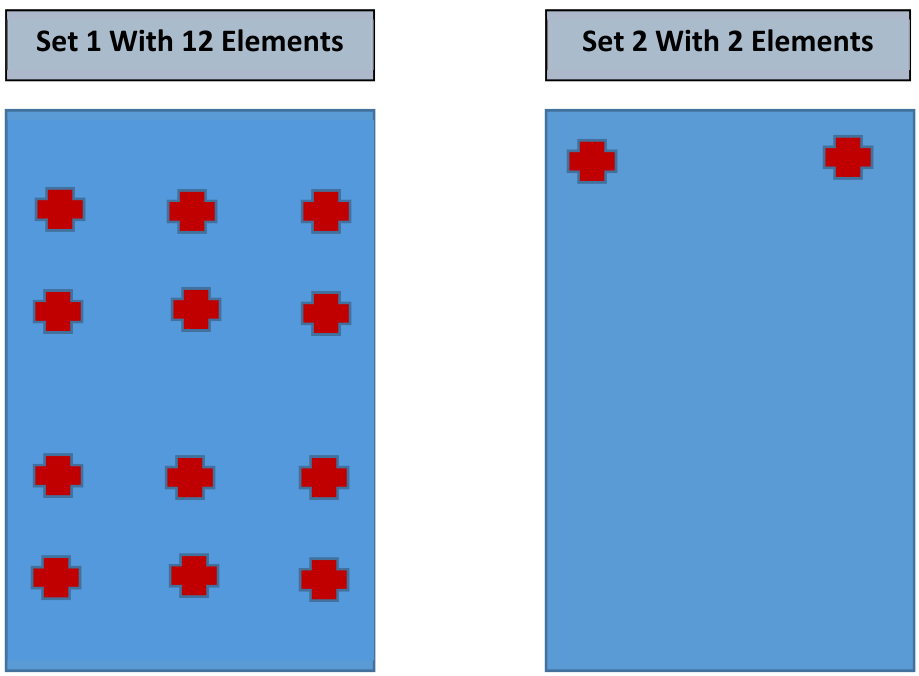
Basic Transfer of Subset Elements between Sets

We use the following equations to understand how to define the transfer of elements between sets.

$$\text{\# Elements after Transfer} = \text{Starting \# of Elements} + (\text{Time})\left[\left(\frac{\text{\# of Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{\# of Tranfers}}{\text{Per Unit Time}}\right)\right]$$

$$\text{Time of Transfer} = \frac{\text{Total Elements Transferred}}{\left[\left(\frac{\text{\# of Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{\# of Tranfers}}{\text{Per Unit Time}}\right)\right]}$$

Set 1 starts with 12 Elements and Set 2 Starts with 2 Elements. The Set 1 Transfers Elements to Set 2 at a Rate of 2 Elements per Transfer at 2 Transfers per second for 2 Seconds. How Many Elements will exist in Set 2 when the transfers end?



$$\text{\# Elements after Transfer} = \text{Starting \# of Elements} + (\text{Time})\left[\left(\frac{\text{\# of Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{\# of Tranfers}}{\text{Per Unit Time}}\right)\right]$$

$$\text{\# Elements after Transfer} = \text{2 Elements} + (\text{2 Seconds})\left[\left(\frac{\text{2 Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{2 Tranfers}}{\text{Per Second}}\right)\right]$$

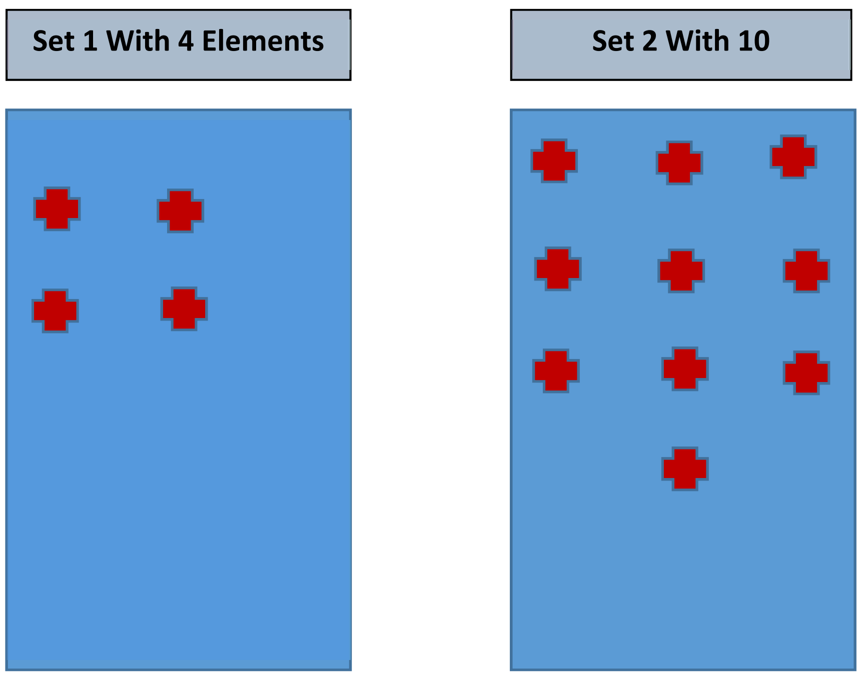
$$= \text{2 Elements} + (\text{2 Seconds})\left(\frac{\text{4 Elements}}{\text{Second}}\right) = \text{10 Elements}$$

# of Elements in Set 1 = 12 Elements - 8 Elements = 4 Elements

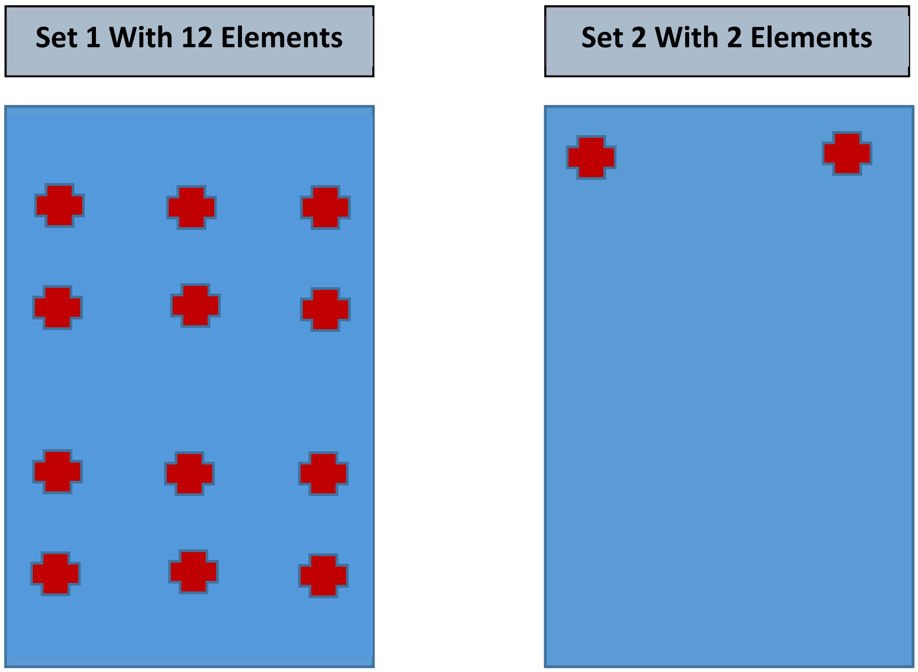
Set 2 Contains 10 Elements after the Element Tranfer Ends.

Set 1 Contains 4 Elements after the Element Transfer Ends.

Set 1 Contains 4 Elements and Set 2 Contains 10 Elements After the Transfer of Elements is Complete.



Transfer of Elements with Subset of 1 Element



Set 1 Transfers Elements at a rate of 1 Element per Element Transfer to Set 2 with 1 Element Transfer per Second for 1 Second. How many Element will Set 1 have after the Transfer? How many elements will Set 2 Have After the Transfer?

$$\text{\# Elements after Transfer} = \text{Starting \# of Elements} + (\text{Time})\left[\left(\frac{\text{\# of Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{\# of Tranfers}}{\text{Per Unit Time}}\right)\right]$$

$$\text{\# Elements after Transfer} = \text{2 Elements} + (\text{1 Seconds})\left[\left(\frac{\text{1 Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{1 Tranfers}}{\text{Per Second}}\right)\right]$$

$$= \text{2 Elements} + (\text{1 Seconds})\left(\frac{\text{1 Elements}}{\text{Second}}\right) = \text{2 Elements} + \text{1 Elements} = \text{3 Elements}$$

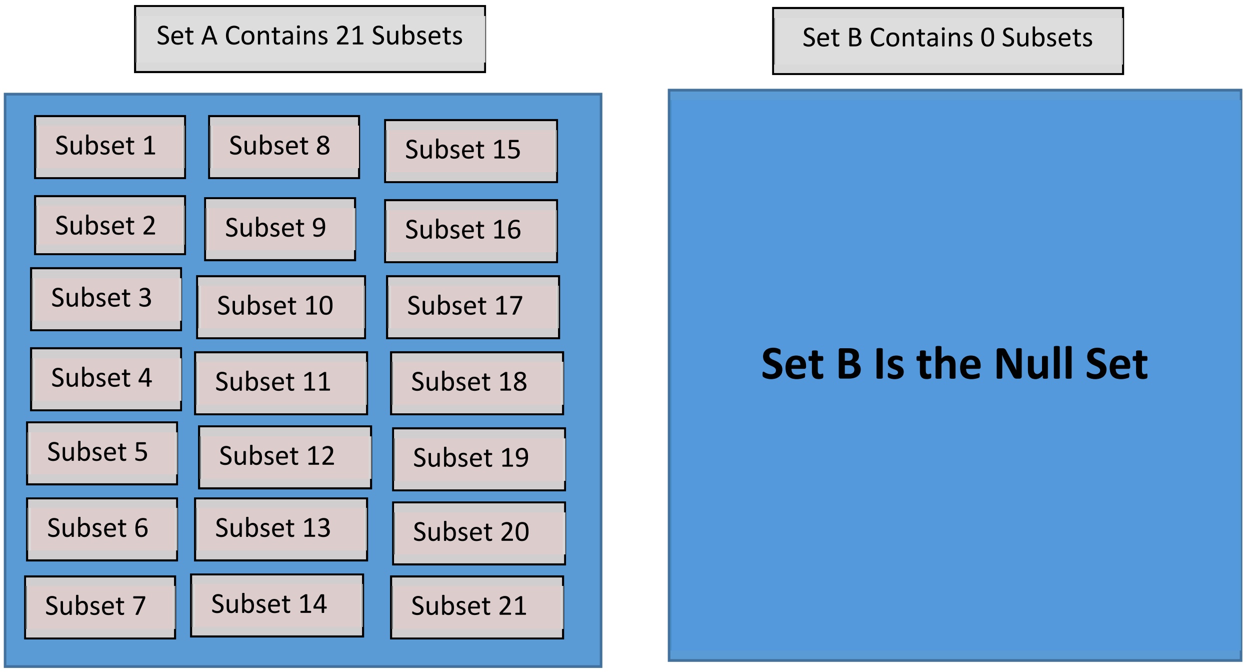
$$\text{\# Elements in Set 2} = \text{12 Elements} + (\text{1 Seconds})\left(\frac{\text{1 Elements}}{\text{Second}}\right) = \text{12 Elements} + \text{1 Elements} = \text{11 Elements}$$

# of Elements in Set 1 = 12 Elements - 1 Elements = 11 Elements

Set 2 Contains 3 Elements after the Element Tranfer Ends.

