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Updated Research Paper of Euclid's Fifth Postulate If It Is Not Tr ue Then

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Abstract: *This research paper cracks the secret of Euclid's Fifth Postulate. Paper is based on thought experiment cognitive model of an approximation and cryptography. Locking infinity is great deal of insight, innovation and discovery. The best model finds its difficult answer and cracks the secret of Euclid's Fifth Postulate by 5 best cognitive models which are interdependent.*

Keywords: *G105008, EUCLID'S 5th Postulate, SINGHSISTERS@LEGALSERVICES, IOSR, RESEARCH*

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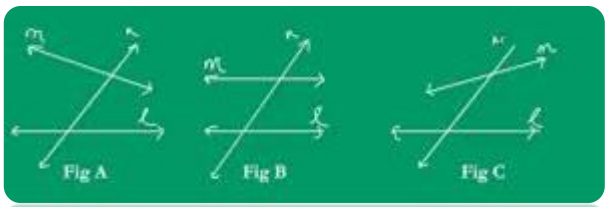
I. Introduction:

The fifth postulate belongs to a class of predicates including such others as "is known" and "is logically necessary".

If somebody we have taken assume, believe, etc. to be a law is subsequently learned to false, that proposition is not a false law, but no law at all. In this regard, that is, implying the truth of its subject.

FIFTH POSTULATE:

If two lines are drawn which intersect a third in such a way that the sum of the inner angles on the side is less th an two right angles, then two lines inevitably must intersect each other on that side if extended far enough. This postulate is also known as the parallel postulate.



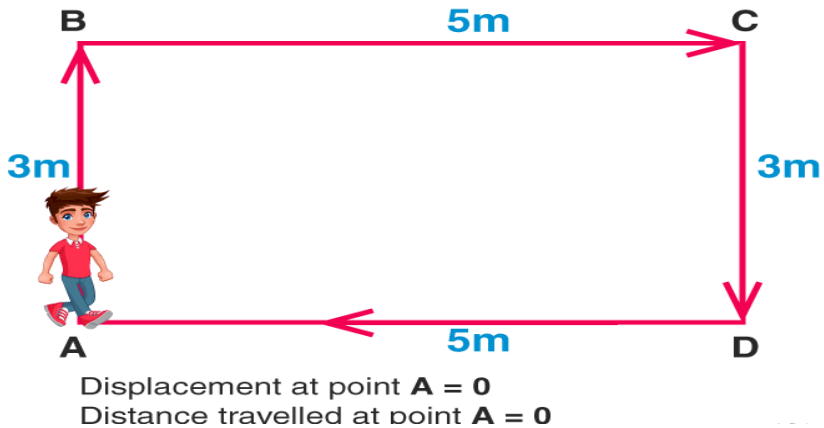
BUT TO SAY THIS IF IT IS NOT TRUE THEN.

✓ **PROOF:**

I. Vector Quantity which requires both magnitude and direction to represent it –
For example: Displacement, Velocity, and Acceleration
Vectors = Displacement, Velocity, Force, Acceleration stance and Displacement

"AT WHAT EXTEND"

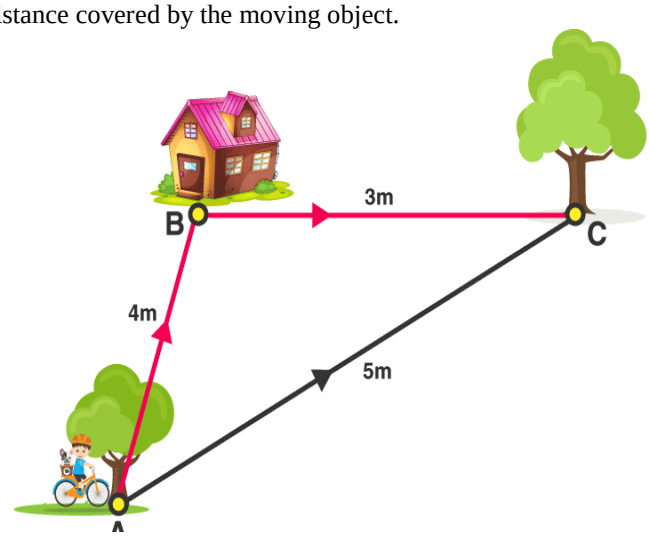
Distance and displacement are two quantities that seem to mean the same but are distinctly different wit h different meanings and definition. Distance is the measure of "how much ground an object has covered during its motion" while displacement refers to the measure of "how far out of place is an object." Similarly, in 5th post ulate question is "at what extend" Distance is the total movement of an object without any regard to direction. We can define distance as to how much ground an object has covered despite its starting or ending point. Displa cement is defined as the change in position of an object. It is a vector quantity and has a direction and magnitude . It is represented as an arrow that points from the starting position to the final position. For Example- If an obje ct moves from A position to B, then the object's position changes. This change in position of an object is known as Displacement.



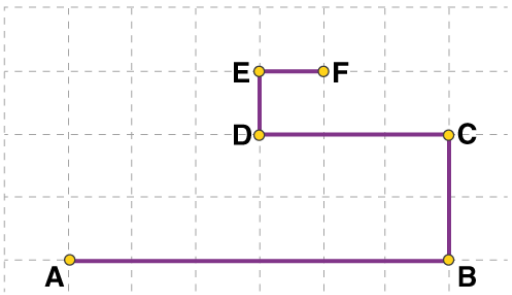
Displacement = $\Delta x = xf - x0$
xf = Final Position
x0 = Initial Position
Δx = Displacement

An object moves along the grid through points A, B, C, D, E, and F as shown below. The side of square tiles me asures 0.5 km.

a) Calculate the distance covered by the moving object.

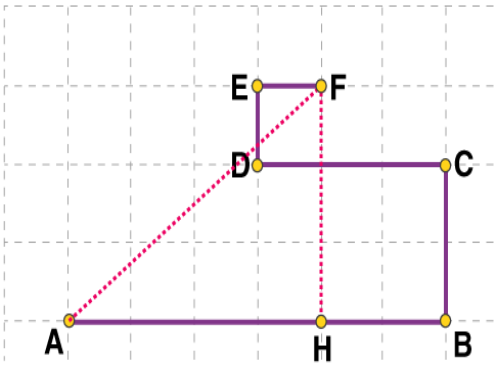


b) Find the magnitude of the displacement of the object.



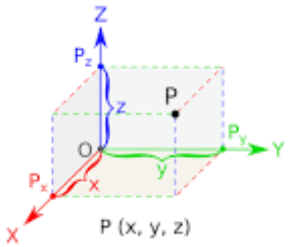
Solution:
a) The distance covered by the moving object is calculated as follows:
AB + BC + CD + DE + EF
3 + 1 + 1.5 + 0.5 + 0.5 = 6.5 km
The distance covered by the moving object is 6.5 km.

b) The initial point is A and the final point is F, hence the magnitude of the displacement is equal to the distance AF which is calculated by applying Pythagoras's theorem to the triangle AHF as shown in the figure below



Applying the Pythagorean formula, we get
AF2=AH2+HF2
Substituting the formula, we get
AF2=(0.5×4)2+(0.5×3)2=6.25 AF=6.25km−−−−−−√=2.5km
The magnitude of displacement is 2.5 km.

