"Explain Like I'm Five" (ELI5) is a sub-reddit of the internet message board Reddit. In this sub-reddit, people ask questions with complex answers and another, purportedly, knowledgeable person provides a response which answers that question by summarizing the relevant information.

At its best, ELI5 is a neat place for people to ask everyday or random questions that someone else may know the answer too if they are more familiar with a certain body of knowledge (see the question about signal strength from a wireless router or the one about whether or not a tumor is edible). Some questions are more scholarly and the person asking the question might have been better served by doing some official research on the matter, but getting another person's answer is nonetheless a fun start to the research process (see the question about what the surface of a gas giant would be like). We are looking at these ELI5 responses to look at the structure and form of a good summary, not for factual answers to the questions posed. As you read these responses, look at how the respondents approach answering the question.

Pre-Reading

Discuss the following question with one or two partners:

What makes a summary effective?

Reading

As you read through these responses, annotate the pages taking note of:

points that really help to summarize the topic at hand.

points that provide perspective on the questions listed below in the post-reading.

Post-Reading:

Respond to these questions in your writers journal using specific examples from responses you read:

What techniques do respondents use to make their answer easy to understand?

How do respondents set up their responses to be more approachable?

How do respondents make use of speech registers in their responses?

ELI5: What are the advantages/disavantages of using Google's/OpenDNS DNS instead of my ISP?

4

submitted 19 hours ago by TalkingHawk

Sorry if this has been asked before - I searched for a while but couldn't find anything this specific. Basically, what I'd like to know is what are the advantages and disavantages of changing my DNS to Google or OpenDNS instead of using the one that my ISP provides.

So far, I only know of one advantage: I can avoid the block on TPB that was installed by ISPs earlier this month on my country. But I know there are other ways to avoid this block too, so I'd like to know if there are any disavantages to changing my DNS. Thanks.

6 comments share

all 6 comments

sorted by: best

[–] **splad** 2 points 17 hours ago

Using a DNS server is like asking someone for directions to a website. You give it a common name like "yahoo.com" and it looks up an address for you: 206.190.36.45 that your computer can get a website from.

DNS servers talk to each other and should generally all provide the same service but the DNS server can tell you whatever it likes, so maybe your ISP decides it doesn't want you going somewhere and suddenly when you ask for "thepiratebay.se" it says "could not find host" instead of saying 104.28.5.42

That's not necessarily a huge issue if it is only 1 site and you have other ways of finding it, but eventually you might realize that you don't know the IP address of anything off the top of your head and if your ISP wanted they could prevent you from reaching the entire internet just by denying DNS services. So really it isn't a practical issue, it is a trust issue. People generally trust google more than they trust their ISP, so they switch to google DNS servers because they know those servers will keep doing their job with minimal shenanigans.

5

ELI5: Why do high-end sports cars require for their batteries to be "plugged-in" almost all of the time compared to other cars which can go months withough being started and still turn-over quite easily?

submitted 3 hours ago by headphonesilence

2 comments share

all 2 comments

sorted by: best

[–] **On-The-Road-To-Swole** [score hidden] 25 minutes ago

It has to do with the computer managing the engine and related systems. If you disconnect the power supply it resets a lot of things. On my car I have to tell it that there's a new battery installed otherwise it will overcharge it causing thermal runaway and a battery explosion.

Mostly though, it's so you get your car serviced at their dealerships. You need special tools and diagnostic equipment that was specifically designed for that car so you can't fix it yourself or at the local backyard mechanics. It's all about money bro.

permalink

[–] **oldestsockpuppet** 0 points 3 hours ago

Sports cars save weight by using smaller alternators and smaller batteries, they also have high compression motors that require more energy to start.

So whereas your passenger car can easily start on a 70% charge, and can refill the battery in maybe 10 minutes of driving, a sports car may not start at less than 80% charge and may take 13 minutes to recover. They also may only be able to start 6 times on a full charge vs 8 for a passenger car.

All numbers are approximate.

permalink

ELI5:Why are there no nuclear-powered spaceships?

submitted an hour ago by blyawon

4 comments share

all 4 comments

sorted by: best

[–] **megamax15** 2 points 58 minutes ago

It is technically possible and most space vessels already have a small nuclear reactor called Radioisotope Thermoelectric Generator (RTG).

