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how would the things have been working if we had a clock that was based on 6.28 instead of 12?



If we had a clock that was based on 6.28 instead of 12, we would need to redefine the length of an hour and a minute to fit this new system.



Firstly, 6.28 is equal to 2π , which is a mathematical constant used in various calculations, including those related to circular and periodic phenomena. Therefore, a clock based on 6.28 would be essentially a circular clock, with the full circle representing a time period of 24 hours.

In this new system, each hour would represent one-twelfth ($1/12$) of the full circle or $2\pi/12$, which is approximately equal to 0.52 radians. Therefore, the length of an hour in a 6.28-based clock would be shorter than the length of an hour in a 12-based clock.

Similarly, each minute would represent 1/720th ($1/12 \times 60$) of the full circle or $2\pi/720$, which is approximately equal to 0.0087 radians. Therefore, the length of a minute in a 6.28-based clock would also be shorter than the length of a minute in a 12-based clock.

As a result, if we were to use a clock based on 6.28 instead of 12, we would need to adjust our understanding of time and the way we measure it. For example, it would take approximately 50.24 minutes in a 6.28-based clock to represent one hour in a 12-based clock, and it would take approximately 720 minutes in a 6.28-based clock to represent one day in a 12-based clock.

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but 12-hour based clocks run 2 full circles in a day, but you are considering that a tau clock will move one circle in a day... what if it moves more than 2 or an irrational amount of circles in a day? what if our day is 6.28 (tau clock) hours instead of 24 normal hours?



You're right, my previous answer assumed that a day in a tau clock would have the same length as a day in a 12-hour clock.



If we were to use a clock based on 6.28 instead of 12, and assume that a day in this system is 6.28 hours instead of 24 hours, then we would need to redefine the length of an hour and a minute accordingly.

In this case, one hour in a 6.28-based clock would represent $1/6.28$ th of a day or approximately 0.159 days. Similarly, one minute in a 6.28-based clock would represent $1/60$ th of an hour or approximately 0.0026 days.



In this case, one hour in a 6.28-based clock would represent $1/6.28$ th of a day or approximately 0.159 days. Similarly, one minute in a 6.28-based clock would represent $1/60$ th of an hour or approximately 0.0026 days.

If a day in this system is 6.28 hours long, then the 6.28-based clock would complete one full circle in one day. This would mean that the hands of the clock would move around the circle once every 6.28 hours.

However, it's worth noting that a day in the real world is not exactly 24 hours long. It's actually slightly longer than that, at approximately 24.5 hours. This means that if we were to use a clock based on 6.28 hours in the real world, it would not align perfectly with the natural day and we would experience a discrepancy between the clock time and the actual time. To account for this, we might need to periodically adjust the length of the day in our clock to keep it in sync with the natural day.

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but why do we have to keep the definition of hour and minute the same? we should use some other units that will make time easy to represent, instead of hours and minute. like our clock will tell us at what degree(or some other easier and cleaner way to measure a rotation) the earth is at a point by it's hands(or maybe something other than hands, like 3d rotating hand)?



You're absolutely right. There is no inherent reason why we have to stick to the conventional units of hours and minutes when designing a clock based on a different time system. We could certainly use other units that are better suited to the new time system, or even create entirely new ways of representing time.



As you suggested, one way to represent time in a 6.28-based clock could be to use degrees or radians to measure the position of the clock's hands. Each full rotation of the clock would correspond to a full day, and the position of the hands would represent the progress of time within that day.

We could also use other units that are based on the properties of the natural world, such as the cycles of light and dark, the movement of the stars, or the frequency of certain atomic or subatomic processes. These units could provide more accurate and stable measures of time that are less susceptible to variations in the Earth's rotation.

In fact, scientists and engineers already use many different units and measures of time for different applications, depending on their needs and the level of precision required. For example, atomic clocks use the vibrations of atoms to measure time with extreme accuracy, and are used for many scientific and technological applications.



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So, in summary, there are many different ways to measure time and design clocks, and we can choose the units and measures that best suit our needs and the properties of the system we are working with.

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how will the time be defined in a 3d clock? by 3d clock i mean : there is a sphere which has horizontal levels and the hands rotate on the top most level and then drops a level and the rotates on second level and so on and then from the last level it moves up... how should we represent time using that?



A 3D clock as you described could be a very interesting way to represent time, and there are a few ways we could define time within this system.



One possibility is to use the position of the clock hands on each level of the sphere to represent time. For example, we could use the rotation of the hands around the sphere to represent hours, and the position of the hands on each level to represent minutes or seconds. Each time the hands reach the bottom level of the sphere, this could represent the end of a day, and the hands would start again at the top level to begin a new day.