Transfer of Subsets to the Null Set

We will now focus on what it means to transfer a series of subsets to another set called the Null Set. The Null Set is supposed to contain a certain number of elements. However, It does not contain any elements. Let us look at the following illustration.



Set A Transfers Subsets at a rate of 3 Subsets Per Transfer at a rate of 2 Transfers per Second for 2 Seconds. How many Subsets will remain in Set A when the transfers end? How many Subsets will exist in Set B when the transfers end? Each Subset contains 3 Elements. How many elements will exist in the Set B after the element transfer ends? How many elements will be left in Set A when the element transfer ends?

$$\text{\# Elements after Transfer} = \text{Starting \# of Elements} + (\text{Time})\left[\left(\frac{\text{\# of Elements}}{\text{Per Transfer}}\right)\left(\frac{\text{\# of Tranfers}}{\text{Per Unit Time}}\right)\right]$$

$$\text{\# Subsets after Transfer in Set B} = \text{0 Elements} + (\text{2 Seconds})\left[\left(\frac{\text{3 Subsets}}{\text{Per Transfer}}\right)\left(\frac{\text{2 Tranfers}}{\text{Per Second}}\right)\right]$$

$$= \text{0 Subsets} + (\text{2 Seconds})\left(\frac{\text{6 Subsets}}{\text{Second}}\right) = \text{0 Elements} + \text{12 Subsets} = \text{12 Subsets}$$

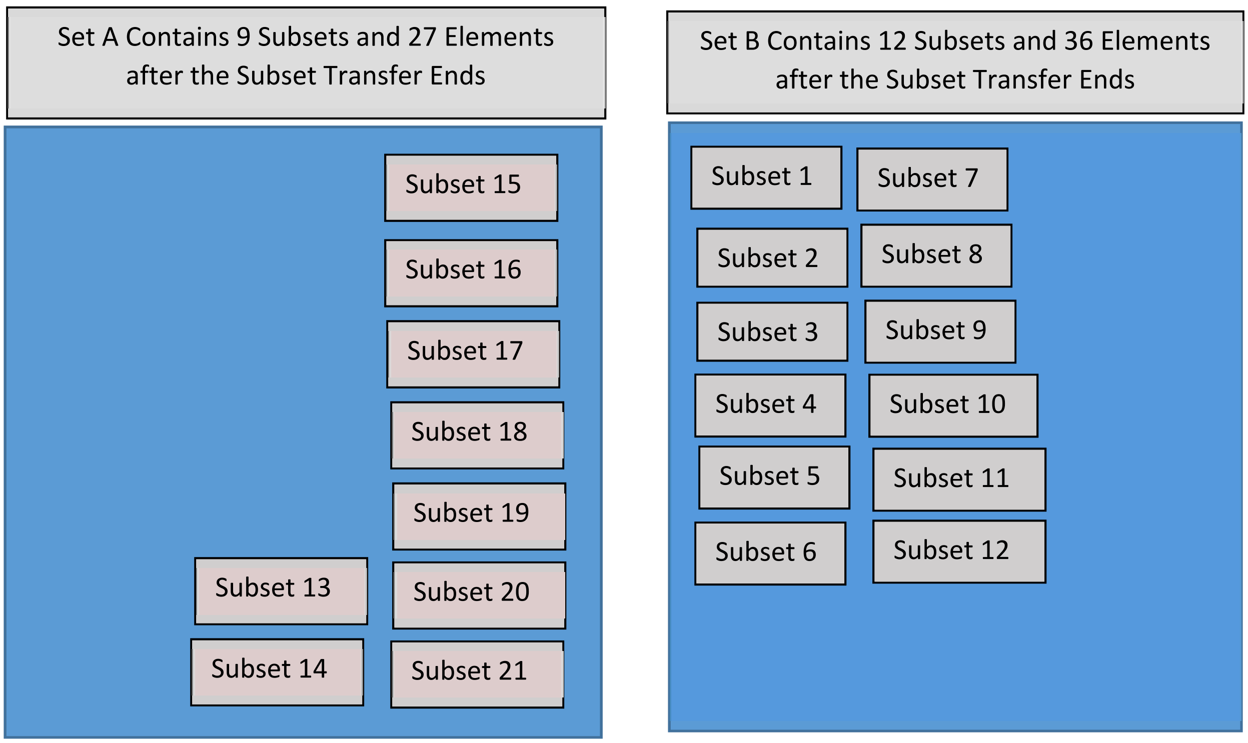
# of Elements in Set B = (3 Elements)(12 Subsets) = 36 Elements

Number of Subsets in Set A = 21 Subsets - 12 Subsets = 9 Subsets

Number of Elements in Subset A = (3 Elements)(9 Subsets) = 27 Elements

Set A Contains 27 Elements after the Element Transfer Ends.

Subset B Contains 36 Elements after the Element Transfer Ends.



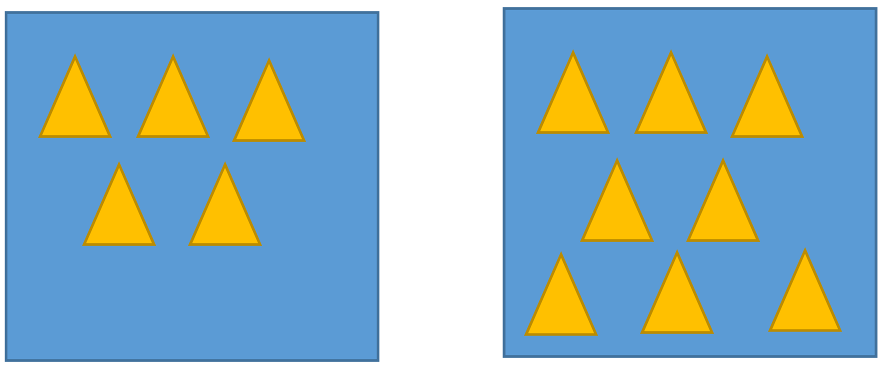
Basic Functions of Equations

What is Addition?

Addition is an increase in the number of elements in a set throughout a series of points in time. Let us look at the following example.

Elements Before Addition Equal to 5 Elements at 12:00 Noon

Total Elements after the Addition of Elements is 8 Elements at 12:01 P.M.



5 Elements + 3 Elements = 8 Elements at Point in Time 12:01 P.M. is a pretty basic concept. How do we get to that Point?

Creating Elements to Add to the Set

We can find some way to make elements for a set appear out of nowhere. We might mix different ingredients together to form the molecules for a certain drink. Nature might help us to create a fruit or a vegetable out of nowhere. We create elements to add to sets all of the time.

Replicating Elements within a Set

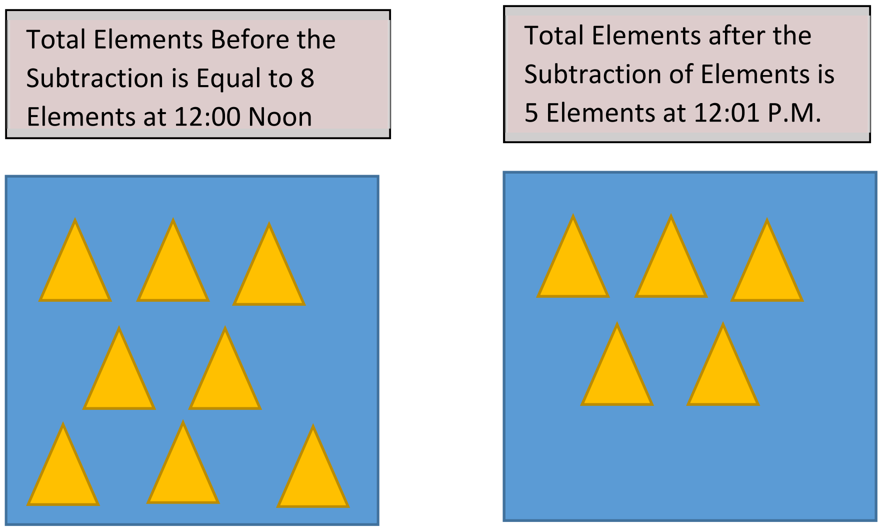
We can sometimes design a set that has elements that can create carbon copies of themselves. We can see that elements can create other elements from within the volume of the set with no intervention from nature or human beings. This may happen with living humans, nonhuman life forms, and nonliving organisms.

Merging Sets

We can turn two sets into one set. We can combine the elements in one set with the elements of another set to create a new set that has a larger number of elements than wither of the two previous sets. This is a way of increasing the number of or elements that will be available for us to use in an individual set.

What Is Subtraction?

Subtraction is defined as a decrease in the number of elements in a set after a certain point in time. Let us look at the following example.



Subtraction is a removal of an element or elements from a set at a point in time. It is very easy to say that 8 minus 3 is equal to 5. However, we are always dealing with sets when we are dealing with subtraction. What are some of the ways that we can produce subtraction within the elements in a set?

Destroying Elements

Destroying an element means that we are removing it from a set by making it disappear so that it is no longer eligible to reside within any set. There are many way to destroy elements within sets depending on what sets with which we are dealing.

Merging Elements within a Set

There are times when two or more elements in a set may join each other to become one element in that set. Turning two elements in a set into one element can reduce the number of elements in a set. This process mimics subtraction even though all of the elements of the set still reside in the set.

Creating a New Set

There are times when elements in a set will leave the set to create a new set outside of the particle's original set. This mimics subtraction because the number of elements in the original set decrease by a certain number because of the creation of the new set that basically steals elements from the old set.

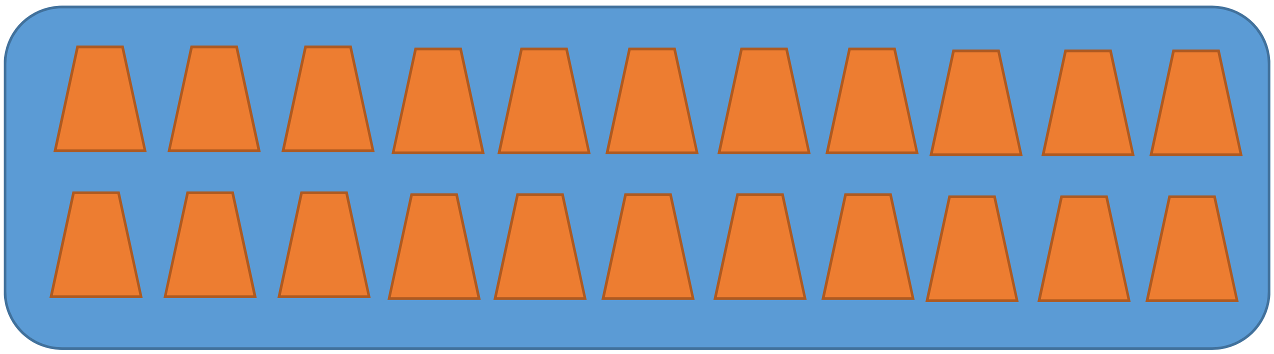
Loss of Mass

Elements in a set may disappear if they lose mass because of an interaction that makes the elements completely unable to respond to a volume or to be countable. This loss of mass can be caused by numerous forces that can turn elements and particles to have no mass.

What is Division?