The reasons why we are not using them exclusively for propulsion are mostly political. Project Orion did research a nuclear powered spacecraft and was canceled due to the Limited Test Ban Treaty (LTBT) of 1963 which prohibits any nuclear tests that are not underground.

permalink

[–] **the_original_Retro** 2 points 56 minutes ago*

There have been a number of designs that have been put forward over the years, ranging from fission-powered craft to fusion-powered craft. But they've not been adopted for several reasons.

First, the science isn't there yet for a lot of those designs, particularly the ones based on fusion and fuelled by light isotopes (atomic forms) of hydrogen or helium. We have theoretical fusion ramjets but not actually tested ones yet. They're still working on a fusion reactor here on earth that will produce more power than it consumes, and until that happens fission is a non-starter.

Second, there's a lot of sensitivity about doing anything with fission metals like Uranium outside of the Earth's atmosphere. Goes back to the old Cold War "you could nuke us!" sentiment.

Third, it's going to be expensive as hell to develop and produce the starships. Even if we could get to a metal asteroid which would pay the investors back hugely, we don't have the technology yet to properly mine it, nor do we have enough knowledge to keep our miners safe from stellar radiation and other dangers. That's still a loooong way away.

TL;DR: Not enough technology has been developed and not enough money has been allocated.

permalink

ELI5: in the USA, why are wait staff tipped a percentage of the food bill, rather than a flat rate?

56

submitted 21 hours ago by shut-up-dana

I've seen a lot of tipping-related ELI5s but nothing addressing this specific question, so here goes.

I'm a Brit, I was just in Florida for 2 weeks on holiday, and the whole tipping system is very strange to me. But specifically, why are waitresses/servers in restaurants tipped a percentage of the food bill? Why not a flat rate of $X per table (or per person)?

If I order filet mignon and a bottle of wine, the worker writes down my order, takes it to the kitchen, fetches my drink, brings me my food, and then clears my table. If I order a salad and a glass of water, the worker does all those same tasks, but gets a far smaller tip. Or put another way, if I order the filet mignon and my friend orders the salad, we end up tipping vastly different amounts for identical service. How did percentages get to be so popular?

89 comments share

all 89 comments

sorted by: best

[–] **estereo_type** 32 points 20 hours ago

The percentage rate thing basically comes down to perceived consumer control. A flat rate, or more radically, paying servers a living wage and charging no service fee, removes [perceived] control from the consumer over how their restaurant experience goes.

Jay Porter, a California restauranteur, transitioned his restaurant from a traditional tip system to a No-tip, flat service fee back in 2006, and wrote a series of blogs describing the experience back in 2013. They're a decent read and a worth a look if you're more interested in the subject, but the long and short of his experience is that people didn't like not being able to punish/reward their servers. He expands that the majority of complaints he got at the restaurant were from men who were upset they couldn't give generous tips to cute female waitresses.

I say *perceived* control above, because (and this is only somewhat related the question posted) the idea that "servers work harder for good tips" is covered in Porter's blog and as anyone who's worked in a restaurant knows, is pretty much bunk. Servers get paid more when they work more tables, period. In general, customers tip the same no matter what kind of service they got, extreme cases of bad/good service notwithstanding. And since many restaurants pool tips among servers (and often distribute portions to cooks and bus staff as well) each individual server's performance has very little to do with how much that server takes home at the end of the night.

ELI5: Why lifespans differ from animal to animal.

31

submitted 2 hours ago by vogie6

10 comments **share**

all 10 comments

sorted by: **best**

[–] **extornius** 4 points 1 hour ago

Hi !

When you're talking about lifespans, you either mean **maximum life span** or **life expectancy** (also called average life span).

- **Maximum life span** : In animals, it's the life expectancy of the most long-lived 10% of a cohort study.
- **Life expectancy** : is the number of years of life remaining at a given age so it is an average statistically speaking.

The big issue is that Animals living under natural conditions rarely approach their maximum possible age because of very high death rates due to infant mortality, diseases, predators, bad weather, accidents, or competition for food and shelter. So most of the reliable information about the length of the life span comes from zoos, where accurate records are kept and animals live under conditions almost ideally suited to prolong life.

The **main difference** between how old an individual animal species gets is to do with the number of times their cells can divide. This is preprogrammed into a particular part of the **chromosome** called **teleomere**. Life cycles of animals differ in length because they use up their amount of cell divisions **quicker** so to speak. After a set number of copies/cell divisions a cell undergoes programmed cell death, cell suidice in effect.