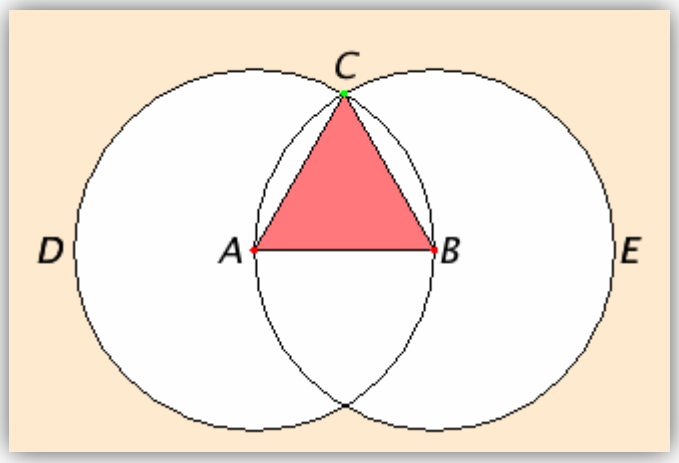
II. Three Dimensions That Is Solid



Three-dimensional space is a geometric setting in which three values are required to determine the position of an element. This is the informal meaning of the term dimension. In physics and mathematics, a sequence of n num bers can be understood as a location in n-dimensional space.

III. What About "C"

EUCLID'S FAMOUS "ELEMENT" "BOOK 1"
Proposition 1 says
To construct an equilateral triangle on a given finite straight line.
Let AB be the given finite straight line.



It is required to construct an equilateral triangle on the straight line AB.
I . P o s t . 3
I.Post.1
Describe the circle BCD with center A and radius AB. Again describe the circle ACE with center B and radiu s BA. Join the straight lines CA and CB from the point C at which the circles cut one another to the points A an d B.
I.Def.15
Now, since the point A is the center of the circle CDB, therefore AC equals AB. Again, since the point B is the c enter of the circle CAE, therefore BC equals BA.
But AC was proved equal to AB, therefore each of the straight lines AC and BC equals AB.
C.N.1
And things which equal the same thing also equal one another, therefore AC also equals BC.
Therefore the three straight lines AC, AB, and BC equal one another.
I.Def.20
Therefore the triangle ABC is equilateral, and it has been constructed on the given finite straight line AB.
Q.E.F.

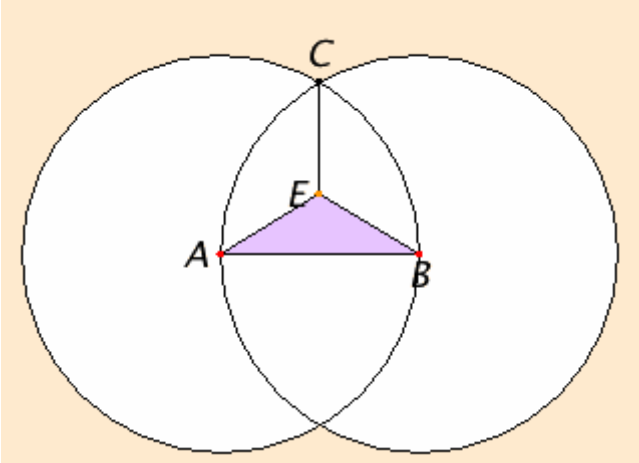
This proposition is a very pleasant choice for the first proposition in the Elements. The construction of the triang le is clear, and the proof that it is an equilateral triangle is evident. Of course, there are two choices for the poin t C, but either one will do.
Euclid could have chosen proposition I.4 to come first, since it doesn't logically depend on the previous three, b ut there are some good reasons for putting I.1 first. For one thing, the Elements ends with constructions of the fi ve regular solids in Book XIII, so it is a nice aesthetic touch to begin with the construction of a regular triangle.
More important, though, is I.1 is needed in I.2, and that in I.3. Propositions I.2 and I.3 give constructions for mo ving lines, and I.4, although not logically dependent on I.2 or I.3, does use the concept of superposition which in volves, in some sense, moving points and lines.
Marginal references to postulates, definitions, etc.
The abbreviations in the right column refer to postulates, definitions, common notions, and previously proved pr opositions. Each indicates a justification of a construction or conclusion in a sentence to its left. They are not par t of Euclid's Elements, but it is a tradition to include them as a guide to the reader.
Sometimes the justification is quoted in full as C.N.1 is here, but usually it is left to the reader to determine the j ustification.

Q.E.F. and Q.E.D. at the ends of proofs
The Q.E.F. at the end of the proof is an abbreviation for the Latin words quod erat faciendum which means "whi ch was to be done." A few of the propositions, as this one and the next two, solve problems by constructions. Th ese are the ones that end with Q.E.F. (they're also printed in red here in the listings of propositions for each boo k.)
The rest of the proofs end with Q.E.D. instead, an abbreviation for quod erat demonstrandum which means "whi ch was to be demonstrated." It's convenient to have a standard way to indicate the end of a proof. These Latin a bbreviations are a bit of an anachronism. It would be less of an anachronism to use abbreviations for the original Greek phrase, or abbreviations for a modern English phrase since the rest of this version of the Elements is in E nglish. But by now, Q.E.F. and Q.E.D. are traditional. In recent decades a small square has become common as a symbol to indicate the end of a proof.
Critiques of the proof
It is surprising that such a short, clear, and understandable proof can be so full of holes. These are logical gaps w here statements are made with insufficient justification. Since the first proof in the Elements is the one in this pr oposition, it has received more criticism over the centuries than any other.
Why does the point C exist? Near the beginning of the proof, the point C is mentioned where the circles are sup posed to intersect, but there is no justification for its existence. The only one of Euclid's postulate that says a poi nt exists the parallel postulate, and that postulate is not relevant here. Indeed, some postulate is needed for that c onclusion, such as "If the sum of the radii of two circles is greater than the line joining their centers, then the tw o circles intersect." Such a postulate is also needed in Proposition I.22. There are models of geometry in which t he circles do not intersect. Thus, other postulates not mentioned by Euclid are required. In Book III, Euclid takes some care in analyzing the possible ways that circles can meet, but even with more care, there are missing postu lates.
Why is ABC a plane figure? After concluding the three straight lines AC, AB, and BC are equal, what is the just ification that they contain a plane figure ABC? Recall that a triangle is a plane figure bounded by contained by t hree lines. These lines have not been shown to lie in a plane and that the entire figure lies in a plane. It is proposi

tion XI.1 that claims that all parts of a line lie in a plane, and XI.2 that claims that the entire triangle lie in a plan e. Logically, they should precede I.1. The reason they don't, of course, is that those propositions belong to solid geometry, and plane geometry is developed first in the Elements, also, no doubt, plane geometry developed first historically.

Why does ABC contain an equilateral triangle? Proclus relates that early on there were critiques of the proof and describes that of Zeno of Sidon, an Epicurean philosopher of the early first century B.C.E. (not to be confused with Zeno of Elea famous of the paradoxes who lived long before Euclid), and whose criticisms, Proclus says, w ere refuted in a book by Posidonius. The critique is sound, however, and the refutation faulty.

Zeno of Sidon criticized the proof because it was n ot shown that the sides do not meet before they rea ch the vertices. Suppose AC and BC meet at E bef ore they reach C, that is, the straight lines AEC an d BEC have a common segment EC. Then they wo uld contain a triangle ABE which is not equilateral , but isosceles.