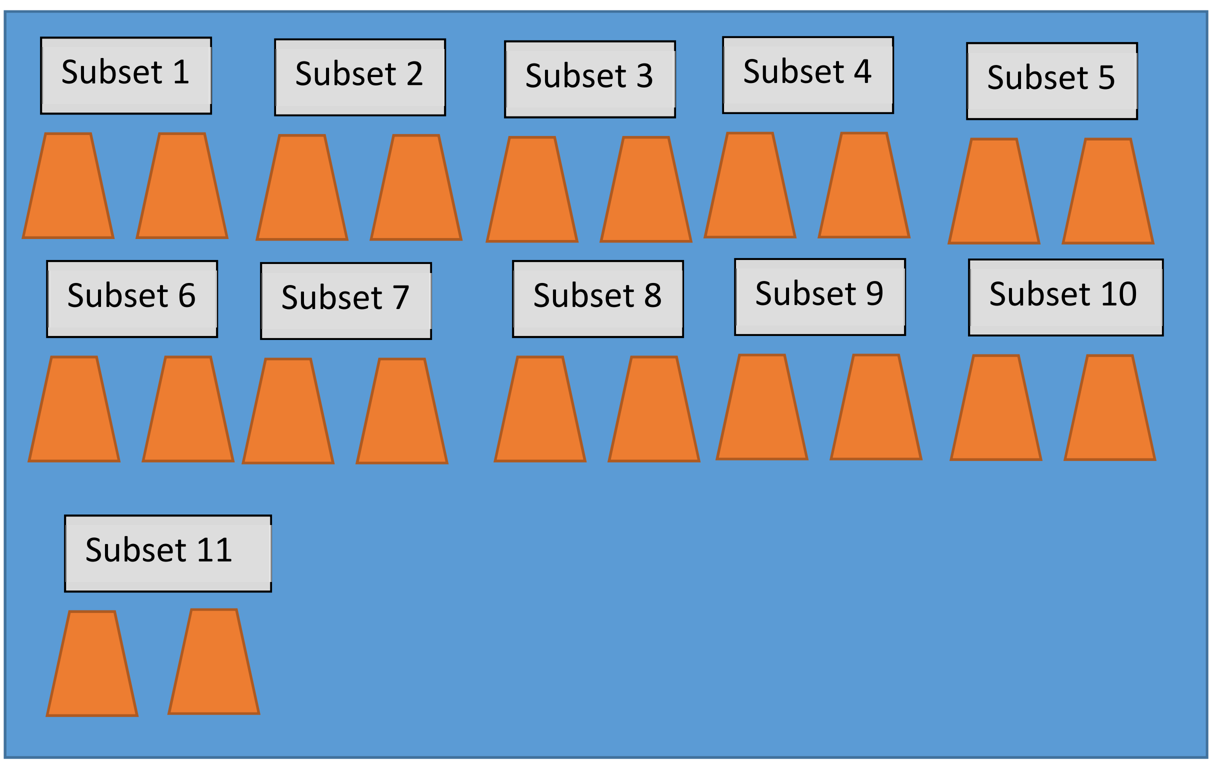
Division is an effort to create subsets from within a set of elements in which all of the subsets would have an equal number of elements. Let us look at the following example.

This is Set 4-A Which Has 22 Elements. We want to create 11 Subsets of Two Elements in Each Subset.



$$\textbf{Subsets} = \frac{\textbf{22 Elements in the Set}}{\textbf{2 Elements Per Subset}} = \textbf{11 Subsets}$$

We Can Create 11 Subsets with 2 Elements in Each Subset



We have succeeded in creating 11 Subsets with 2 elements in each subset by using the functions of Division. This is really what Division does in the truer sense of the concept and of the word.

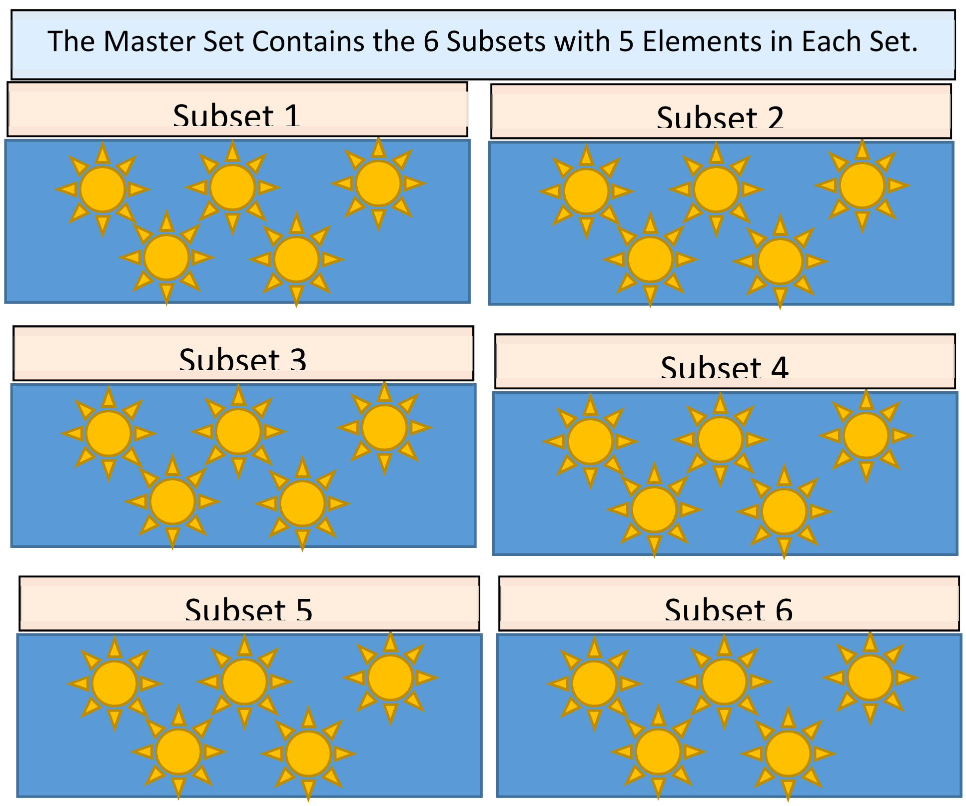
What is Multiplication?

Multiplication is an effort to create a set from a number of different subsets at the same time in which all of the subsets would have the same number of elements. Let us look at the following examples.

We want to create a set that has 30 Elements with 5 Elements in each Subset. We know that we will be multiplying 5 Elements by 6 subsets in order to get to the desired number of subsets and the equivalent elements in each subset. Let us look at the graphic to see how that works.

We will be creating a set with 6 Subsets that we will obtain from another source. We will be merging the 6 Subsets in order to create the final master set.

Total Elements = (Number of Subsets)(Number of Elements in Each Subset)
Total Elements = (6 Subsets)(5 Elements in Each Subset)
Total Elements = 30 Elements



Sets and Concepts in Money

What is a Penny?

A Penny is the most basic element in the United States. There is no such thing as half of a penny. There is no such thing as a third of a penny. Every denomination of money answers to a group or a set of pennies. Let's look at the following example.

Working with a 1-Dollar Bill

A Nickle is a Subset of a One Dollar Bill. We want to create as many sets as we can with a one-dollar bill. How do we determine how many sets of nickels that we can create with a dollar?

$$\text{Total Sets} = \frac{\text{Total Number of Pennies}}{\text{The Value of the Subset}} = \frac{\text{100 Pennies}}{\text{A Nickle (5 Pennies)}} = \text{20 Nickels}$$

We can create 20 Subsets with 5 Pennies in Each Subset

(Each Nickel is a Subset of 5 Pennies).

Working with a 5-Dollar Bill

One Quarter is a Set of 25 Pennies. A one-dollar bill contains 4 subsets of 25 Pennies or 4 Quarters. A 5 Dollar bill is a set of 5 One-Dollar Bills. How many subsets of a quarter are included in a 5-dollar bill?

$$\text{Total Sets} = \frac{\text{Total Number of Pennies}}{\text{The Value of the Subset}} = \frac{\text{500 Pennies}}{\text{A Quarter (25 Pennies)}} = \text{20 Quarters}$$

100 Pennies*5 Dollars = 500 Pennies

Each Quarter is a Subset of 25 Pennies.

There are 20 Subsets of 25 Pennies (20 Quarters) in a Set of 5 Dollars.

Working with a 10-Dollar Bill

A 10-Dollar Bill is a set of 1,000 Pennies. It is fortunate that we can carry a 10-Dollar bill with us because 1000 Pennies would be very inconvenient if we would need to buy something.

How many subsets of 10 Pennies (1 Dime) exist in a 10-Dollar Bill?

$$\text{Total Sets} = \frac{\text{Total Number of Pennies}}{\text{The Value of the Subset}} = \frac{\text{1,000 Pennies}}{\text{A Dime (10 Pennies)}} = \text{100 Dimes}$$

10 Dimes = 1 D-Dollar

100 Dimes = Ten Dollars

Each Dime is a Subset of 10 Pennies

There Are 100 Subsets of 10 Pennies (100 Dimes) in a 10-Dollar Bill

What Is the Number Line?

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

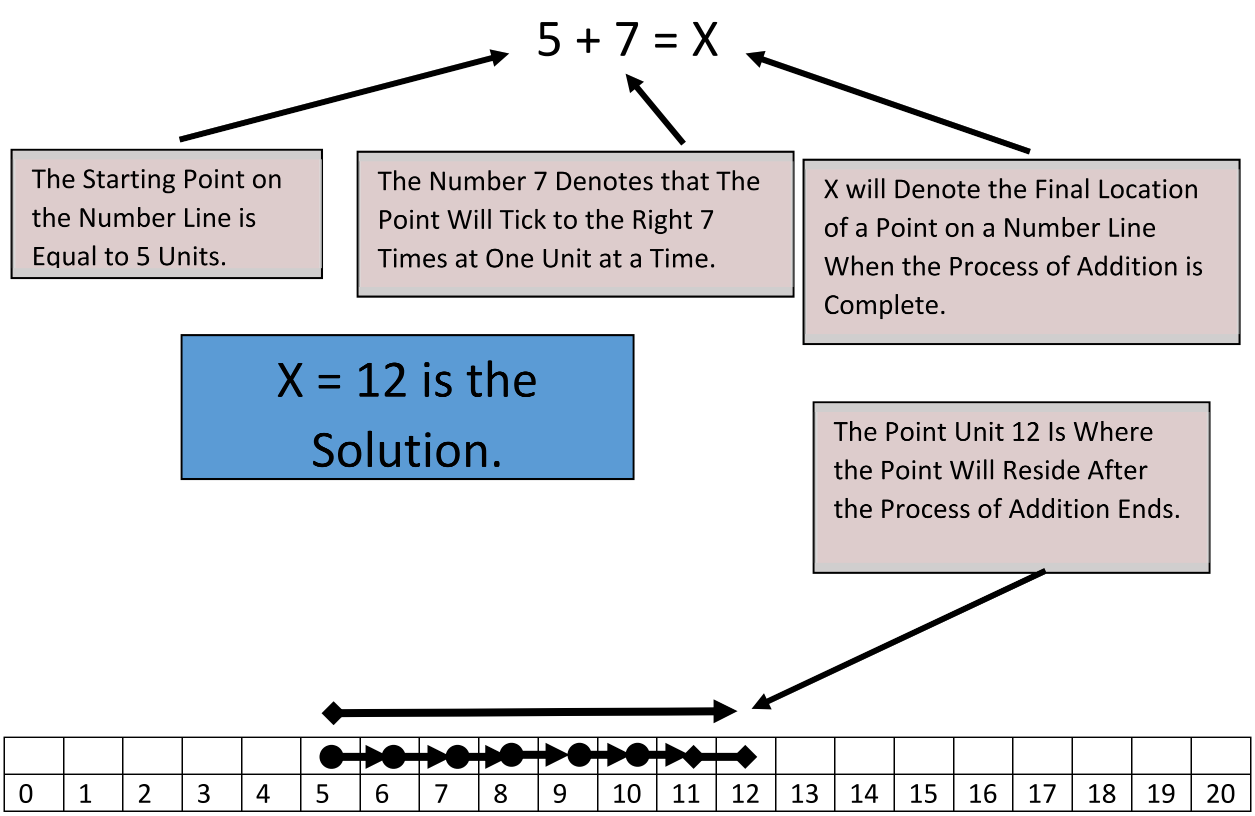
A number line helps us to understand the concepts of Additions, Subtraction, Multiplication, and Division. We can understand the behaviors of numbers by studying the number line.