There are of course **many many many** others factors to take in consideration but this should give you enough information to understand the general concept behind life spans in animals at least.

permalink

ELI5: Is there a surface on a gas giant?

submitted 1 hour ago* by Fenixstorm1

I always hear "gas giant" when referring to Jupiter but wonder if the whole thing is actually gas or if I can find some resemblance of surface.

10 comments share

all 10 comments

sorted by: **best**

[–] **dyoano** 7 points 30 minutes ago

Seeing as the only other answer got downvoted to oblivion, I'll try to explain. The short answer is: yes. Gas giants are so large and have such a strong gravitational pull that their cores usually exist in the solid state of the gas near the surface. For example, Jupiter's core is (mostly) solid Hydrogen, which takes either extremely cold temperatures or (in Jupiter's case) extremely large pressures to form.

However, the gradient between solid to liquid to gas isn't as clearly defined as it is on a rocky planet like Earth. If someone dropped you from the upper atmosphere of Jupiter, you wouldn't fall then suddenly splat against a hard hydrogen surface. Instead, you'll be falling into material that gets denser and denser, and eventually you'll stop falling when the density is great enough.

permalink

[–] **Spectroscope** 3 points 28 minutes ago

Well, it would depend on the specific planet we're talking about. In the cases of *our* gas giants, we don't really know. I'll go with Jupiter, since most of the theories about the Jovian planetary dynamics started with Jupiter.

Here's a decently updated infopic to go along with. There are a couple ideas here that are a tad outdated, but they're minor. Also, keep in mind that that internal structure is *theoretical*.

So, the theory goes like this: the Jovian (gas giants) planets are composed mainly of gasses. In particular, hydrogen and helium. The presence and strength of Jupiter's huge-ass magnetic field, however, requires the radius of whatever is producing that field to be very large: larger than the proposed solid core of the planet would be. The persistence of storms on Jupiter's outer surface also suggest a smaller relative core, because those types of storms typically dissipate when over solid ground. Volcanoes on Io shoot a huge amount of oxygen and sulfur into space, and these ions get collected around Jupiter's equator, creating a huge ring of plasma around the planet which distorts the magnetosphere into a disk. This is another way to collect data on whatever is creating Jupiter's magnetic field, and fits well with the models of metallic hydrogen, and it **ALSO** provides some insight on things relating to shockwaves affecting the type of hydrogen found in Jupiter, and **THAT** will then give us more info on how to calculate (and possibly even map with ***SONAR***) the size of Jupiter's proposed solid core more precisely.

Also, Jupiter gives off close to the same amount of heat as it receives from the sun. That's not really related to your question but it's pretty freaking cool.

but **tl;dr** we don't really know. Current models suggest the existence of a solid core, but the atmosphere is far too dense for any kind of topographical imaging with current methods

ELI5: Why are there so many fights in ice hockey?

8

submitted 5 hours ago by emmapointthree

For someone with no idea about ice hockey, only that we only ever seem to see the fights from it.

12 comments share

all 12 comments

sorted by: **best**

[–] **VileValiance** 10 points 5 hours ago

Simply put: it's about a code of etiquette and sportsman like behavior. In all sports, there's rules and there are players who skirt those rules and there are times where its almost against the rules. In Ice Hockey, because of its physical nature and the velocity of the players, hits hurt and there are okay places to hit and okay ways to hit another player. If a player skirts the line between okay and against da rules: the ref's technically can't call a penalty. But the other team will police that sort of action because it can lead to career ending injuries. That's why a lot of the fights start; a policing action by one team on the other to the statement of "that's a dick thing, punch time." This is especially true when it comes to each team's goal tender. They have a blue half circle in front of the goal that's a 'no touchie' zone but once they scoot out side of it for a better angle on the play; fair game to get run over. But that's a dick thing to do and the victim's team will punish the player who did it. A second reason why is because it energizes a crowd. There are a few great times when a crowd goes wild; a break away, a fantastic play combination to a magnificent goal, and a fight. Hockey players, like most athletes, can get a massive boost in confidence when a crowd is cheering and vocally engaged in the game. Boring game? Attention elsewhere. So a quick and easy way for a hockey match to get re-energized is to have a brawl. This motivation is less often that the other two. A third and final reason is player egos and hotheadedness. You have grown men (or women) who know they're good playing against others who also know they're good, and it's a clash of personality and mentality and sometimes they just start swinging.

permalink

[–] **zzscherp** 2 points 3 hours ago

I'd like to add that in the NHL, fights are disappearing since the league has started cracking down on dangerous plays. Enforcers don't have to fight because the league will suspend them for fighting or their opponent for big hits, thus discouraging both behaviors

permalink parent

ELI5: If we've spent thousands of years domesticating dogs and cats, why are people still so allergic to them?