Zeno recognized that in order to destroy his counte rexample it was necessary to assume that straight l ines cannot have a common segment. Proclus relat es a supposed proof of that statement, the same on e found in proposition XI.1, but it is faulty. Proclu s and Posidonius quoted properties of lines and cir cles that were never proven and never explicitly as sumed as postulates.

The possibilities that haven't been excluded are much more numerous than Zeno's example. The sides could me et numerous times and the region they contain could look like a necklace of bubbles. What needs to be shown (o r assumed as a postulate) is that two infinitely extended straight lines can meet in at most one point.

IV. LACK OF CO – ORDINATES

FRAME OF REFERENCE – In physics, a **frame of reference** (or **reference frame**) consists of an abstract co ordinate system and the set of physical reference points that uniquely fix (locate and orient) the coordinate syste m and standardize measurements within that frame.

For *n* dimensions, *n* + 1 reference points are sufficient to fully define a reference frame. Using rectangular (Cart esian) coordinates, a reference frame may be defined with a reference point at the origin and a reference point at one unit distance along each of the *n* coordinate axes.

In Einsteinian relativity, reference frames are used to specify the relationship between a moving observer and th e phenomenon or phenomena under observation. In this context, the phrase often becomes "**observational fram e of reference**" (or "**observational reference frame**"), which implies that the observer is at rest in the frame, alt hough not necessarily located at its origin. A relativistic reference frame includes (or implies) the coordinate tim e, which does not equate across different frames moving relatively to each other. The situation thus differs fro m Galilean relativity, where all possible coordinate times are essentially equivalent.

IN EUCLID'S 5TH POSTULATE THERE IS PROBLEM OF DESIGN

Basic definitions are given below

CO = ORDINATES -

A pair of numbers that describe the position of a point on a coordinate plane by using the horizontal and vertical distances from the two reference axes. Usually represented by (x,y) the x-value and y-value.

ORIGIN -

The Starting point

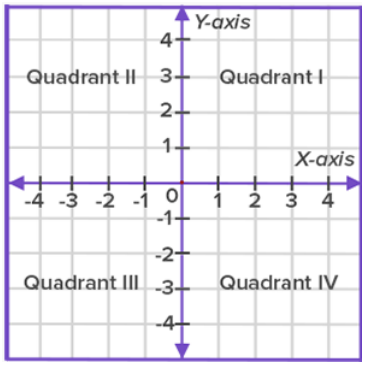
Point where the reference axes in a coordinate system meet. The values of coordinates are normally defined as z ero.

PLANE -

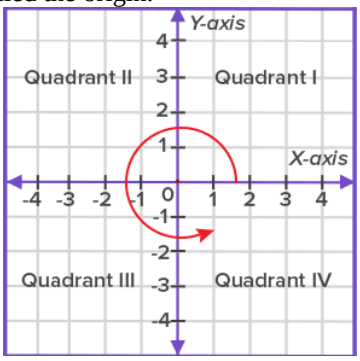
A plane is a flat, two-dimensional surface.

What is Quadrant?

Take a sheet of paper and draw the horizontal axis (x-axis) and the vertical axis (y-axis). These two axes divide t he paper into 4 parts. Each part is called a quadrant.



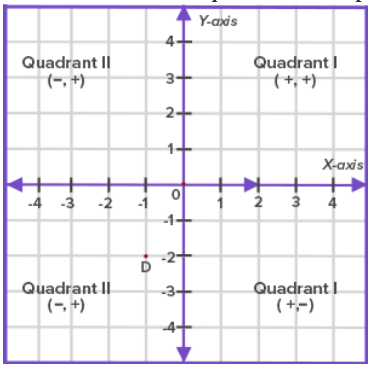
The meeting point of the two axes is called the origin.



By convention, quadrants are named in an anticlockwise direction.
Each point is represented by its x-coordinate followed by its y-coordinate.
It is written as (x, y)
So, for a point (6, 3), its x-coordinate is 6 and y-coordinate is 3.

Signs of x-axis and y-axis in each quadrant

In the first quadrant, both x and y take positive values. In the second quadrant, x is negative and y is positive. In the third quadrant, x and y are negative, and in the fourth quadrant, x is positive and y is negative.



Example:

Point	**Quadrant**
(5, 4)	L
(-5, 4)	Ll
(-5, -4)	Lll
(5, -4)	Lv

There are also points which do not lie on any of the four quadrants.
For example: (1, 0), (-1, 0), (0, 2) and (0, -5) do not lie on any of the four quadrants. They lie on the x-axis or y-axis.
(1, 0) and (-1, 0) lie on the x-axis.
(0, 2) and (0, -5) lie on the y-axis.

V. WE NEED TWO POINTS TO CHANGE SPEED.

INSTANTANEOUS SPEED

Calculus is a field of Mathematics, tell us change is everywhere around us.

- ✓ Babies grow
- ✓ Bank balance
- ✓ Your position keeps on changing
- ✓ Number of face book friends
- ✓ Amount of data keeps accumulating

The field of mathematics which deals change is calculus.

As we know hearts of calculus are two ideas

- ❖ Derivative
- ❖ Integral

Derivative means - How fast something is changing

And there are two flavors of calculus:

- ❖ Average Rate of Change
- ❖ Instaneous Rate of Change

Rate of Change means:

1. Whenever something is changing = 1
2. Changing with respect of something = 2

And then define relationship between two entities that will be ½

It will tell you how fast change one equation comparatively to other.

Every field has its own rate of change; we just call them by different names eg. Run Rate of cricket match, inter est Rate, etc.

For Example - If you need to score 200 in 25 overs what will be run rate to make score. You cannot count so eas ily. You have to define relationship between score and over's which will tell you how score is changing in the c omparison of over than you will find required run rate.

You can find in every field the rate of change.

Distance and time are single entity you can measure independently both but you cannot measure Rate of change as a single entity.

For rate of change you required two entities and you have to define relationship between them and then it's give you important information.

For Example – HONEYMOON Relationship.

HONEYMOON relationship - committed, committed is not a single entity, it's a relationship between TWO PE OPLE which tells important information to both people.

Similarly, we are solving the Pi value by the principles of Derivatives.

First we need to understand in simple terms

INSTANEOUS RATE OF CHANGE

An INSTANEOUS RATE of change, also called the derivative, is a function that tells you how fast a relationshi p between two points is changing at any point.

For Example: Run rate of cricket match.

Most important points: -

YOU ALWAYS NEED TWO POINTS TO FIND SPEED

For Example: -

In the case of any accident on a road –

What determines if driver will survive or not?

Central question behind derivative

What is the INSTANEOUS Speed at the time of collision matters?

Speed = Change in Distance / Change in time = 0/0

= Meaningless

We have just one point and hence cannot use the formula.

Derivative is slightly subtle has three solution

Step 1- Choose some point as 2nd point. Only criteria it is extremely close to point where you need to find s peed.

For Example – Speed, choose 3.14

Step 2 – Find Average speed over this small interval

Change in Distance/Time = D/T

3.14/0.1

Step 3 – Choose interval to be extremely close to 0 but not 0

Created imaginary number called as infinity, < Real Numbers but > 0

Generally,
1. When we want to reduce information we have to use derivative.
2. When we want to increase information we have to use integration.