What Does a Point on a Number Line Represent?

A point on a number line represents a value of the number of elements in a set. The number 8 would represent the 8 predefined elements in a set. All of the numbers that represent a set fall at some point on the number line.

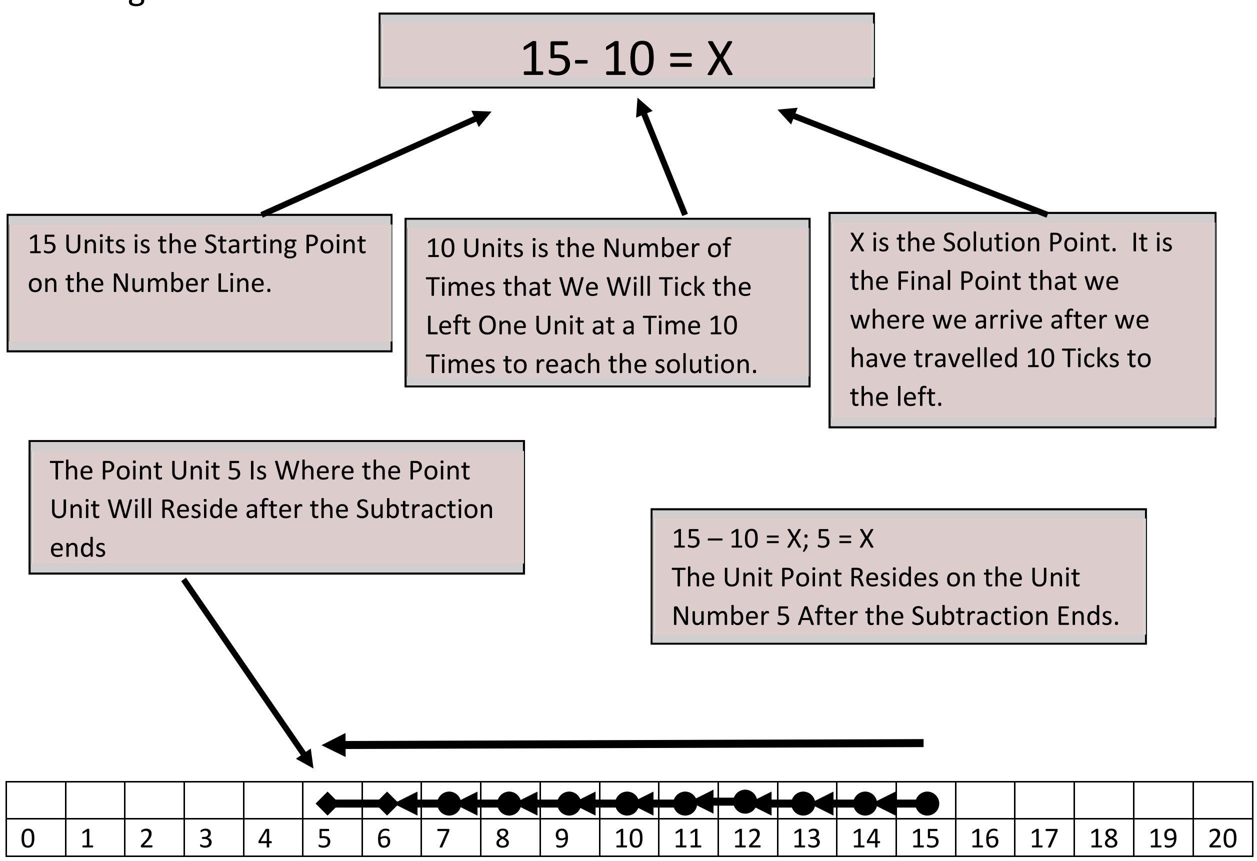
What is Addition on the Number Line?

We can illustrate how addition operates on a number line. Let us look at a simple equation that illustrates addition on the number line.



What Is Subtraction on the Number Line?

Subtraction on the number line is similar to addition on the number line. We have a starting point. We then start to tick to the left a certain number of times until we have finished exhausting the number of ticks. Let us look at the following illustration.



What Is Multiplication on the Number Line?

Multiplication is an effort to reach a target Unit on the number line by ticking to the right by one group of units per unit time until you reach the target unit. Let us look at the following example.

$$4 \times 3 = X$$

This Number Denotes the Number of Elements that We Will Tick to the Right at One Unit of Time.

This Number Denotes then Number of Units of Time That We Will Tick to the Right 4 Units at a Time. We Will Tick 4 Ticks Once a Second for 3 Seconds.

X is the Solution That We Achieve When We Arrive at When We Have Finished Ticking to the Right 3 Times at 4 Units per Tick to Arrive at Unit 12.

The Variable X Has Assumed a Value of 12 After The Point Has Ticked to the Right of the Number Line from the 0 Point 3 Times at 4 Units at a Time.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Group of 4 #1

Group of 4 #2

Group of 4 #3

The Point Ticks to the Right at 3 Times at Four Unit Points at a Time.

What Is Division on The Number Line?

Division is an effort to take a Set of Elements and to create a series of subsets out of an original set of Elements.

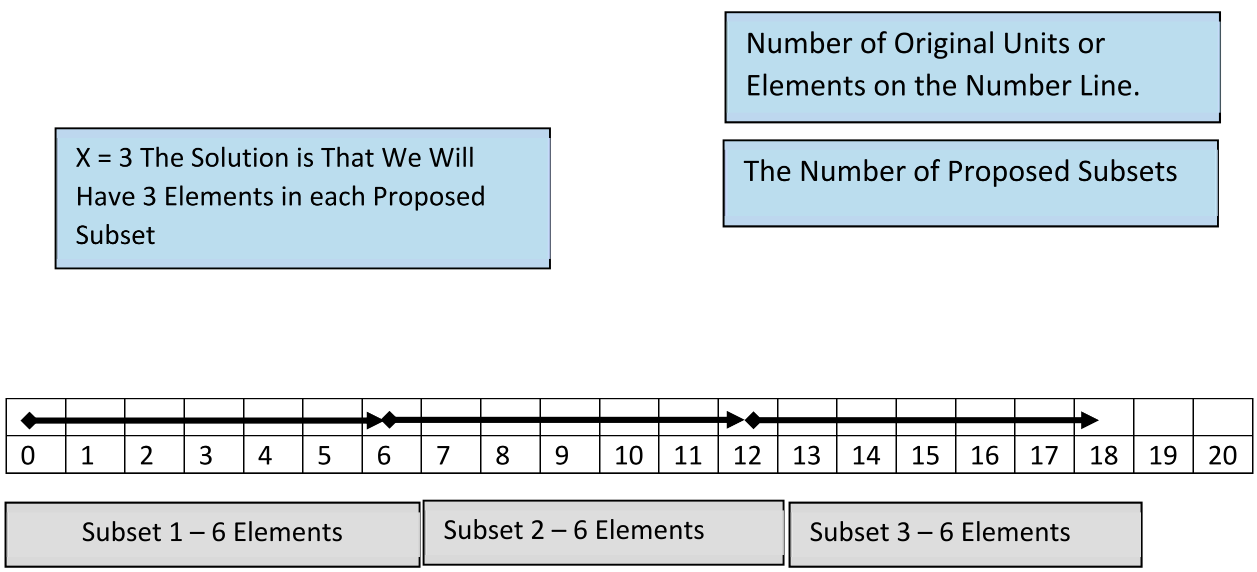
Let us say that we have a Set of18 Elements. We want to create 6 Subsets out of those 18 Elements. How many elements will reside in each subset?

$$\textbf{Number of Subsets} = \frac{\textbf{Original Number of Elements in a Set}}{\textbf{Proposed Number of Subsets}}$$

$$\textbf{Number of Subsets} = \frac{\textbf{18 Elements In the Original Set}}{\textbf{3 Proposed Subsets}} =$$

6 Elements In Each Proposed SubsetSet

$$\textbf{X} = \frac{\textbf{18 Original Elements}}{\textbf{3 Proposed Subsets}} = \textbf{6 Elements Per Subset}$$



Concepts in Linear Distance

What is Distance?

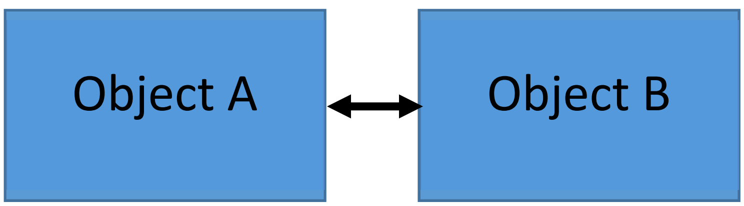
It is relatively simple to define distance. Distance is the number of points between a start point and an endpoint. We have different ways of calculating just how many points are between a start point and an endpoint.

A Repulsive Force

A repulsive force causes an increase in the distance between two objects. One of the objects emits what is called a Repulsive Pulsation. A Repulsive Pulsation is a force that comes from either an electromagnetic field or from some other type of mechanism. Let us look at the following example.

Object A and Object B are 0 Feet apart. Object A emits a repulsive force against Object B. Object A Pulsates at a rate of 2 feet per pulsation and at 2 pulsations per second for 3 seconds. How far apart will the two objects be after the pulsations end?

The Original Distance Between Object A and Object B Before the Pulsations Begin is 0 Feet.



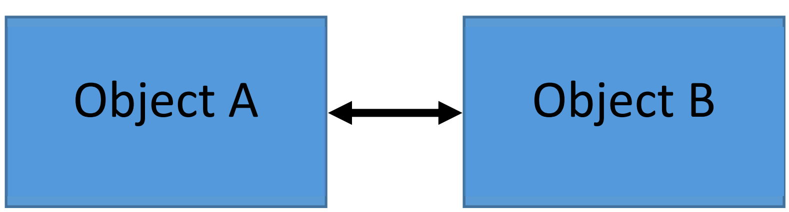
$$\textbf{Final Distance} = \textbf{Original Distance} + (\textbf{Time})\left[\left(\frac{\textbf{Distance}}{\textbf{Pulsation}}\right)\left(\frac{\textbf{Pulsations}}{\textbf{Per Unit Time}}\right)\right]$$

$$\textbf{Final Distance} = \textbf{0 Feet} + (\textbf{3 Seconds})\left[\left(\frac{\textbf{2 Feet}}{\textbf{Pulsation}}\right)\left(\frac{\textbf{2 Pulsations}}{\textbf{Second}}\right)\right] =$$

$$= (\textbf{3 Seconds})\left(\frac{\textbf{4 Feet}}{\textbf{Second}}\right) = \textbf{12 Feet}$$

Object A and Object B are 12 Feet Apart after the Pulsations End.

The Final Distance Between Object A and Object B Before the Pulsations Begin is 12 Feet.