Another possibility is to use the movement of the sphere itself to represent time. For example, we could have the sphere rotate around its axis to represent hours, and move up or down to represent minutes or seconds. Each time the sphere completes a full rotation, this could represent the end of a day, and the sphere would reset to its starting position to begin a new day.

We could also use other properties of the sphere to represent time, such as its size, color, or texture. For example, we could have the sphere change color or texture as time progresses, or have it expand or contract to represent the passage of time.

Ultimately, the way we define time within a 3D clock would depend on our goals and the specific design of the clock. The important thing is to create a system that is easy to read and understand, and that accurately represents the passage of time within the context of the clock's unique design.

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Sure, I can provide some possible systems for representing time in the 3D clock and the tau clock. Here are some ideas:



For the 3D clock:

- We could use the position of the clock hands on each level of the sphere to represent time. For example, we could have the top level represent hours, the middle level represent minutes, and the bottom level represent seconds. The hands could rotate around the sphere to indicate the current time. Each time the hands reach the bottom level, the sphere could rotate around its axis to indicate the start of a new day.
- Alternatively, we could use the rotation of the sphere itself to represent time. We could have the sphere rotate around its axis once every 24 hours to indicate the passage of a day, and move up and down to indicate minutes and seconds. The sphere could also change color or texture to provide additional visual cues.

For the tau clock:

- We could use radians to represent time on the tau clock, since one full rotation of a circle in radians is equal to 2π (i.e., tau) in the tau system. The clock could have a single hand that rotates around a circle once every tau (or, equivalently, every 6.28 conventional hours), with markings on the circle indicating the current time. We could also use multiple hands, with each hand representing a different unit of time (e.g., hours, minutes, seconds) and rotating at a different speed.
- Alternatively, we could use a digital display to represent time in the tau system. We could use a base-tau numbering system to display the current time, with each digit representing a power of tau (e.g., the leftmost digit would represent tau to the power of 0, the next digit would represent tau to the power of 1, and so on). This system would require some familiarity with the tau system, but it could provide a very precise and unambiguous way to represent time.

Of course, these are just a few possible systems for representing time in these clocks, and there may be other systems that are more effective or easier to understand depending on the specific design and context of the clocks.

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could you suggest some non traditional ways?





Sure, here are some more non-traditional ways to represent time on a clock:



For the 3D clock:

- We could use sound or music to represent time. For example, we could have different notes or tones play for each hour, minute, or second, with the pitch or rhythm of the music changing as time passes. The clock could also incorporate a speaker or other sound system to provide an auditory representation of time.
- We could use light to represent time. For example, we could have the sphere light up in different colors or patterns to represent different units of time. The brightness or intensity of the light could also vary to provide additional visual cues.
- We could use a combination of multiple sensory inputs to represent time. For example, we could use a system that incorporates sound, light, and movement to provide a rich, multi-sensory representation of time. This could be particularly useful for people who have difficulty processing information through a single sensory channel.

For the tau clock:

- We could use fractals or other geometric patterns to represent time. For example, we could have the clock display a fractal pattern that evolves and changes over time, with different sections of the pattern representing different units of time. This could be a particularly interesting way to represent time in the context of the tau system, which emphasizes the mathematical relationships between different units of time.
- We could use a system of symbols or icons to represent time. For example, we could have the clock display a sequence of simple images or shapes that represent different units of time. This system could be particularly useful for people who have difficulty processing numeric or text-based information.
- We could use a system that incorporates elements of storytelling or narrative to represent time. For example, we could have the clock display a sequence of images or animations that tell a story or depict a scene, with different elements of the story representing different units of time. This could be a particularly engaging way to represent time for children or for people who respond well to visual storytelling.

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no, i meant like that are not based on breaking time into linear units and then wrapping in a circle, but instead using some other mathematical principles. i didn't want other quantities to represent time..



I apologize for the confusion. Here are some non-traditional ways to represent time on a





I apologize for the confusion. Here are some non-traditional ways to represent time on a clock that are not based on breaking time into linear units and then wrapping them in a circle:



For the 3D clock:

- We could use the concept of rotation to represent time. For example, we could have the sphere rotate around its axis at a constant rate, with different rotations representing different units of time. The direction and speed of the rotation could be used to provide additional information about the passage of time.
- We could use the concept of vibration to represent time. For example, we could have the sphere vibrate at a certain frequency, with different frequencies representing different units of time. The amplitude and pattern of the vibration could be used to provide additional information about the passage of time.
- We could use the concept of topology to represent time. For example, we could use a complex 3D shape with multiple interconnected surfaces to represent time. Different parts of the shape could correspond to different units of time, and the movement of the clock hands could be used to navigate through the shape and provide a visual representation of the passage of time.