Derivative with respect to t = D/Dt
3.14/3.14*0.1
Result here t will be 0.1
And now the question what is the relationship between distance and time
Relationship will be here $D = 1/2\ gt^2$

We can use "POWER OF GENERALIZATION" to find the answer.
And LOCK THE INFINITY
By the way of
The title equation, $s = 1/2\ gt^2$, gives the distance *s* fallen by an object in a time *t*, assuming the object starts at re st and that air resistance is negligible; *g* is the acceleration of gravity, which is about 9.8 m/s^2 on the surface of t he Earth.
Solution
$½xgt^2$
Here $g = 9.8\ m/s^2$
$t = 0.1$ (Derivative with respect to t = D/Dt)
$s = ½xgt^2$
$2s = gt^2$
$2s/t^2 = g$
$= 49$

Then we will find out the answer 49
Means $(7)^2$

Area of a Limit is LxB

L = 7

B = 7

We prove that 7 is Pi **(π)** exact value which is now knowable.
Area of circle = πr^2
We can Proof of Area of circle by below given steps and figure 1.1
Above given figure 1 is showing you how we can chop area and rearrange figure.
In step 1 – Chop area into 4 quarters then rearrange figure that is π R
Step 2 – Repeat with 8 slices and then rearrange figure.
Step 3 – Repeat with more slices and take to infinity. Break infinite pieces and break and rearrange.
When you take infinity concept, you will find the shape of rectangle. Now by the way of above given figure and steps you can easily proof the area of circle.
Limits
Lim f(x)
X tends to value
Lim (x+7)
X tends to 3
Limits are used to know the Behaviour of a function
Lim (x+7) = 10
X tends to 3
i.e. x is going to nearer and nearer to 3
Lim (x+7)
X tends to 3
= 3+7
=10

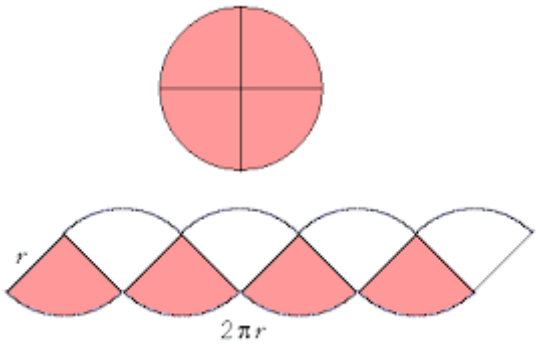
Left Hand Limit							**Right hand limit**				
f(x) = x+7	**9.5**	**9.6**	**9.7**	**9.8**	**9.9**	**10**	**10.1**	**10.2**	**10.3**	**10.4**	**10.5**
x=3	**2.5**	**2.6**	**2.7**	**2.8**	**2.9**	**3**	**3.1**	**3.2**	**3.3**	**3.4**	**3.5**

Area of Circle = πr^2

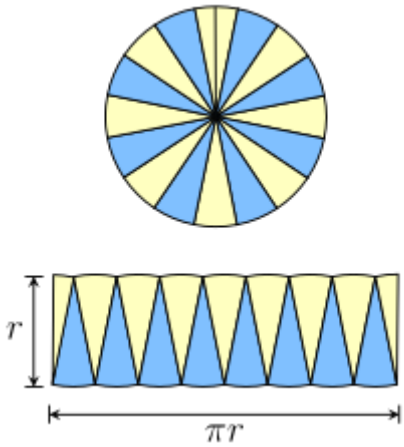
Proof of Area of circle –

Step 1 - Chop area into 4 quarters and then rearrange the figure.

Step 2 – Repeat with 8 slices and then rearrange figure.



Step 3 – Repeat with more slices and takes to infinity, break infinite pieces and break and rearrange. Prac tically not possible but we can imagine.



When we take infinity concept, we will find the shape of rectangle. Now we can easily proof the area of circle. Area of a Limit is LxB

By using the invariance principle, we find that ... WE CAN LOCK INFINITY BY 7.

MYTHOLOGY:
Mythology:

1. Chaos: Butterfly Effect: (Mental Health)
2. Order: Destroy sex craving with creativity
3. Problem: Euclid's 5th Postulate
4. Solution by Lord Krishna
5. Model

Model will be –
A COGNITIVE MODEL OF APPROXIMATION WITH POSITIVE THINKING
Let's take scenario of
Mail dated 15th August, 2020
A cognitive model is an approximation

Ekta Singh <singhsisterslegalservices@gmail.com> 2:11 PM (5 hours ago)

to Hina.bisht, Anand.Mahindra, Sujit.Bakshi, kalyan.krishnamurthy

Keep your family protected with
LORD KRISHNA.

Let's play with the below mentioned names and suggest magical messages.
Are you familiar with names? But you are not familiar with hidden messages behind these names.

ANAND - Ecstasy
SUJIT - Victory
HINA - A Goddess of fragrance
HONEYMOON - Honey Month
KRISHNAMURTHY- Lord Krishna
SHILPA– Art of work
DIVORCE - Detachment

MAGICAL MESSAGE WILL BE
Victory on intense exaltation of mind and feelings in "Honey Month", a goddess of fragrance commanding does work of creativity for Lord Krishna who has grown into iconic leading brands with Tech Mahindra and detach you from materialistic things.

A peaceful and calm environment is the right place to breed prosperity and good deeds and thoughts. A destructive and unstable environment breeds destruction, stagnation and hate.

Kind Regards,
Ekta Singh

Shree Krishna resolves the apparent confusion of the Hindu pantheon by explaining that the one God is the sole object of worship. He is the goal, the support, the refuge, and the one true friend of all living beings

MYTHOLOGY FOLLOWED BY OLD PARADOXES
HILBERT'S HOTEL

I've heard there is a strange hotel,
Whose rooms are *filled* with clientele,
And yet – and this you'll find bizarre –
Without bidding an *au revoir*
To any guest inside already,
Queue then later may a steady
Stream of late arrivals who
Can be accommodated too.

No end of lodgers may arrive,
And have a place to stay inside.
For when each newbie does appear
To these rules the guests adhere:
Guest of room one moves to two,

And two to three, and so on through:
Four to five; five to six,
(And no new rooms need we affix)
Six to seven – him to eight
Never do we reach a state
Where a guest cannot accede
And to adjacent room proceed.
For *always* there's a room beside
Each room that can be occupied
So every room can be made vacant
When guests all move to room adjacent.
And since this method does repeat,
It is not then much a feat
To accept more people when
Every room is filled again.

This news surely will make the day
Of anyone who needs to stay.
But turn your thoughts towards the cleaner
Who is never, ever, nearer
To finishing, to being done:
For every room, another one!
Another room, another loo,
Sadly, always, left to do.

What is known as "Hilbert hotel" is a story of an imaginary hotel with infinitely many rooms that illustrates the bizarre consequences of assuming an actual infinity of objects or events. Since the 1970's it has been used in a v ariety of arguments, some of them relating to cosmology and other to philosophy and theology. For a long time i t has remained unknown whether David Hilbert actually proposed the thought experiment named after him, or w hether it was merely a piece of mathematical folklore. It turns out that Hilbert introduced his hotel in a lecture of January 1924, but without publishing it. The counter – intuitive hotel only became better known in 1947, when George Gamow described it in a book, and it took nearly three more decades until it attracted wide interest in sci entific, philosophical, and theological contexts. Hilbert's hotel, a thought experiment illustrating the paradoxical nature of actual infinities. As new guests check in he constantly has to move to rooms with higher numbers, cau sing him a sleepless night (Never more will I confuse a Hilton with a Hilbert Hotel!"). But Hilbert's Hotel has a n advantage that Hilton's cannot match:
Last thing I remember at the end of my stay –
It was time to pay the bill but I had no means to pay.
The man in 19 smiled, "Your bill is on me".
20 pay mine, and so on, so you get yours for free"
get yours for free"

"Hotel (Called) Infinity"

On a dark desert highway -- not much scenery
Except this long hotel stretchin' far as I could see.
Neon sign in front read "No Vacancy,"
But it was late and I was tired, so I went inside to plea.
The clerk said, "No problem. Here's what can be done--
We'll move those in a room to the next higher one.
That will free up the first room and that's where you can stay."
I tried understanding *that* as I heard him say:
CHORUS: "Welcome to the HOTEL called INFINITY --
Where every room is full (*every room is full*)
Yet there's room for more.
Yeah, plenty of room at the HOTEL called INFINITY --
Move 'em down the floor (*move em' down the floor*)
To make room for more."
My mind got more twisted when I saw a bus without end
With an infinite number of riders coming up to check in.