3

submitted 7 hours ago by CaptainDizzy

Why is it we've become immune to so many diseases over the course of our evolution, but so many people are still allergic to cats and dogs? I get that it has something to do with their enzymes, but I don't see why there we haven't become immune to the allergy as a species.

3 comments share

all 3 comments

sorted by: best

[–] **hunt_the_gunt** 4 points 7 hours ago

The short answer is that being allergic to cats or dogs is unlikely to make you die before reproductive age.

If you can live long enough to have kids, your genes are passed on.

permalink

[–] **LondonPilot** 2 points 7 hours ago

Evolution tends to remove traits that are likely to kill us before we have a chance to reproduce, or which prevent us from reproducing.

One reason why we haven't evolved to not be allergic to domestic animals, I would guess, is because it's not that difficult to avoid domesticated animals and still live a healthy life and have children. Source: I'm a lifelong animal allergy sufferer, but I've still managed to have a daughter.

However, allergies aren't entirely genetic. I'm not sure of the exact relation between the different factors, but I believe that exposure to pollution increases the chances of someone suffering from allergies - people who live in the country are less likely to develop allergies than those living in cities.

Since pollution is a relatively recent phenomenon (especially when you're talking about evolutionary timescales), it could also be that we simply have had time to out-evolve allergies since they've become a common problem. What's more, because modern medicine makes living with allergies relatively straightforward, it's unlikely we ever will out-evolve allergies, since they now cause pretty much zero reduction in someone's ability to have children.

permalink

ELI5: The phrase "Mercury is in retrograde"

submitted 23 minutes ago by theripped

2 comments **share**

all 2 comments

sorted by: **best**

[–] **Arinvar** 2 points 18 minutes ago

The planets orbit the sun at different speeds. Occasionally this speed difference makes it appear from our view that the planet starts moving backwards across the sky.

This apparent backwards motion is called retrograde.

permalink

[–] **jrf_1973** 1 point 12 minutes ago

Normally when we look at the night sky and see the stars and planets, they move across the sky in the same direction. This is because of how the Earth revolves.

In old greek, the word for wanderer gave us the English word "planet" because unlike all the stars in the sky, the planets didn't always move in the same direction. They would mostly go from west to east and very rarely appear to go from east to west.

This was because the planets (Mercury, Venus, Mars, etc...) are also moving, and Earth is moving too. And how you see one object move, from another moving object, can cause weird effects.

If you were moving in a car passing another moving car which is moving slower than you, then the other car appears to be moving backwards. From your front, to your back.

Orbital motions get a little more complicated, but that's basically what's happening. The other planet appears to change direction from our point of view, but it's just because we're moving at a different speed.

In the pseudo-science of Astrology, it has some other meaning no doubt.

permalink

ELI5:How is it determined how many calories (including fat/protein/carbohydrates) are in an item of food?

106

submitted 1 year ago by hanyuqn

33 comments share

all 33 comments

sorted by: best

[–] **EMike93309** 25 points 1 year ago*

Edited to add: I'm not a food professional... this is mostly from Google, so take it with a grain of salt.

Calories: They can determine the absolute caloric value of a food item by putting it into a sealed container, submerging that container into water, and then using electricity to burn the food and see how much it heats the water. However, that includes the calorie content of indigestible parts of the food that our bodies can't use for energy (like fiber), so now they just take the recipe, look up the individual ingredients on standard reference tables for common ingredients, and estimate the calories. The reference tables and methodology used to add to those tables were the products of experiments conducted by Wilbur Atwater at Wesleyan University in the late 1800s-early 1900s.

Fat: The fat content of foods is measured by using a solvent that pulls the fat out of a food, and then measuring the results. If you use this lab they'll do it with a mix of ether and chloroform.