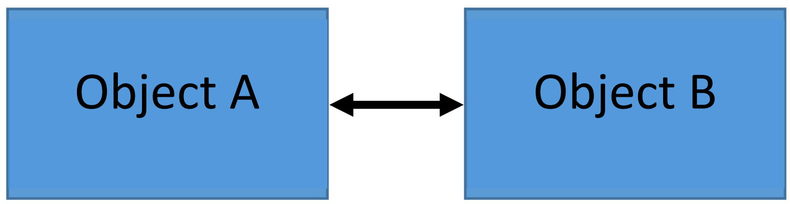


An Attractive Force

An Attractive Force causes a decrease in the distance between two objects. One Object emits an Attractive Pulsation which causes the distance between the two objects to decrease over time. The distance between the two objects will decrease until the pulsations end or until the distance between the two objects will be equal to 0 feet. Let us look at the following example.

Object A and Object B are 150 Feet apart. Object A pulsates at a rate of 5 Feet per Pulsation and at 5 Pulsations per Second for 6 Seconds. What is the final distance between Object A and Object B after 6 Seconds?

The Initial Distance Between Object A and Object B Before the Pulsations Begin is 150 Feet.



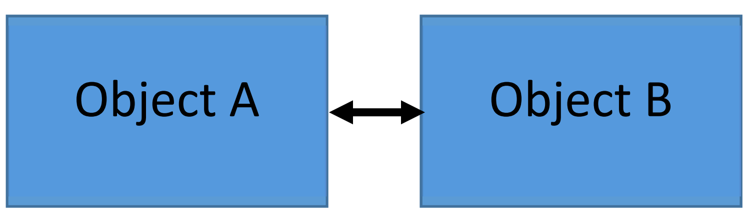
$$\textbf{Final Distance} = \textbf{Original Distance} + (\textbf{Time})\left[\left(\frac{\textbf{Distance}}{\textbf{Pulsation}}\right)\left(\frac{\textbf{Pulsations}}{\textbf{Per Unit Time}}\right)\right]$$

$$\textbf{Final Distance} = \textbf{150 Feet - } (\textbf{6 Seconds})\left[\left(\frac{\textbf{5 Feet}}{\textbf{Pulsation}}\right)\left(\frac{\textbf{5 Pulsations}}{\textbf{Second}}\right)\right] =$$

$$= \textbf{150 Feet - } (\textbf{6 Seconds})\left(\frac{\textbf{25 Feet}}{\textbf{Second}}\right) = \textbf{150 Feet - 150 Feet = 0 Feet}$$

Object A and Object B are 0 Feet Apart after the Pulsations End.

The Final Distance Between Object A and Object B After the Pulsations End is 0 Feet.

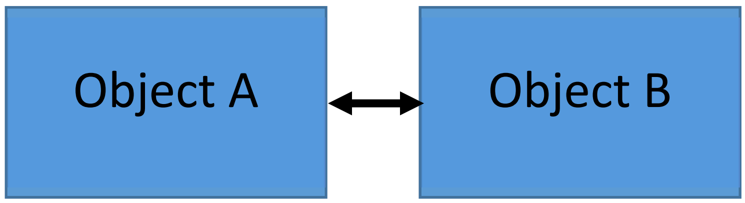


Understanding Time and Linear Distance

How do we calculate how much time it will take for an object to travel a certain distance if we know the distance per pulsation and the pulsations per unit time of the object that emits a repulsive pulsation? Let us look at the following example.

Object A emits a Repulsive Pulsation for Object B. They are currently 0 Feet Apart. Object A pulsates at 4 feet per Pulsation and at 3 Pulsations per Second. How much time will it take for the Object A and the Object B to be 36 Feet apart?

The Original Distance Between Object A and Object B before the Pulsations Begin is 0 Feet.

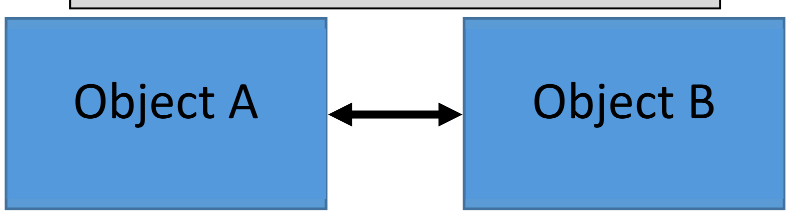


$$\textbf{Time} = \frac{\textbf{Total Distance}}{\left[\left(\dfrac{\textbf{Distance}}{\textbf{Per Pulsation}}\right)\left(\dfrac{\textbf{Pulsations}}{\textbf{Per Unit Time}}\right)\right]}$$

$$\textbf{Time} = \frac{\textbf{36 Feet}}{\left[\left(\dfrac{\textbf{4 Feet}}{\textbf{Per Pulsation}}\right)\left(\dfrac{\textbf{3 Pulsations}}{\textbf{Seconds}}\right)\right]} = (\textbf{36 Feet})\left(\frac{\textbf{Seconds}}{\textbf{12 Feet}}\right) = \textbf{3 Seconds}$$

It Will Take Object A and Object B 3 Seconds to Be 36 Feet Apart.

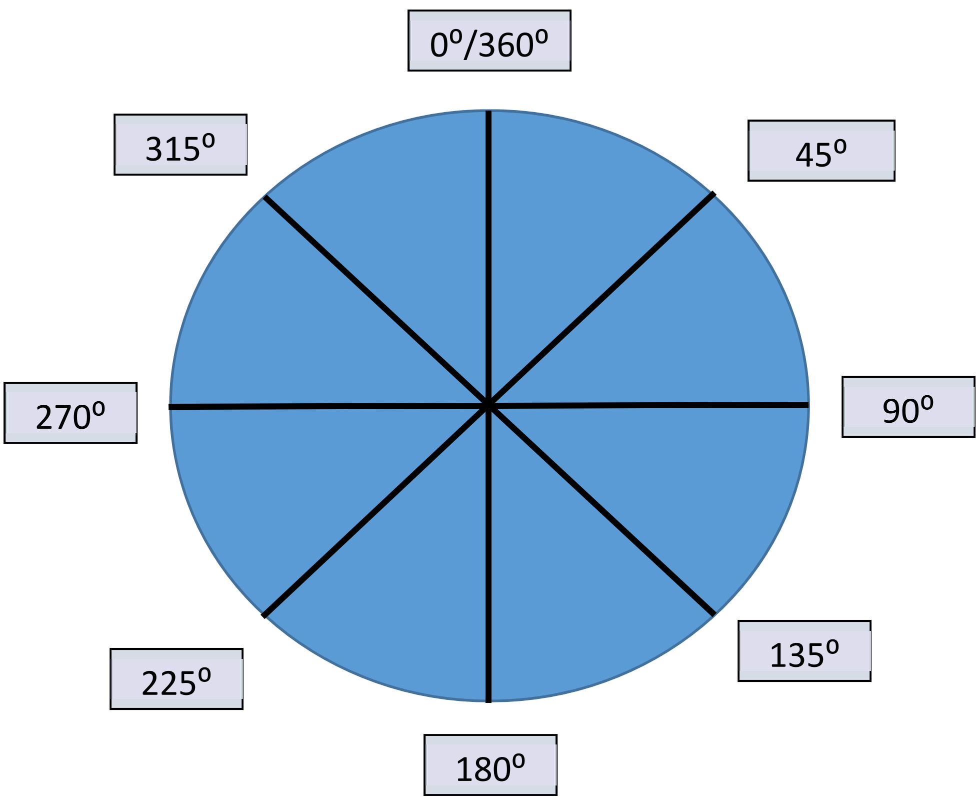
It Will Take a Total of 3 Seconds for Object A and Object B to be 36 Feet Apart.



Concepts Angular Distance

Understanding Angular Distance is very important to understand if we are going to develop our knowledge about how planets and gravitational bodies function. Let us look at some facts about Angular Distance.

Concepts about Planetary Angular Distance		
1 Hour	= 15^o Angular Orbit	1 Hour Per Time Zone
Midnight	$0^o/360^o$	Midnight
Noontime	180^o	12 P.M. Noontime
1 Minute	= $.25^o$	Angular Distance in one minute
The Central Axis	Angular Center or Rotation	Inclusive to All Planets
24 Hours	360^o Full Angular Rotation	360^o Completes Full Rotation
Clocks Measure the Angular Rotation of a Planet around its Central Axis.	Time is a measurement of a Planet's Progress toward Achieving a 360^o Complete Rotation.	Angular Distance is a Constant. The way that we will detect and monitor time and angular motion will never change.



How Do We Calculate Angular Distance?

Clockwise Angular Distance

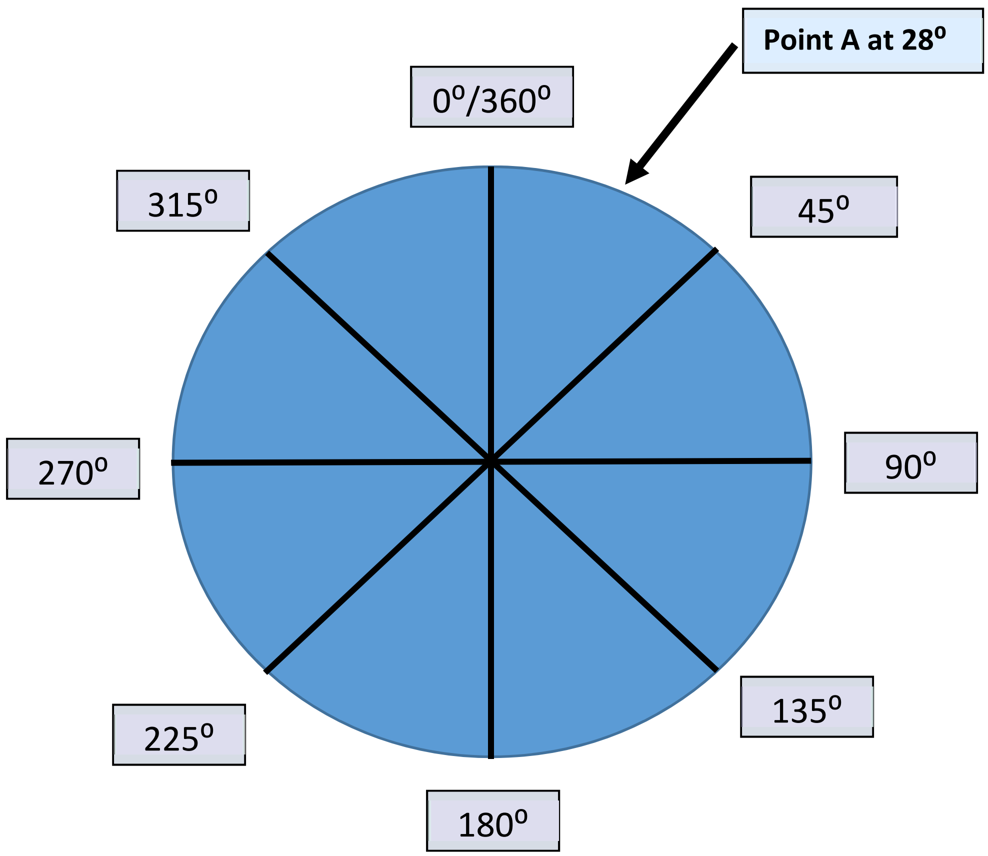
We can calculate the angular distance of a rotating disc if we can come to understand the variables that are involved in the rotation. Let us look at the following example.

A Point A begins to rotate around the central axis of a Circular Disc clockwise at a rate of 4^o per second. The Point A starts its rotation at 0^o How many degrees will the Point A travel around the Center of the Circular Disc in 7 Seconds?

$$\textbf{Angular Distance} = (\textbf{Time})(\textbf{Velocity})$$

$$\textbf{Angular Distance} = (\textbf{Time})\left(\frac{\textbf{Degrees}}{\textbf{Second}}\right) = (\textbf{7 Seconds})\left(\frac{\textbf{4}^\circ}{\textbf{Second}}\right) = \textbf{28}^\circ$$

Point A Travels 28° Clockwise Around the Center of the Circular Disc in 7 Seconds



Counterclockwise Angular Distance

We can also predict the distance that a point on a Circular Disk will travel when the disc is rotating in a counterclockwise motion around its center of rotation. Let us look at the following example.