"Relax," said the nightman. "You each will move
To the double of your room number to free the odd-numbered rooms."
Last thing I remember at the end of my stay--
It was time to pay the bill but I had no means to pay.
The man in *room three* smiled, "Your bill is on me.
Four pays mine, and so on, so you get yours for free!" (Repeat Chorus)
Here at the hotel called infinity!

Imagine you book into a hotel but are then told that all the rooms are full. Should you walk away and look for el sewhere to crash for the night? Well, that depends if the hotel has infinitely many rooms or not!

This thought experiment was devised by mathematician David Hilbert (1862–1943), and it teaches us that in finities are very odd things indeed! What is infinity? To describe something as 'infinite' is to describe it as being unbounded – without limit. Take the natural numbers, for example: 1, 2, 3, 4… These are infinite, or rather, the re are infinitely many of them, because there is no last member in the series they form. If we were to list them all , our task would never be done, no matter how much time we had, because there would be no point where we wo uld run out of more to reel off. Now, suppose our hotel has infinitely many rooms, each with a different number on the door. Even in the case that every room is already occupied; the hotelier can accept more guests. For, all they need to do is ask guest in room 1 to move to room 2, and ask guest in room 2 to move to room 3, and so on and so forth. No matter how far along this hotel's corridor's we go, there will never be a guest who will have no adjacent room to move along to, because there is no end to the rooms in the hotel!

This seems paradoxical: the rooms are all full, but more people can always be accommodated, even if infinit ely many more people turned up to the already-fully-occupied hotel! But alas, our minds are not infinite, and the re is a limit to what we mere mortals can grasp!

We now assume that the hotel has infinitely many rooms numbered 1, 2, 3, 4, 5, and that each of the rooms is oc cupied by a single guest. All that the manager has to do in order to accommodate a new guest is to make sure th at each of the old guests move to a new room with the number one unit larger. In this way room 1 becomes avail able for the new guest. One can of course make room for any finite number of new guests in the same manner, a nd thus, in a world with an infinite number of houses and occupants there will be no homeless.

Hilbert continued: The situation is the same with an infinite dance party where all the gentlemen have asked the ladies to dance. A new lady enters, but the organizer of the dance can easily arrange that she will not be without a partner. It is even possible to get a space for an infinite number of new guests, respectively ladies (that is: par tner for an infinite number of new ladies on the dance floor). One could, for example, ask the old guet who origi nally occupied room number n to move to room number 2n. In this way infinitely many rooms with odd number would be left free of new guests.

In a paper of 1971 Pamela Huby, a philosopher at Liverpool University, discussed a modernized form of Kant' f irst cosmological antimony. In a purely philosophical way and without referring to scientific cosmology, she rec onsidered the classical question of whether an actual infinity is possible, or whether the universe could be infinit e in extension. She argued that this was not the case and that those who still maintained the possibility would ha ve to "accept the many paradoxes that follow…such as Hilbert's hotel". Huby briefly described the paradoxical hotel, as if it were well known to her readers and without offering a reference to it. Based on logical arguments, among which Hilbert's hotel was one, she concluded that "the universe must be finite in space and …it must ha ve existed for only a finite time.

In fact, "Hilbert Hotel" describes metaphorically, the structure of the universe as it is conceived by the "Steady State" Cosmology – that is if the "Steady state" theory of the Universe is true, then, we are living in something very like "Hilbert's Hotel". The "Steady state" theory is exactly like "Hilbert' Hotel" in that an infinite number of guests (galaxies) occupy an infinite number of rooms (spaces) next door. Thus "Hilbert's Hotel" is no mere mathematical fiction, but, may be the world we actually live in.

This was more or less what Gamow had said in his book of 1952, except that Gamow did not speak of the steady state universe (which he much disliked), but of the infinitely large universe in general. As far as astronomers an d physicists were concerned, the steady state theory had been proved wrong by the discovery of the cosmic micr owave background in 1965. All the same, philosophers continued to discuss the problem, perhaps unaware that it had already been settled or just considering the solution irrelevant to their logical exercises.

THEOLOGICAL ARENA

William Lane Craig, an American philosopher and Christian apologist, has been instrumental in reviving the co smological proof and using set theory in the service of faith. His main argument, a more elaborate version of Hu by's reasoning of 1971, is that an infinite temporal regress of events is an actual infinite and that such a concept can have no real existence. While Craig admits that Contor's theory set theory is consistent and allows the actu al infinite, he considers it a purely mathematical system applicable only to a universe of discourse. When Hilber

t's hotel is translated from abstract mathematic to the real spatio – temporal universe, absurdities inevitably foll ow. In any realistic sense, he concludes, "Hilbert's Hotel is absurd"

The infinity is nowhere to be found in reality. It neither exists in nature nor provides a legitimate basis for ration al thought – a remarkable harmony between being and thought. The role that remains for the infinite is solely th at of an idea – if one means by an idea, , a concept of reason which transcend all experience and which complete s the concrete as a totality – that of an idea which we may unhesitatingly trust within the framework erected by o ur mathematical theory.

WAVE FUNCTION

1. Wave Function (at least its coordinates' part) is in real 3-D space. Such an idea attends in Heisunberg's text, it is presented in EB, and it was tested by de Broglie, Schrodinger, and Bohm.
2. Wave function is in the consciousness of a physicist thinking about. Such an idea was supported by von Neumann, London and Bauer, and Wigner.

EINSTEIN'S BOXES THOUGHT EXPERIMENT

The configuration of EB is shown in fig

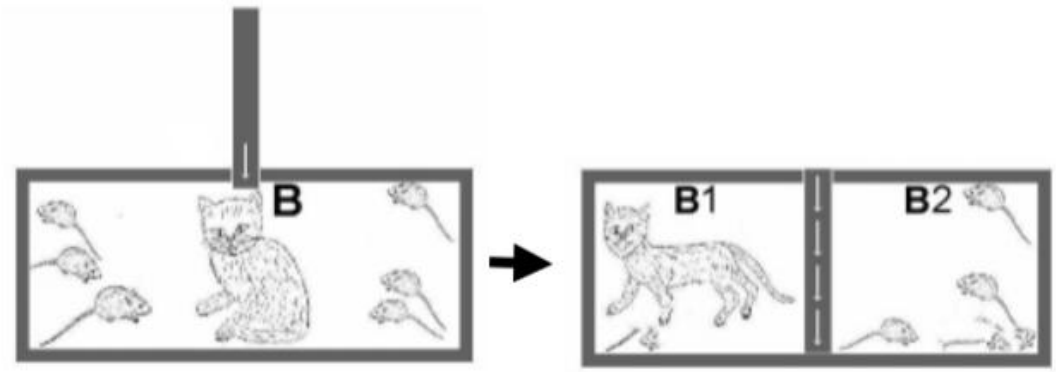


FIGURE EINSTEIN'S BOXES THOUGHT EXPERIMENT

The first step: An object is brought into a big box **B** with impermeable walls. Originally this object was a ball. B ut objects of quantum physics are atomic i.e. indivisible, that is, it is impossible to split one electron into two sm aller electrons with the same topology, etc. The same is valid for living beings. On the contrary the ball made e. g. from iron can be split into two smaller balls, so it is not an appropriate object for us. Therefore I have borrowe d from Schrödinger his still alive cat. The wave function of the cat $\Psi(x, y, z, t)$ is confined to the box (idiom), the $|\Psi|$ gives a probability to find the cat in the point (x, y, z) at the moment t .