Protein: You can't directly measure protein, but you can figure out how much protein is in a food sample by finding out how much nitrogen is in it. The amount of nitrogen in a sample is measured by melting the sample in sulfuric acid, which releases the nitrogen as a chemical called ammonium sulfate, then doing some other stuff to turn the ammonium sulfate into ammonia, and then extracting and measuring the ammonia. If we know how much ammonia the original sample has made, we can figure out how much nitrogen it had, and then with a little math figure out how much protein the original sample had.

Carbs: The FDA allows the food companies to measure carbs by first measuring the protein and fat content of the the product as above, as well as measuring the water and ash content of the food sample with other methods. Add the weight of all those together, subtract your result from the total weight of the food sample, and what you're left with the your carb content.

ELI5: What's the difference between a Prime Minister and a President?

134 submitted 1 year ago by LonghornWelch

59 comments share

all 59 comments

sorted by: best

[–] **djazzbass** 116 points 1 year ago*

Think of it this way - there are three main roles to fill when running a country:

1. Head of State. You represent the country in all foreign matters and are basically the "face" of the country. You also get to sign all the laws and can theoretically veto them if you want.
2. Head of Government. You're responsible for running things day to day and making the country work.
3. Head of Legislature. You're responsible for controlling what laws gets proposed, voted on, running the legislature, etc.

In the US, the President does #1 and #2, while the Speaker of the House (and to a lesser extent the Senate Majority Leader) does #3. In the UK, the monarch (Queen) does #1, and the Prime Minister does #2 and #3.

Item #2 is typically what we think of as "running the country", so whoever does that job is usually considered the "leader" of that country. That's why it's the President in the US but the Prime Minister (not the Queen) in the UK.

In terms of elections, the Prime Minister is not typically elected directly - they get their seat much like the Speaker of the House does in the US. They are Prime Minister because they are the head of the party with the most seats in the legislature, so they are elected indirectly. Compare this to the US president, who is elected directly (sort of).

Edit: can't spell

permalink

[–] **doc_daneeka** 36 points 1 year ago

To add to this, it's worth noting that a lot of countries have both a president (as head of state) **and** prime minister (as head of government). For example, France, Israel, or Germany. This is very common in non-monarchies.

ELI5:Sooooo... is a tumor edible? Is it meat? Will it kill you if you eat it? (sorry for grossness)

1930

submitted 1 year ago by Daevidd

746 comments share

top 200 comments show 500

sorted by: best

[–] **sfoglia301** 1711 points 1 year ago

Immunologist/MD student here. Yes it is edible, no it is not "meat" unless it is a tumor of muscle, and even then odds are they are undifferentiated tumor cells not really approaching real meat. I do not know why you would want to eat one, but yes. If it belongs to another person, the odds of you "getting" cancer are ~0% due to major and minor mismatches between immune antigens called HLAs (when you hear people talk about transplant matches, this is what they are talking about). So basically your immune system would kill the tumor, no problem. Even if the tumor is yours, odds are the cells would die in the stomach environment...unless you have stomach cancer, low stomach acid, and that is the tumor you ate. And even then I do not know of any mechanisms by which a tumor can "invade" through the GI tract, but honestly who knows.

Congratulations on asking a hilarious question and making my day.

408

I am currently sitting in a vehicle ~100m from my wireless router, but yet I still have a reasonably strong signal. From the same router, there are rooms ~10m away where my signal is terrible. What gives?

submitted 1 year ago by Josephdirte

> Why is there so much variability in signal strength.

125 comments share

all 125 comments

sorted by: **best**

[–] **crosmanrond** 132 points 1 year ago

I work for an IT company installing and maintaining hundreds of residential wireless networks. The 2.4ghz frequency is especially prone to being affected by interference from things like walls, wires, plumbing, ductwork, and other electronics like cordless phones, microwaves, and just about anything with a motor. With a clear line of sight many residential-quality routers can work up to 400 feet at greater than 50% signal strength(approx 2 "bars" on most devices). However with even minor obstructions they can be rendered unusable even just a room away. Additionally, wireless networks in general can and will interrupt each other. On the new 5ghz frequency, interference such as walls and plumbing pose a greater obstacle. However since there are fewer networks on this frequency and it is not shared with cordless phones, it is currently much more stable. It is also faster.

Of note, commercial-quality routers and access points(like Ubiquiti Networks' OutdoorAP) provide *much* better ranges, I have tested these to be useable at as much as 600ft with line of sight and 300ft with reasonable obstruction.

permalink