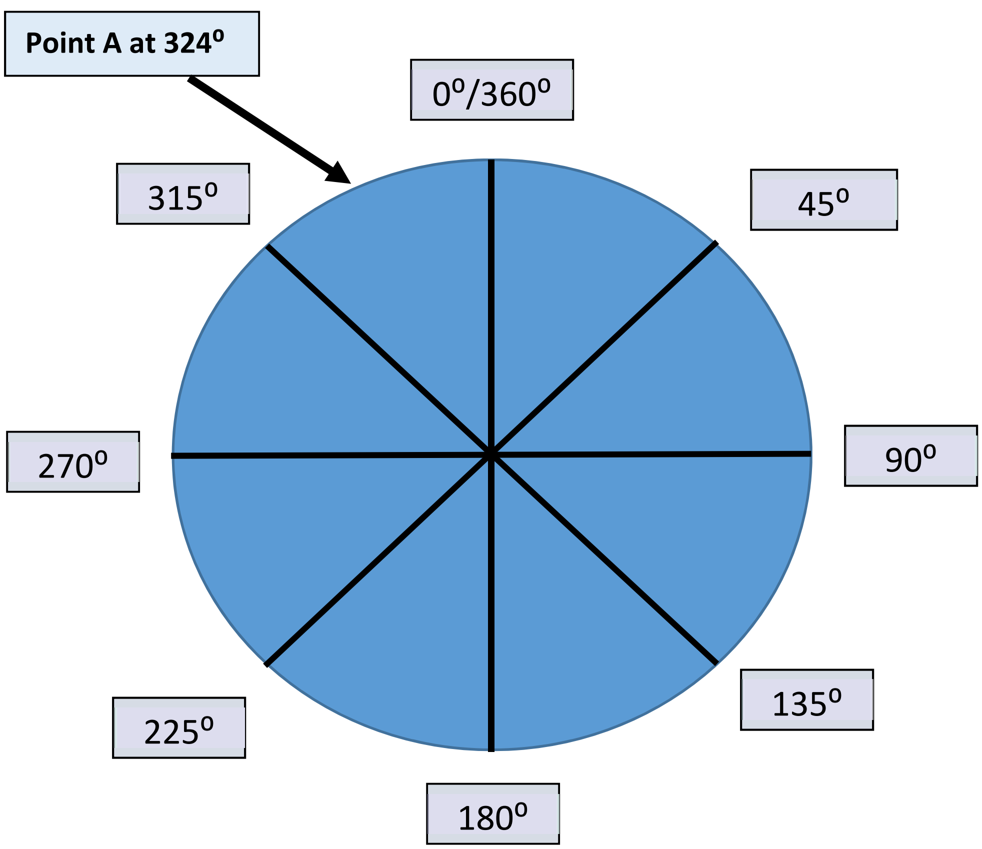
A Point A on a Circular Disc starts to rotate at 0^o in a counterclockwise rotation. It rotates at -3^o per second for 12 Seconds. What will be the distance that the point will have traveled? What will be its angular location?

$$\textbf{Angular Distance} = 360^o - (\textbf{Time})(\textbf{Velocity})$$

$$\textbf{Angular Distance} = 360^o - (\textbf{Time})\left(\frac{\textbf{Degrees}}{\textbf{Second}}\right) =$$

$$= 360^o - (12\ \textbf{Seconds})\left(\frac{3^\circ}{\textbf{Second}}\right) = 360^o - 36^o = 324^o$$

Point A Travcls for 36^o in 12 Seconds. It exists at the 324^o Point after the rotation ends.



What Is Angular Time?

We can calculate at what point we are in the angular rotation of our planet by looking at our watches. A watch measures the progress that we have made in our rotation around our planet's central axis by responding to the pulsations of the earth's gravitational fields. Let us look at the next example about translating angular distance and time.

An dinner event takes 3 and ½ hours to complete. We take our time there. We want to know the Angular Distance that we have traveled in that time span. How do we calculate the Angular Distance of an event that lasts 3 and ½ hours?

$$\textbf{24 Hours} = 360^{o}$$

$$\textbf{1 Hour} = \frac{360^{o}}{\textbf{24 Hours}} = 15^{o}$$

$$\textbf{Total Angular Distance} = (\textbf{Hours})(15^{o}) = (\textbf{3.5 Hours})(15^{o}) = 52.5^{o}$$

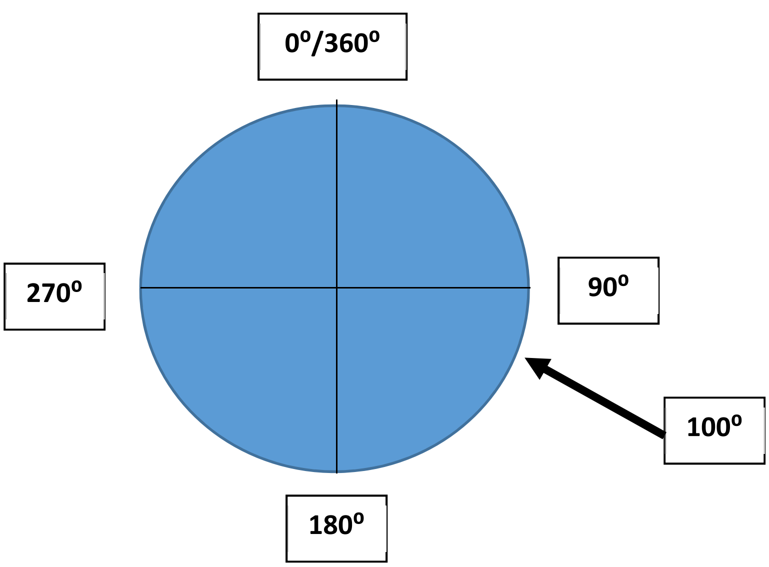
We can determine the Angular Time, the time that expires when we travel from one point on a circular disc to another point on a circular disc. Let us look at the following example.

The Angular Velocity of a Point A on the surface of a Circular Disc is 5^{o} Per Second. Its start point is a 0^{o}. It's total distance in its rotation around the center of the disc is 100^{o}. How much time does it take to complete the 100^{o}? How do we determine the Angular time of the object?

$$\textbf{Total Angular Time} = \left(\frac{\textbf{Total Angular Distance}}{\textbf{Total Angular Velocity}}\right) =$$

$$\frac{\textbf{Distance}}{\left(\frac{\textbf{Degrees}}{\textbf{Per Unit Time}}\right)} = \frac{100^{o}}{\left(\frac{5^{o}}{\textbf{Second}}\right)} = (100^{o})\left(\frac{\textbf{Seconds}}{5^{o}}\right) = \textbf{20 Seconds}$$

The Point A Travels for 100^{o} In Its Rotation in 20 Seconds.



Concepts in Rotational Distance

What Is Rotational Distance?

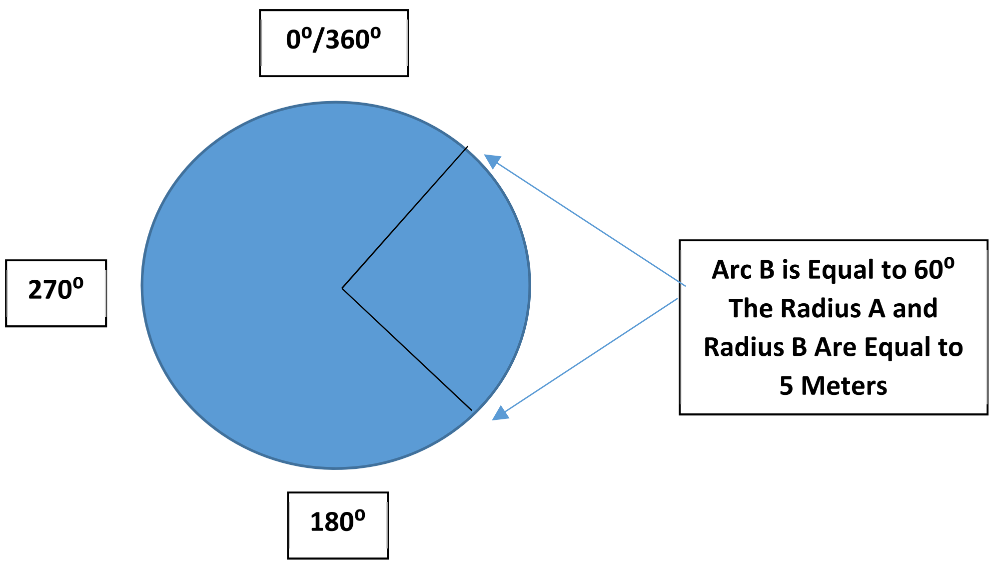
We can sometimes use our knowledge of Angular Distance concepts to determine the Rotational distance that a point on a rotating circular disc has traveled. Let us look at the following example.

The Radius A and Radius B of Circular Disk 1 are equal to 5 Meters. The Arc Bthat they form has an angular distance of 60^o. What is the Rotational Distance of the Arc B?

$$\textbf{Rotational Distance} = \left(\frac{\textbf{Angular Distance of Arc B}}{\textbf{360}^o}\right)(2)(\pi)(R)$$

$$\textbf{Rotational Distance} = \left(\frac{\textbf{60}^o}{\textbf{360}^o}\right)(\textbf{2})(\textbf{3.14})(\textbf{5 Meters}) = \textbf{5.23 Meters}$$

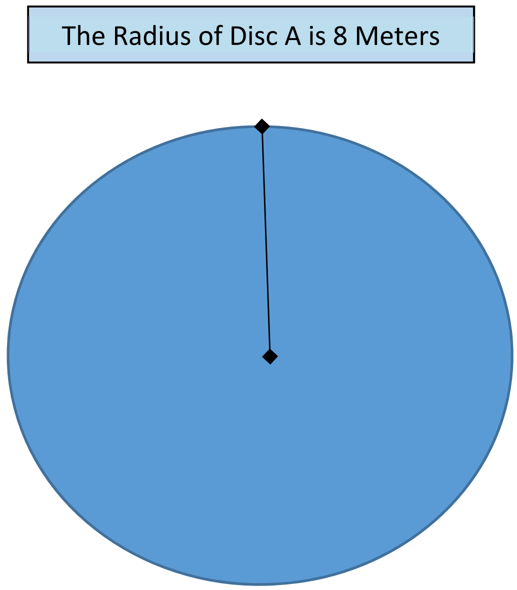
The Rotational Distance of Arc B is 5.23 Meters.



What Is Rotational Velocity?

We can determine the rotational velocity of a point on a circular disc if we know the radius of the disc and the angular velocity of the disc. Let us consider the following example.

The Radius of Disc A is 8 Meters. Its Angular Velocity is 15^o per Second. What Is the Rotational Velocity of Disc A?