The second step: An impermeable sliding shutter penetrates into the box **B** and divides its inner space in two equ al parts. Such a procedure divides also the wave function of the cat in two parts (a standard but doubtful conclusi on).

The third step: Someone saws the box holding on to the central plane of the sliding shutter. As a result we have t wo separate small closed boxes **B**1 and **B**2 without looking where the cat is. Of course one must be sure that the cat does not run away.

The fourth step: The box **B**1 stays on the place e.g. in Paris and the box **B**2 is sent off e.g.

to Tokyo. The probabilities to find the cat in Paris or in Tokyo are both 1/2.

The fifth and last step: An experimenter opens the box **B**1 and (with probability 1/2) finds the cat. In this case sh e can immediately conclude that the box **B**2 is empty i.e. the wave function contained in **B**2 immediately collaps es to zero in spite of the long distance between **B**1 and **B**2. Apparently we have an instant action over (any) dista nce that contradicts our physical knowledge and common sense. That is the "Einstein's boxes" paradox. Conclus ion: Quantum mechanical description of physical reality is incomplete

In the case 2 it is pointed out that a wave function is not in real but in a configurational space, which is, in its tur n, in the consciousness of the physicist i.e, is occupying perhaps only a small space part of brain.
Our consciousness receives, works up and spreads information. It controls our behavior to realize our intentions. As it seems our behavior also has a wave component. My plans, my strategy are my wave function. To know a wave function of another person, cat, or electron, I must observe, experimentalize, deduce, guess, and/or ask the object. The original wave function of any object must be in the object itself.
Let us return to the EB thought experiment. At the beginning the cat was mewed into the box **B** together with se veral mice as food. It surveys the box and works up its wave function. The cat is hungry and seeks for mice. But the mice are not stupid. They guess the cat's wave function and look for a regularity of the cat's trips. If mice fi nd such a regularity they can better get away from the cat. To avoid it the cat randomizes its behavior, that is, if i t has alternatives, it chooses randomly with weights recommended by the wave function. Atomism, wave functi on (strategy), and randomization (tactics) are three whales of quantum mechanics. The peculiarities of the cat's (particle's) behavior lie outside of quantum mechanics. Conclusion: Quantum-mechanical description of physical reality is incomplete. To know these peculiarities we can try to act on atoms and particles with information, try "to speak" with them.
The second step in EB: An impermeable sliding shutter penetrates into the box **B**. If the shutter hits and kills the cat then its wave function vanishes. The cat tries to evade it. With
good luck as an atomic i.e. indivisible object it is in the left ***or*** in the right half of **B** and later in the box **B**1 ***or*** in the box **B**2. The idea of a wave function split in half is wrong.

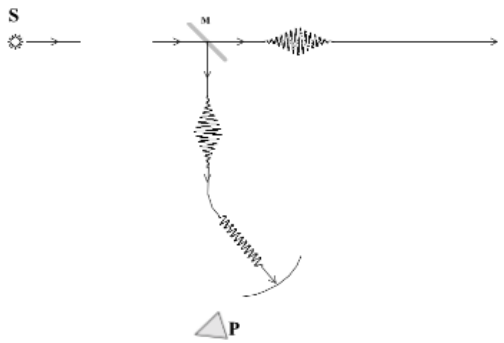
The cat surveys its new box and works up in its consciousness the new wave function. This is the origi nal, right, correct, genuine wave function of the cat. The physicist has not actual information and cannot imagine the correct copy of original wave function of the cat before **B**1 and/or **B**2 are open.

Therefore there is a very natural explanation of Einstein's boxes thought experiment. We must only acc ept that the object is indivisible and has a hidden variable like a consciousness. For people, cats, and mice it is o bvious. Why not for atoms and particles? As it seems they are very complex products of evolution. Such an acce ptance is more natural compared with "*many worlds*", "*empty*" and "*advanced*" waves. Moreover, it includes the se ideas as mental alternatives appearing in the object's consciousness. And this consciousness can be tested by experiments

HEISENBERG'S THOUGHT EXPERIMENT

Heisenberg discussed something like EB and quotes from

". . . one other idealized experiment (due to Einstein) may be considered. We imagine a photon which is represe nted by a wave packet built up out of Maxwell waves. It will thus have a certain spatial extension and also a cert ain range of frequency. By reflection at a semitransparent mirror, it is possible to decompose it into two parts, a reflected and a transmitted packet. There is then a definite probability for finding the photon either in one part or in the other part of the divided wave packet. After a sufficient time the two parts will be separated by any distan ce desired**;** now if an experiment yields the result that the photon is, say, in the reflected part of the packet, then the probability of finding the photon in the other part of the packet immediately becomes zero. The experiment a t the position of the reflected packet thus exerts a kind of action (reduction of the wave packet) at the distant poi nt occupied by the transmitted packet, and one sees that this action is propagated with a velocity greater than tha t of light."

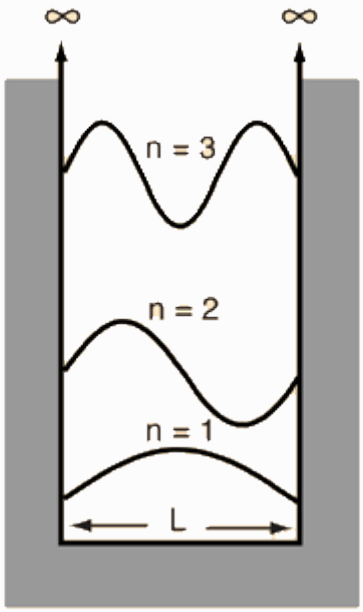


Heisenberg's thought experiment. **S** is a source of photons,
M is a semitransparent mirror, **P** is a prism, **D** is detector.

Heisenberg's thought experiment have added there in the reflecting alternative a spectrometer as a measurement apparatus. The Heisenberg's photon or wave packet interacts with a prism. As a result of this interaction a certai n mode of the latent photon spectrum is chosen and a monochrome photon reaches a corresponding point of a ph otographic plate or an array of photodiodes. Only now, according to the prevalent Copenhagen interpretation, to which Heisenberg trended, we can speak about a real photon:

"No elementary phenomenon is a phenomenon until it is a registered (observed) phenomenon. It is wrong to spe ak of the route of the photon in the experiment of the beam splitter. It is wrong to attribute tangibility to the phot on in all its travel from the point of entry to its last instant of flight."

