Pythagorean theorem: the heart of mathematics

Profession, Philosophers

Have you ever wondered what the Pythagorean theorem is? Where it came from? Who came up with the idea of it? I’m going to start by telling you the history of the Pythagorean theorem. In this part of the essay you will learn the timeline of the Pythagorean theorem and its Importance in history. Although even being around for over 4000 years its importance and uses are almost limitless. Its effects are everywhere and affect everyone and everything. The affects are found in living and nonliving things. Although the effects seem like they are hidden they are right in front of our eyes. It’s simple to understand once you learn about them. Even the math is simple and can be very versatile and can be used with many other formulas to improve its solving capabilities. Not only is the math and simple but the history of this theorem is interesting. From this theorem being fo und by Babylonians to being discovered by Pythagoras to being passed on to his followers. From his followers it has new been proven over 300 times and still proofs are being found. More and more this theorem evolves and gets more and more complex in the manner used. None of this would make scenes though if not explained and an explanation is due. What is the history of this theorem? How does the mathematics work? How is it used today? Not only can those questions be answered but they can be explained, proven and shown. Even now there is so much unexplained about the Pythagorean theorem. This essay will only provide a skin to the whole system that is this theorem. This theorem is easily explained but understanding it and the history about it is very difficult. The origins of this theorem are unknown and most likely will never be found but as time goes on our understanding and uses for this theorem will be way greater and farther complicated.

The Pythagorean theorem is one of the oldest mathematical theorems known to men. It goes way back in 1900-1600 BCE but was looked more into and resolved Pythagoras. Pythagoras was a mathematician and a philosopher. He founded a brotherhood that had contributed to development of mathematics. Even inspiring and influencing Plato and Aristotle with his formulated principles and philosophies. Even with all the developmental stuff he has done for mathematics none of his true writings and teachings have survive through word of mouth of his followers. As many know word of mouth travels and changes due to interpretation. Although traveling and changing from his followers' interpretations the Pythagorean theorem has also stayed the same without fail. Use of the theorem can be seen everywhere in history. It is used I all architecture through time. it has been proved many times throughout history and has been estimated to have 367 different proofs. Not only has this theorem been used for scales and buildings it is used for supports in bridges. A more ancient type of architecture that used this theorem for calculation for supports is aqueducts. Every support pillar has three support triangles to help keep the weight from crumbling the pillars. Triangles are important in architecture because the equally distribute pressure and weight throughout the triangle. This was useful because of the lack of materials and supplies available. It allowed less materials to be used and still have buildings be sturdier while standing under all its own weight.

Even before the Pythagorean theorem triangles were being used in buildings for supports but it wasn't until Pythagoras discovery that buildings became more and more complex. Look at the colosseum. The colosseum is 1949 years old and is still standing strong. Even buildings such as the leaning

tower of Pisa still stands even after its awkward and unusual state of being. For over 4000 years its seen in architecture and teaching by scholars in all ages of time. Even as children we learn about it. at your ages we learn about the uses and traits of right triangles. These weird traits were stating to be questioned by the Chinese in the 1st that were not yet realized could be solved by the theorem. One of these problems being having the ability to find the length of a side of a right triangle only being given a combination of either two angles or two side or both. Today we have just interpreted that into the theorem but that wasn’t the true purpose of the theorem. Seeing as the theorem was discovered mainly by seeing that triangles and right triangles can be fit into any regular shape. Most of these being squares and rectangles. This can also work with some irregular shapes. this can be seen in the game tangrams. There isn’t much left to say or explain about the history of the theorem. Most ancient examples can only be seen in buildings and seen on tablets that were used only as examples. Most of the knowledge died when Pythagoras and his followers and following philosophers died. Even though he wasn’t the one who created it he perfected it and taught the world of the masteries of this amazing and versatile theorem. It is only time till the theorem is perfected and more is discovered because Mathematics has evolved and changed and become more advance as time goes on. Even as time continues, and all these advancements happen this theorem will always be helpful.

What about how this theorem works. How does a theorem provide this much information and when can you use it? What are its limits and how does it benefit the user? In this part of the essay you will learn how the theorem

works mathematically and physically makes sense. With most math it is hard to make it physically work but this theorem is possible to be created outside of writing.