We Must First Determine the Total Time of Rotation of the Disk A.

$$\text{Angular Velocity} = \frac{15^o}{\text{Second}}$$

$$\text{Time of Rotation} = \frac{\text{Total Distance (in Degrees)}}{\text{Rate of Rotation (in Degrees)}}$$

$$\text{Time of Rotation} = \frac{360^o}{\left(\frac{15^o}{\text{Second}}\right)} = \left(360^o\right)\left(\frac{\text{Seconds}}{15^o}\right) = 24\ \text{Seconds}$$

$$\text{Total Rotational Distance} = (2)(\pi)(R)=(2)(3.14)(8\ \text{Meters}) = 50.24\ \text{Meters}$$

$$\text{Total Rotational Velocity} = \frac{\text{Total Rotational Distance}}{\text{Total Rotational Time}}$$

$$\frac{\text{Total Rotational Distance}}{\text{Total Rotational Time}} = \frac{50.24\ \text{Meters}}{24\ \text{Seconds}} = 2.09\ \text{Meters per Second}$$

The Rotational Velocity of Radius of Disk A is 2.09 Meters Per Second.

What Is Rotational Time?

We can determine the amount of time it will take a radius to complete a revolution around the center of a circular disc. Let us look at the following example.

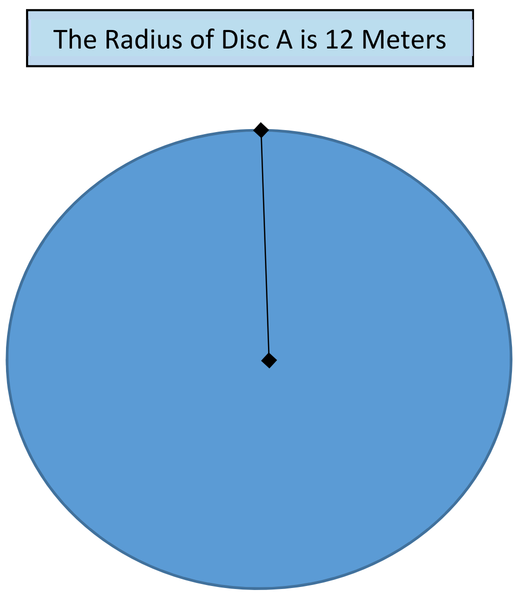
Radius 1 of Circle A has a length of 12 Meters. It rotates around the center of the disc at a rate of 10 Meters per Second. How long does it take to make a complete revolution around the center of the circular disc?

The Circumference of Circular Disk A is:

$$\text{Circumference} = (2)(\pi)(R)=(2)(\pi)(12) = 75.36 \text{ Meters}$$

$$\text{Total Time} = \frac{\text{Total Distance}}{\text{Rotational Velocity}} = \frac{75.36 \text{ Meters}}{\left(\frac{10 \text{ Meters}}{\text{Second}}\right)} =$$

$$= (75.36 \text{ Meters})\left(\frac{\text{Seconds}}{10 \text{ Meters}}\right) = 7.536 \text{ Seconds}$$



The Total Time that it takes for the circumference to make a complete rotation around the center of the disc is 7.536 Seconds.

The 3 Basic Particles

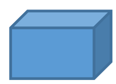
What Is a Particle?

A particle is the most basic microscopic component of a Field of Matter, Field of Space, or a Field of Energy. It can have mass or no mass. Its polarity determines whether it will be a repulsive force or an attractive force for other fields. Particles with mass can have a density. Particles with no mass cannot have a density.

What is Density?

Density is the Number of Particles per Unit Volume of a Field. Let us look at the following example.

A Field A has a Volume of 30 Cubic Centimeters. It contains 240 Particles. What is the Density of the Field A?



$$\textbf{Density} = \frac{\textbf{Number of Particles}}{\textbf{Per Unit Volume}}$$

$$\textbf{Density} = \frac{\textbf{240 Particles}}{\textbf{30 Cubic Centimeters}} = \textbf{8 Particles Per Cubic Centimeter}$$

What Is Mass?

Mass is a group of particles that are countable and that can occupy a volume such as a liter or a cubic centimeter. Mass is a detectable version of a Field of Space, a Field of Matter, and/or a Field of Energy. Fields that have mass tend to register to have weight in gravitational fields.

What is a Volume?

A Volume is a structure that retains or holds particles that have mass. We can find ways to count or to weigh the number of particles that exist in a volume. A volume is a set of particles of protons, neutrons, and/or electrons. A volume has a constant capacity to hold particles unless the space of the volume either increases or decreases.

What Is a Particle with No Mass?

A particle with no mass is not countable, is not detectable and cannot occupy a constant volume. Such particles cannot have a density. They can pulsate from a source of pulsation such as from a magnet to increase or to decrease the distance between two densities.

What is Polarity?

A particle's polarity will determine whether it will be a repulsive force or an attractive force for other particles that have mass and that have densities when the particles with no mass pulsate.

What is a Proton Density?

A Proton Density is a group of Proton Particles that occupy a constant volume. Let's look at the following example. Proton particles are normally associated with fluids and gases.

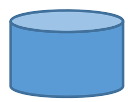
A Proton Density of a Field A consists of a group of 10,500 Protons occupy a cylinder of 500 Cubic Millimeters. What is the Proton Density of the Field A?

$$\textbf{Proton Density of Field A} = \frac{\textbf{The Number of Proton Particles in Field A}}{\textbf{The Volume of Field A}}$$

$$\textbf{Proton Density of Field A} = \frac{\textbf{10,500 Proton Particles}}{\textbf{500 Cubic Millimeters}} =$$

$$= \textbf{21 Proton Particles per Cubic Millimeter}$$

Proton Density of Field A



The Proton Density is 21 Proton Particles per Cubic Millimeter.

What is a Neutron Density?

A Neutron Density is a group of neutrons that occupy a constant volume. Neutron particles are normally associated with fields of matter such as pieces of wood, plastics, rubber, steel, and paper. Let us look at the following example.

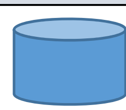
A Neutron Density of Field A consists of a group of 8,000 Neutron Particles in a Volume of 400 Cubic Centimeters. What is the Neutron Density of Field A?

$$\textbf{Neutron Density of Field A} = \frac{\textbf{The Number of Neutron Particles in Field A}}{\textbf{The Volume of Field A}}$$

$$\textbf{Neutron Density of Field A} = \frac{\textbf{8,000 Neutron Particles}}{\textbf{400 Cubic Centimeters}} =$$

$$= \textbf{20 Neutron Particles per Cubic Centimeter}$$

Neutron Density of Field A



The Neutron Density is 20 Neutron Particles per Cubic Centimeter.

What is an Electron Density?

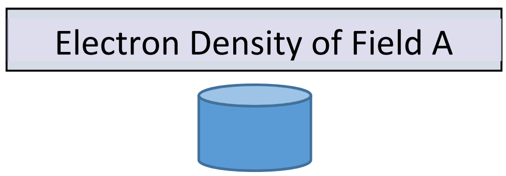
An Electron Density is a group of Electron Particles that occupy a constant volume. Electrons are normally associated with heat particles, light particles, radio wave particles, and electrical circuits. Let us look at the following example.

The Electron Density for Field A consists of 25,000 Electron Particles in a Volume of 250 Cubic Centimeters. What is the Electron Density for Field A?

$$\textbf{Electron Density of Field A} = \frac{\textbf{The Number of Electron Particles in Field A}}{\textbf{The Volume of Field A}}$$

$$\textbf{Electron Density of Field A} = \frac{\textbf{25,000 Electron Particles}}{\textbf{250 Cubic Centimeters}} =$$

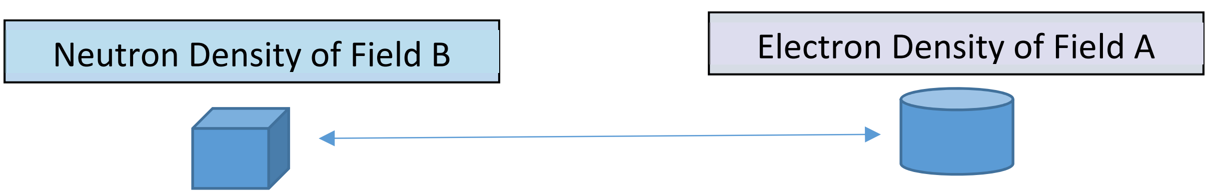
$$= \textbf{100 Electron Particles per Cubic Centimeter}$$



The Electron Density for Field A is 100 Electron Particles per Cubic Centimeter.

What is Distance?

This is the value of the total number of values of distance between two densities.

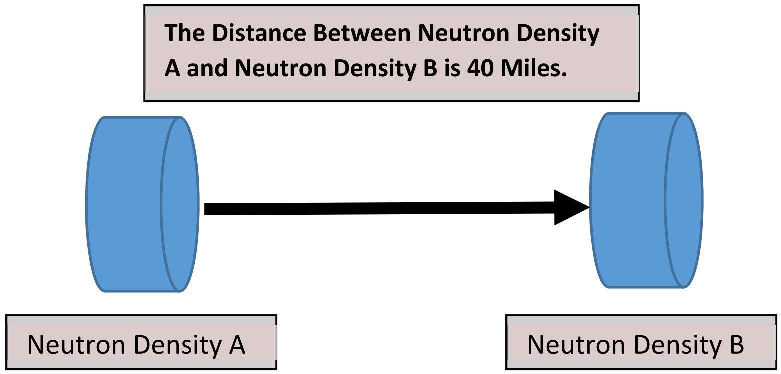


The Distance between Neutron Density Field B and Electron Density Field A is 8 Feet

What is Velocity?

Velocity is the rate of change in the distance between two densities over a finite limit of time. Let us look at the following example.

It takes Neutron Density A 20 Minutes to travel a distance of 40 Miles to meet Neutron Density B. What is the Velocity of Neutron Density A?

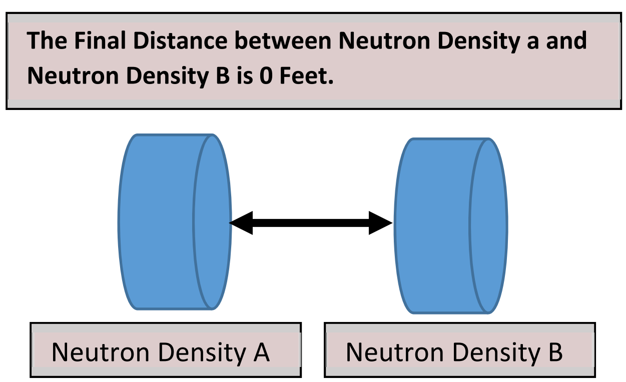


$$\text{Velocity} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$\text{Velocity} = \frac{\text{20 Miles}}{\text{40 Minutes}} = .5 \text{ Miles/Minute}$$

Determining Time

A Neutron Density A travels 1000 Feet at a Velocity of 100 Feet per Minute to meet another Neutron Density B. How Much Time will it take for the distance between the Neutron Density A and the Neutron Density B to be equal to 0 Feet?



$$\text{Time} = \frac{\text{Total Distance}}{\text{Velocity}} = \frac{\text{Total Distance}}{\left(\frac{\text{Distance}}{\text{Unit Time}}\right)} = \frac{\text{1,000 Feet}}{\left(\frac{\text{100 Feet}}{\text{Minute}}\right)} = (\text{1,000 Feet})\left(\frac{\text{Minutes}}{\text{100 Feet}}\right) = \text{10 Minutes}$$

The Total Time That It Will Take for the Neutron Densities To Reach a Distance of 0 Feet would be 10 Minutes.