PARTICLE IN A BOX



When the momentum expression for the particle in a box

$$p = \frac{h}{\lambda} = \frac{nh}{2L} \quad \text{where} \quad n = 1, 2, 3, 4...$$

is used to calculate the energy associated with the particle

$$\frac{1}{2}mv^2 = \frac{p^2}{2m} = \frac{n^2h^2}{8mL^2} = E_n$$

Energy for nth quantum state for a particle in an infinite box

Though oversimplified, this indicates some important things about bound s tates for particles:

1. The energies are quantized and can be characterized by a quantum num ber n
2. The energy cannot be exactly zero.
3. The smaller the confinement, the larger the energy required.

If a particle is confined into a rectangular volume, the same kind of proces s can be applied to a three-dimensional "particle in a box", and the same ki nd of energy contribution is made from each dimension. The energies for a three-dimensional box are

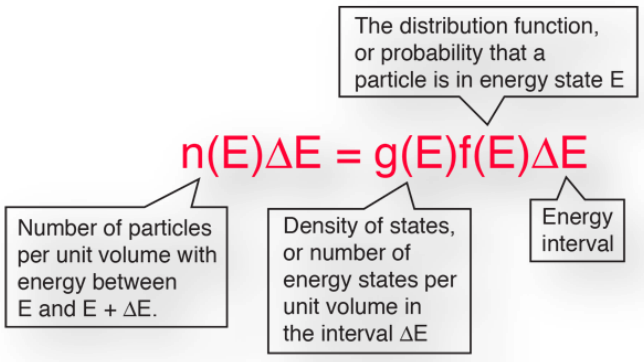
Calculation

$$E = \frac{(n_1^2 + n_2^2 + n_3^2)h^2}{8mL^2}$$

This gives a more physically realistic expression for the available energies for contained particles. This expression is used in determining the density of possible energy states for electrons in solids.

ELECTRON ENERGY DENSITY

The behavior of electrons in solids depends upon the distribution of energy among the electrons:



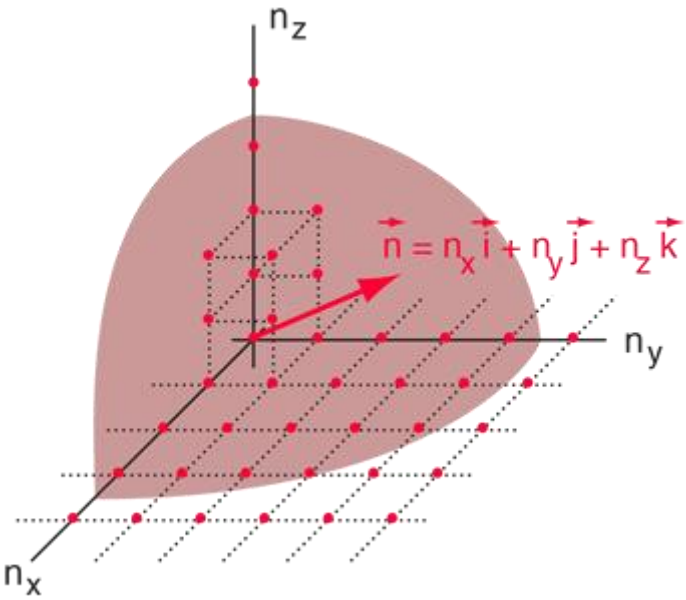
Since electrons are fermions, the distribution function is the Fermi-Dirac distribution

$$f(E) = \frac{1}{e^{(E - E_F)/kT} + 1}$$

Explain the symbols

This distribution determines the probability that a given energy state will be occupied, but must be multiplied by the density of states function to weight the probability by the number of states available at a given energy.
The determination of how many ways there are to obtain an energy in an incremental energy range dE can be ap proached with the quantum mechanical particle in a box. The energy for an infinite walled box is

$$E = \frac{\left(n_1^2 + n_2^2 + n_3^2\right)h^2}{8mL^2}$$



Treating the "quantum numbers" n as a space s uch that a given set of n values determines a po int in that space, you can argue that the number of possible states is proportional to the "volum e" in "n-space".
It is convenient to define a radius R in n-space:

$$R = \sqrt{n_1^2 + n_2^2 + n_3^2}$$

The Rayleigh scheme for counting modes.
After Richtmyer, et al.
The energy can be expressed in terms of R and vice versa.

$$R = \frac{2\sqrt{2mE}\ L}{h} \quad or \quad E = \frac{h^2R^2}{8mL^2}$$

The n-space associated with the particle-in-a-box involves only positive values of n, so the volume must be divi ded by 8. It then must be multiplied by 2 to account for the two possible spin values of the electron. The number of values is then

$$N = (2)\left(\frac{1}{8}\right)\frac{4}{3}\pi R^3 = \left(\frac{8\pi}{3}\right)(2mE)^{3/2}\frac{L^3}{h^3}$$

The number of states per unit volume is

$$n_s = \frac{N}{L^3} = \left(\frac{8\pi}{3}\right)\frac{(2mE)^{3/2}}{h^3}$$

The final density of states as a function of energy is then the derivative of this population with respect to energy

$$\rho(E) = \frac{dn_s}{dE} = \frac{4\pi(2m)^{3/2}}{h^3}\sqrt{E}$$

This represents the number of electron states per unit volume per unit energy at energy E. This energy density is a factor in many of the electrical properties of solids. Note that the result is independent of the dimension L whic h was chosen above, showing that the expression can be applied to the bulk material.

MATHEMATICAL THEORY

In Algebra

UNIT VECTOR

A vector has **magnitude** (how long it is) and **direction**:

Unit Vector

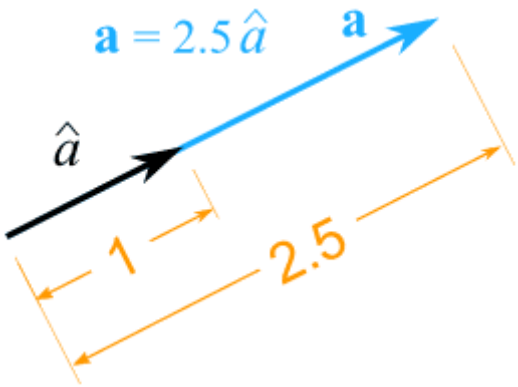
A **Unit Vector** has a magnitude of **1**:

The symbol is usually a lowercase letter with a "hat", such as:

(Pronounced "a-hat")

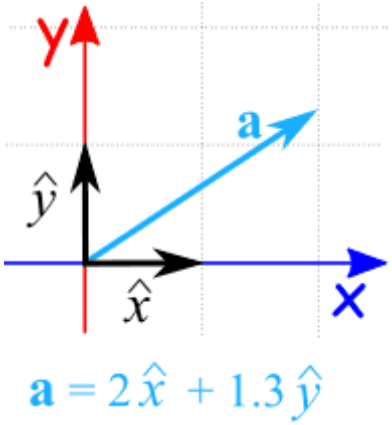
Scaling

A vector can be "scaled" off the unit vector. Here vector **a** is shown to be 2.5 times a unit vector. Notice they stil l point in the same direction:



In 2 Dimensions

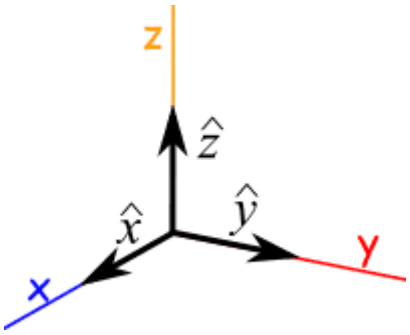
Unit vectors can be used in 2 dimensions:



Here we show that the vector **a** is made up of 2 "x" unit vectors and 1.3 "y" unit vectors.