When it comes to the Pythagorean theorem it is hard to tell when you use it and when you don’t. It’s as easy as ABC. a2 +b2= c2 is the equation. This equation only works with right triangles and can be used to find any of the sides of the triangle. Depending on the side you are trying to find the equation can change from addition to subtraction. It starts with a, A is usually the smallest or the side that is flat to the bottom. B is the second longest or the side that goes up. C is the hypotenuse or the longest side and is usually the side you will be looking for. If you know what two of the sides of the triangle are you can always find the third. When you only have one side of the triangle the formula can still be used but there can be a very of answers for the other two sides unless you use another formula that uses the right angle or any of the other angles to help you calculate the lengths. This isn’t part of the Pythagorean theorem, but it can be used to help find all the side of the triangle. This is because the Pythagorean theorem isn’t perfect. it isn’t able to find the hypotenuse without two sides already known. With help from other formulas and equations this theorem can cover a vast majority of materials. Through these vast amounts of materials, you can physically show the how this equation works. First you make squares of all the sides. Taking the area of both the smaller squares and combining them will equal the area of the bigger square. This is the most accurate way for finding unknown sides of a triangle. This can be used to help find a rough estimate of the

unknown sides of any type of triangle, but it is always correct when used for right triangles.

Although this is extremely accurate and is always correct when used in the right way it is very faulty. First it only works with right triangles. If used on equal lateral triangles for example c would equal twice the amount that it really would. When it comes to the type of triangles it only works with one specific type of triangle. Although it can be used to estimate other types of triangles it won't be as accurate as right triangles. There are little to no disadvantages to this theorem. If used in the correct way, it will almost end up right and is easy to learn and you can learn other equations to further the uses of this theorem. Every day we see how the Pythagorean theorem is used. It is everywhere around us in both natural and manmade objects. Not only is it there but we also use the effects of it every day and every second of our lives.

In architecture triangles are the most important part. Triangles are used for equal weight distribution. They are usually right triangle and put in between wall beams and used in roofs they are used as supports under a bridge and even the wires on top of a bridge. When it comes to supports and weight triangles are the only shape that can successfully at holding buildings together. Occasionally, you'll see a board holding up a fence. Imagine the ground is side a and the fence is side b what is side c. Side c is the board touching the ground and the fence. Side c is the hypotenuse. If you knew the height of the fence and the length of the ground from the fence to the end of the hypotenuse, you would be able to calculate a highly accurate estimate of

how long the hypotenuse is. This is just one common example of how people use the Pythagorean theorem. This theorem is a very common practice in our lives. It’s used when you want your picture frames to stand up. This theorem is used in our daily lives as well as our jobs. It is everywhere you just must look for it or know what you’re looking for.

In natural objects the Pythagorean theorem is also used. Unlike in manmade objects it’s hard for us to see it. You would have to go out of your way to find them but there are still common examples. In gemstones triangles are natural forming because of the way they are created to support weight. this can also be seen in the patterns that cut diamonds are in today. even in the smallest of jewelry and toys you can see triangles at work. In common toys such as Legos you can see the supports are right triangles and even that they are extremely durables and withstand the pressure of children and adults’ feet.

Even in plain sight people would still question how that is the Pythagorean theorem is used every day in common life. It isn’t directly used unless being taught or doing homework. In our heads we don’t usually do this math all the time. We use the effects of this theorem. This theorem affects our daily life from simply objects like toys and furniture to more complex objects like buildings and bridges. It’s not that we use the theorem is that we are using the after effects of the theorem and the theorem was used to create items so we can use them. It’s used to create items to be more stable and durable. jobs such as an architect carpenter metal worker or welder use this theorem

during work and use it constantly for their job but it isn’t used in many other jobs.

The Pythagorean theorem serves a big purpose on our day to day living. There are many real worlds uses for it. It is used in our day to day lives even without knowing it. The Pythagorean theorem is a big component in our lives, and I have learned to appreciate it a little more after writing this paper. Not only have I learned how to use it, but once it is learned and you know how it is used you are able to see its affects everywhere.

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