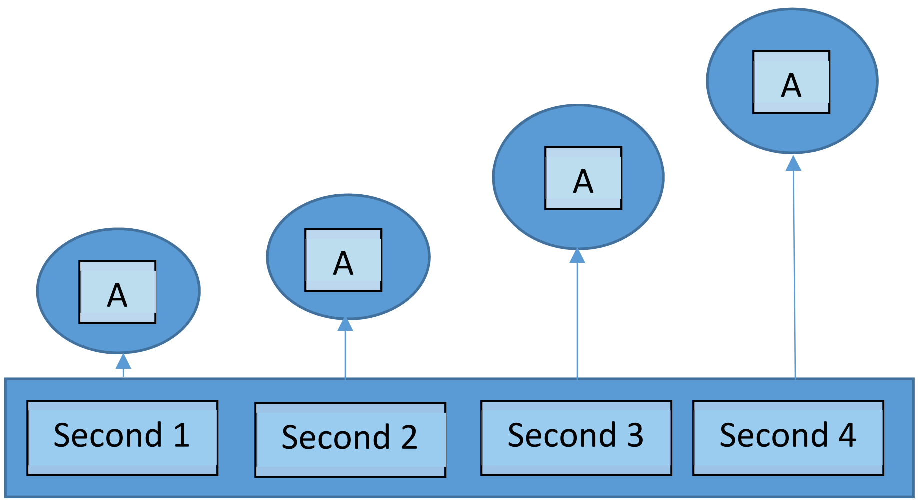
What Is Weight?

Weight is a Gravitational Pulsation that either Increases a Surface Altitude of a Proton Density, Neutron Density, and/or Electron Density, or Decreases the Surface Altitude, or allows the Surface Altitude to remain the same.

What is Positive Weight?

Positive weight is consistent with an increase in the surface altitude of a density such as a Neutron Density. The Surface Altitude increases for every point in time for a certain length of time. Then the increase in Surface Altitude ends. Let us look at the following example.

The Positive Weight of Object A causes its Surface Altitude to increase over a period of 4 Seconds. Its Surface Altitude increases by 5 Feet per Second for Three Seconds. The original Surface Altitude is 0 Feet. The Final Surface Altitude is 15 Feet.



Tracking the Surface Altitude of the Neutron Density A				
	Second 1	Second 2	Second 3	Second 4
Surface Distance of Neutron Density A	0 Feet	5Feet	10 Feet	15 Feet

Surface Altitude (Second 1) = Original Distance

Surface Altitude (Second 1) = 0 Feet

Surface Altitude (Second 2) = 0 Feet + 5 Feet

Surface Altitude (Second 2) = 5 Feet

Surface Altitude (Second 3) = 5 Feet + 5 Feet

Surface Altitude (Second 3) = 10 Feet

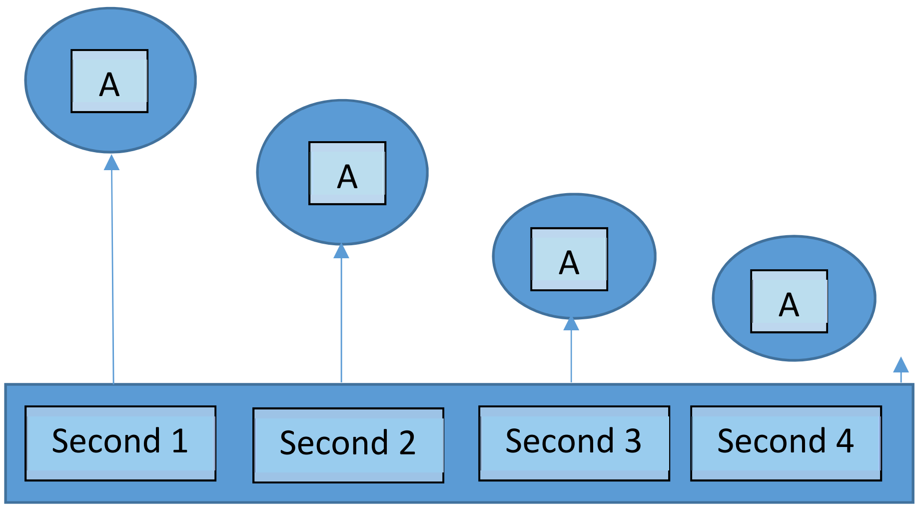
Surface Altitude (Second 4) = 10 Feet + 5 Feet

Surface Altitude (Second 4) = 15 Feet

What Is Negative Weight?

A Negative Weight causes the Surface Altitude of a Neutron Density, a Proton Density, or an Electron Density to decrease over time. Let us look at the following example.

A Neutron Density has a Surface Altitude of 15 Feet. Its Surface Altitude decreases by 5 Feet per Second for 3 Seconds. What will be the final Surface Altitude of the Neutron Density?

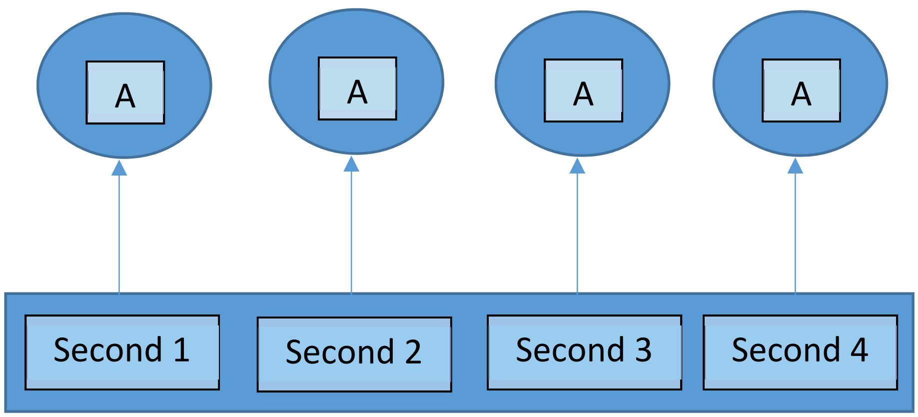


Tracking the Surface Altitude of the Neutron Density A				
	Second 1	Second 2	Second 3	Second 4
Surface Distance of Neutron Density A	15 Feet	10 Feet	5 Feet	0 Feet

Surface Altitude (Second 1) = Original Distance
Surface Altitude (Second 1) = 15 Feet
Surface Altitude (Second 2) = 15 Feet - 5 Feet
Surface Altitude (Second 2) = 10 Feet
Surface Altitude (Second 3) = 10 Feet - 5 Feet
Surface Altitude (Second 3) = 5 Feet
Surface Altitude (Second 4) = 5 Feet - 5 Feet
Surface Altitude (Second 4) = 0 Feet

What Is Neutral Weight?

The Neutral Weight means that the Surface Altitude of a Neutron Density, Proton Density, and/or an Electron Density will be greater than 0 centimeters and will continue to maintain an Surface Altitude that will not change for a foreseeable period of time.



Tracking the Surface Altitude of the Neutron Density A				
	Second 1	Second 2	Second 3	Second 4
Surface Distance of Neutron Density A	10 Feet	10 Feet	10 Feet	10 Feet

Surface Altitude (Second 1) = Original Distance
Surface Altitude (Second 1) = 10 Feet
Surface Altitude (Second 2) = 10 Feet
Surface Altitude (Second 2) = 10 Feet
Surface Altitude (Second 3) = 10 Feet
Surface Altitude (Second 3) = 10 Feet
Surface Altitude (Second 4) = 10 Feet
Surface Altitude (Second 4) = 10 Feet

Properties of Space, Matter, and Energy

Space	Matter	Energy
Primary Particle: Proton	Primary Particle: Neutron	Primary Particle: Electron
Positive Polarity (+)	Neutral Polarity (N)	Negative Polarity (-)
What is a Field with Mass?		
Particles of Protons with Mass are consistent with liquids and gases. These particles can change the chemical structures of Neutron Particles and Electron Particles.	Neutron Particles are consistent with solid objects such as woods, plastics, metals, and paper. Neutron Particles can change the chemical structures of Proton Particles and Electron Particles.	Electron Particles are consistent with heat particles, light waves, radio waves, and sound waves. Electron particles can change the chemical structures of Proton Particles and Neutron Particles.
What is a Field with No Mass?		
Proton Particles with no mass cause repulsions (increases in distance) between two objects. Proton particles with no mass can cause repulsions for Neutron Particles and Electron Particles with Mass when the Proton Particles Pulsate.	Neutron Particles with no mass can cause repulsions (Increases in distance) with Proton Particles. Neutron Particles with no mass can cause attractions (decreases in distance) with Electron Particles.	Electron Particles with no mass can cause attractions (decreases in distance for both Proton Particles with mass and Neutron Particles with mass.
What is Density?		
Density is defined by the number of Proton Particles per Unit Volume.	Density is defined by the number of Neutron Particles per Unit Volume.	Density is defined as the number of Electron Particles per Unit Volume.
What is Volume?		
Volume is an enclosure that can support the existence of Proton Particles, Neutron Particles, and/or Electron Particles. Different types of volumes can support the existence of different types of Mass of Proton Particles, Mass of Neutron Particles, and Mass of Electron Particles. These size of a volume is a given though a size is consistent with a volume's ability to hold a certain weight of Proton Particles, Neutron Particles, and/or Electron Particles.		
What is Velocity?		
A Velocity is the rate of change in the distance between the distance of two densities of either Proton Particles, Neutron Particles, and/or Electron Particles. The rate of change in distance can be a linear velocity, an angular velocity, or a rotational velocity.		
What is an Event?		
An Event is any circumstance that changes the properties of a Proton Density, a Neutron Density, or an Electron Density. This includes changes in molecular structure as well as density and velocity.		

Conclusion

It is so important for scientists and mathematicians to be able to develop mathematical concepts that will help us to understand our Universe. God uses His Universe and Our Universe to continue to keep us in existence. God wants scientists to investigate His Creation of Human Life by developing mathematical theories that will help us and all of our brothers and sisters throughout the world to finally find God.

Finding mathematical concepts that explain the way that electromagnetism and gravitation function is not easy for any of us. Still, scientists and mathematicians have a goal to bring about the betterment of Humanity by developing theories about gravitation and electromagnetism that will make the experience of all of our brothers and sisters with God to be productive and worthwhile.

We all answer to God as scientists. We do not answer to a God that would want to stop us from understanding His Universe forever. Science is about our human effort to find God by investigating and coming to understand His Creation. God wants scientists to help all of us to find God by showing interest in how God creates and manages life throughout His Vast Universe.

Our brothers and sisters need the help of scientists all over the world. Scientists must work together to end conflict. Scientists must work to stop hatred and anger between the members of God's Human Family. We must answer God as looks to us as scientists to lead a movement that will eventually end violence, death, and the destruction of human life all over the world. We need to find the answers for God. We need to work with God to make our human existence a better experience for ourselves and for our children, and for our children's children.

It is possible for our scientists to develop a reusable and dependable space-transportation vehicle so that we can explore our solar system in our lifetime. It would be so wonderful if we could help our brothers and sisters to find God and to stop violence and hatred all over the world while we build mechanisms that will allow us to explore our solar system.

We have dreams when we are scientists. We dream of living in a world where every person that shows or has the intent to hurt themselves or to hurt others will receive psychiatric treatment and psychological counseling. We dream of living in a world where all of our brothers and sisters that need help to save their lives will get that help. We must look at the Governments of Humanity and challenge them to make our Human Nation the Human Nation that God intended to create when He created all of us.

Scientists have received our calling. Our brothers and sisters all over the world are in desperate need of medical treatment, religious counseling, and to know and to understand that the scientific community loves them as much as Our Almighty God loves them. We have to find those of us that need help from Humanity and from God in order to make this Human Experience the Human Nation that God deserves from us. We can build a world that will be free of violence and suffering. It is the calling of scientists to make these incredible dreams to come true.

We must try to live in a world that does not make God suffer. We must create an existence where hatred and violence will not exist. We will all understand that hatred and violence are inconsistent with our creator. We must come to show love for all of our brothers and sisters.