In 3 Dimensions

Likewise we can use unit vectors in three (or more!) dimensions:



IN REFERENCE OF ARTIFICIAL INTELLIGENCE:

Artificial Intelligence: The hidden nature of natural things. In 1961, first chat bot invented.

If you look around everywhere, everywhere around you are run through AI deep learning or machine learning. AI covers domain such as

1. Machine learning
2. Deep Learning
3. Neural Learning

"If a line falls on two other lines so that the measure of the two interior angles on the same side of the transversa l add up to less than two right angles then the lines eventually intersect on that side and therefore, are not paralle l"

In a plane, through any point not on a given line only one new line can be drawn that is parallel to the original o ne.

UNDER GOD'S UMBRELLA

Postulates are assumptions that are mainly related to geometry.

"the pair of lines, which lie on a plane in such a way that they do not intersect each other, no matter how long th ey are extended, are known as parallel lines.

An ancient greek thought experiment was the most ancient platform of mathematical proof, and an existed befor e euclidean mathematics, where the emphasis was on the conceptual, rather than in the experimental part of thou ght experiment.

Euclid's elements book 1 – proposition 1
And the explanation of chapter 4, verse 6
A short story of Lord Krishna is a key to open the lock of fifth postulate.

Interdependence of five cognitive models of an approximation are - -

1) Wow
2) Cicada
3) A light and music in a new life can be protected by meditation and prayer to reach the star for pride in king's kingdom.
4) A light of super sweet persons glowing in family of god their dominating presence is exists in red light wind on united flowers.
5) Victory on intense exaltation of mind and feelings in "honey month", a goddess of fragrance commanding does work of creativity for lord krishna who has grown into iconic leading brands with tech mahindra and detach you from materialistic things.

Chain of events is trusted. All the events are becoming extremely happy because euclid's 5^{th} postulate tenderly s miling between them.

In the Puranas, there is a sage called Narada who travels from house to house comparing people's talent, titles a nd estates; his wife is more beautiful, his son is more talented, his daughter I married to a richer man, he has mor e followers, and his daughter is married to a richer man, he has more followers, his kingdom is larger, she has m ore jewelry…This comparison evokes feelings of inadequacy and jealousy in people. It fuels ambition and ignite s conflicts. Having created the tension, Narada walks away chanting, ' Narayana! Narayan' But no one hears thi s. They are too consumed by Narayani (kshetra) to worry about (kshetragna).

Narada did not want to marry and produce children. He wanted to be a hermit. This annoyed his father, Brahma, who cursed that Narada would wander in material reality forever. This is why Narada spends all his time mocki ng householders who value themselves on the basis of Narayani, rather than paying attention to the Narayana wi thin.

Once, Narada came to Dwarka and tried to park a quarrel in Krishna's house. Krishna's wives asked him what h e wanted. 'I want you to give me your husband,' said the mischievous quarrel-monger. The queens said that they could not give their husband. 'Then give me something that you value as equal or more than him.' The queens a greed. Krishna was put on a weighing pan and the queens were asked to put something they valued equal to mor e than Krishna on the other pan. Satyabhama put all her gold. But it made no difference; Krishna was heavier. R ukmini then placed a single sprig of Tulsi on the pan and declared it to be the symbol of her love for Krishna. In stantly, the weighing be the symbol of her love for Krishna. Instantly, the weighing scale titled in her favor and Narada had to be satisfied, not with Satyabhama' s gold but with Rukmini's tulsi sprig, symbol of devotion

1. This story does not make logical sense: how can a sprig of tulsi weigh more than Krihna? But it makes metaphorical sense, when the sprig is given meaning by human imagination, it becomes heavier than anything else, Human imagination can attribute any value to anything. A dog does not differentiate between gold and stone. But humans see gold as money and can turn a rock into a deity. This is the power of imagination. We cannot measure infinity, as Satyabhama realized when she tried to weigh Krishna against gold. But we can lock infinity in a symbol, as Rukmini did.
2. Bhagavada Gita: Chapter 4, Verse 6 – Arjuna, I am infinite and immortal and yet, respecting the ways of nature, I bind myself in finite and mortal measurable existence.

Thus in temples, a rock or a fossil can represent the formless divine. It is our imagination that gives value to thin gs, purpose to an activity and identity to a thing. We can give meaning or wipe it away. That I the power of may a. It is the power of God bestowed upon us humans. Maya is often called magic, for it has the power to make the world meaningful, transform every word into a metaphor, every image into a symbol.

Maya can divide and separate, cause conflict by comparison. It can also turn anything around, change reality for us, for our mind can give meaning to anything. For Example, a hermit may see sex and violence as horrible, whi le a householder may see sex and violence as necessary, even pleasurable. Maya can divide the world. It can als o unite the world; serve as the glue to a relationship, as we expand our boundaries to include whoever we wish. Duryodhana's inclusion of Karna, a charioteer's son, but exclusion of Arjuna, his royal cousin, is a case in point. That is why, in colloquial parlance, maya also means 'affection', that which binds relationships together.

When people say in Hindi, Sab maya hai, it is commonly translated as 'the world' is an illusion or a delusion'. What it means is that the world can be whatever we imagine it to be – valuable or valueless, fuelling ambition or cynicism.

In Vedanta there is a popular Sanskrit phrase, "Jagad mithya brahma satya"! It is translated a 'the world is a mir age and only divinity is real'. 'Mithya' means a measured limited truth created through maya. So the phrase can also be translated as 'the material world is an incomplete reality, made complete by imagination and language', We can manufacture depression and joy in our lives by the way we measure, delimit and apportion the world. T he world itself has no intrinsic measurement.

In Bhagavada Gita Chapter 5 verse 18 to 20 – Arjuna, the wise look at a learned man, an outcaste, a cow, an ele phant or a dog with an equal eye. A person who sees equality in all, and is equanimous in all pleasant and unple asant situations, has realized the divine for the divine is impartial too.

VI. Conclusion:

RATE OF CHANGE OF VELOCITY

Describing motion – To describe the position of an object we need to specify a reference point called the origin.

Motion Along a straight Line – The simplest type of motion is the motion along a strong line.

To describe distance we need to specify only the numerical value and not the direction of motion.

The numerical value of a physical quantity is its magnitude.

The shortest distance measured from the initial to the final position of an object is known as displacement.

Displacement can be zero but distance travelled can never be zero.

Thus distance and displacement are used to describe the overall motion of an object and to locate its final positio n with reference to its initial position at a given time.

Physical Quantity: Scalar Quantity and Vector Quantity

Vector Quantity: requires both magnitude and direction to represent it.

Example: Displacement, velocity, acceleration.

The world do not walk apart but secretly a mathematical solution of Euclid 5 postulates hides in the series of " H oneymoon at workplace "published on Amazon".

A hypothesis which essential to solve Euclid's 5^{th} postulate.

Acknowledgement

I Would Like To Express My Sincere Gratitude To Tech Mahindra Leaders And Management For His Patience, Motivation And Enthusiasm. Beside This, My Sincere Thanks Goes to "Kalyan.krishnamurthy, FLIP KART". I also want to thank Lord Krishna, Goddess Radha, Lord Shiva, and Goddess Kali.

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