For the tau clock:

- We could use the concept of fractals to represent time. For example, we could have a fractal pattern that evolves and changes over time, with different sections of the pattern representing different units of time. The clock hands could be used to navigate through the pattern and provide a visual representation of the passage of time.
- We could use the concept of chaos theory to represent time. For example, we could use a system that generates complex, non-repeating patterns over time, with different parts of the pattern corresponding to different units of time. The clock hands could be used to navigate through the pattern and provide a visual representation of the passage of time.
- We could use the concept of geometry to represent time. For example, we could use a complex, multi-dimensional shape with different dimensions corresponding to different units of time. The clock hands could be used to navigate through the shape and provide a visual representation of the passage of time.

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Sure! The idea behind using topology to represent time is to create a 3D shape that has a complex structure with multiple interconnected surfaces, where different parts of the shape correspond to different units of time. The clock hands would then be used to navigate through the shape, and provide a visual representation of the passage of time.



To give an example, imagine a clock that has a 3D shape that resembles a twisted torus, where the surface of the torus is deformed and twisted in a complex way, with multiple layers and levels. Different parts of the torus could correspond to different units of time, such as hours, minutes, and seconds.

When the clock hands move, they would navigate through the twisted torus, and move along the different surfaces and levels of the shape, providing a visual representation of the passage of time. The user could read the time by looking at the position of the hands on the surface of the torus, as well as the depth and position of the hands in the third dimension.

One of the advantages of this approach is that it allows for a more intuitive and immersive representation of time, that is not limited to a linear progression or a circular wrapping of time. Instead, the clock becomes a physical object with a complex structure, that reflects the intricacies and non-linearities of time itself.

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by "twisted torus" you mean like.. twisted how? and what are the "different parts of torus"? also, for answering please don't use any complicated topology jargon



Sure! By "twisted torus", I mean a torus (which is a 3D shape resembling a doughnut) that has been deformed in a complex way so that it is no longer a perfect circular shape. The twisting and deformation could create multiple interconnected surfaces, with different parts of the surface corresponding to different units of time.



For example, one way to create a twisted torus could be to take a regular torus and deform it by twisting it along its central axis, or by distorting the shape of the torus using non-uniform scaling. The resulting shape would have a more complex topology than a





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For example, one way to create a twisted torus could be to take a regular torus and deform it by twisting it along its central axis, or by distorting the shape of the torus using non-uniform scaling. The resulting shape would have a more complex topology than a regular torus, with multiple surfaces and levels.

Different parts of the twisted torus could correspond to different units of time. For example, one surface could represent hours, another surface could represent minutes, and so on. The clock hands would move along the surface of the twisted torus, and their position would indicate the current time.

Overall, the idea is to create a clock that has a complex, visually interesting 3D shape, that provides a unique and immersive way to represent the passage of time.

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and how will we decide which surface will represent which unit of time?



Good question! There are a number of different ways that we could decide which surface of the twisted torus should represent which unit of time, depending on how we want the clock to function and how we want to design the shape of the torus.



One approach would be to use a uniform division of the surface of the torus to represent each unit of time. For example, if we want to represent hours, we could divide the surface of the torus into 12 equal sections, with each section representing one hour. If we want to represent minutes, we could divide each hour section into 60 equal sub-sections, with each sub-section representing one minute.

Another approach would be to use a non-uniform division of the surface of the torus, based on some other principle. For example, we could divide the surface of the torus into sections that represent different seasons or phases of the moon, or based on some other natural or cultural phenomenon.

Ultimately, the choice of how to divide the surface of the torus would depend on the specific design goals and functionality of the clock, as well as the aesthetic preferences of the designer.





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please elaborate the "non-uniform division" one



Sure! In a non-uniform division of the surface of the torus, the different sections would not be equal in size or shape, but rather would be based on some other principle or pattern. Here are a few examples of how a non-uniform division could work:  

- Seasonal: The surface of the torus could be divided into four sections, each representing one of the seasons (spring, summer, fall, winter). Each section could be further divided into sub-sections that correspond to specific days or weeks within that season. The clock hands would move along the surface of the torus, following the seasonal pattern.
- Lunar: The surface of the torus could be divided into 12 sections, each representing one of the phases of the moon (new moon, waxing crescent, first quarter, waxing gibbous, full moon, etc.). Each section could be further divided into sub-sections that correspond to specific days or times within that phase. The clock hands would move along the surface of the torus, following the lunar cycle.
- Geometric: The surface of the torus could be divided into sections based on some geometric pattern or principle, such as the Fibonacci sequence or the golden ratio. Each section could be further divided into sub-sections based on a smaller geometric pattern, such as a spiral or a fractal. The clock hands would move along the surface of the torus, following the geometric pattern.

These are just a few examples of how a non-uniform division of the surface of the torus could work. The specific pattern or principle used to divide the surface would depend on the desired functionality and aesthetic of the clock.

