# Evidence of God's Power from a Textbook

*A Revelation Before the Age of Advanced Science*

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*There they found a servant of Ours, to whom We had granted mercy from Us and enlightened with knowledge of Our Own. Moses said to him, "May I follow you, provided that you teach me some of the right guidance you have been taught?" He said, "You certainly cannot be patient ˹enough˺ with me. And how can you be patient with what is beyond your ˹realm of˺ knowledge?"*
Al Kahf 18 verse 65-68.

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## Evidence of God's Power

> *We will show them Our signs in the universe and within themselves until it becomes clear to them that this ˹Quran˺ is the truth. Is it not enough that your Lord is a Witness over all things?*
> Fussilat 41 verse 53.

The verses of the Qur'an, as revealed in Surah Fussilat, are a clear proof of truth, not only for us but also for previous generations. This proof is not just general; it's also very specific, even predicting extraordinary historical events like the victory of the Romans. What we did not experience, the companions of the Prophet did.

> *The Romans have been defeated in a nearby land. Yet following their defeat, they will triumph within three to nine years. The ˹whole˺ matter rests with Allah before and after ˹victory˺. And on that day the believers will rejoice at the victory willed by Allah. He gives victory to whoever He wills. For He is the Almighty, Most Merciful.*
> Ar Rum 30 verse 2-5.

The war between two superpower empires, the Eastern Roman, known as Byzantine, and Persian, had reached its peak. From 611 to 623 CE, **the Persian army gradually conquered Roman territories**, seizing Syria, Palestine, Egypt, and Rhodes, and even managing to enter Anatolia. This defeat was a devastating blow to the Roman Empire, causing widespread despair.

However, in the midst of the Roman defeat, an extraordinary revelation came down. **In 625 CE, Surah Ar-Rum, verses 2–5, was revealed**. These verses made an unimaginable promise: "The Romans have been defeated in the nearest land. But after their defeat, they will be victorious within a few years." This revelation seemed to defy the reality on the ground.

The promise became a reality a few years later. In 627 CE, despite being outnumbered, the **Roman forces managed to defeat the Persians** in a decisive battle at Nineveh. This victory turned the tide. Two years later, in 629 CE, the Persians were forced to retreat from all the territories they had conquered, restoring Roman glory. This event occurred just three years before the Prophet Muhammad (peace be upon him) passed away in 632 CE, serving as one of the clear proofs of the truth of the Qur'an for the companions and subsequent generations.

The story of the Roman victory shows how the Qur'an provides detailed guidance. However, it must be understood that the Qur'an's focus is not on technical scientific details but on a broader message. Meanwhile, modern science is rapidly progressing with new discoveries.

Scientific understanding has advanced remarkably since Eratosthenes's **3rd century BCE** calculation of Earth's circumference, which aided early latitude determination. The Quran was revealed to Prophet Muhammad (peace be upon him) incrementally over 23 years in the **7th century**. While it contains verses that touch upon natural phenomena, creation, and the universe, it **does not explicitly** present information about mapping, the precise composition of matter (like atomic theory), specific biological structures (like cells or DNA), or detailed cosmic observations in the form of scientific formulas or systematic explanations.

There are several verses in the Qur'an that are considered relevant to modern scientific discoveries. For example, descriptions of fetal development in the womb, the expansion of the universe, or the orbital movement of celestial bodies. Although these verses do not provide detailed scientific specifics, scholars often see them as an indication that scientific truths discovered much later were alluded to in the Qur'an thousands of years ago.

The **17th century** saw pivotal inventions like the compound microscope by Janssen, Galileo's initial telescopic observations of the Milky Way, Hooke's coining of "cells," Leeuwenhoek's microscopic insights, and Picard's refined land mapping techniques. This pursuit of precision continued into the 18th century with Harrison's marine chronometers revolutionizing oceanic longitude and Bergman's early chemical systematization.

The **19th century** brought fundamental scientific shifts, including Dalton’s atomic theory, Berzelius’s chemical notation, the formalization of Cell Theory by Schwann and Schleiden, the initial recognition and naming of enzymes, and the discovery of chromosomes. The early 20th century featured Hubble’s profound revelation of distant galaxies and the development of electron microscopes that greatly surpassed optical limits. Finally, the mid-20th century saw the groundbreaking discovery of DNA’s double helix structure, culminating in the late 20th century with GPS providing unprecedented global precision in mapping.

Thanks to inventions in optics, waves, and other technologies, our current experiences are profoundly different from those of the Prophet's companions, and even from our grandparents'.

However, the story is not over yet. A much more astonishing secret, which was not explicitly revealed, will soon be uncovered in the next chapter...

**Disclaimer**

AI assists in material discovery, text composition, wording refinement, and translation.

Kaaba ration to the earth’s poles: inspired by online video on the same theme, that is Kaaba and Golden Ratio, calculate with different calculation and perspective.

The Bee: directly inspired by an online video.

Science and the Supernatural: Modern science operates on the principle of methodological naturalism, meaning it seeks to explain the universe through natural, observable, and testable phenomena. Supernatural concepts, by definition, exist outside of these natural laws. Therefore, a supernatural being like a genie, which can perform actions that defy the laws of physics e.g., creating matter from nothing, instantaneous travel, or magic, is considered

beyond the scope of scientific inquiry. It cannot be studied, measured, or proven using the scientific method. In the case of Genie, there is no discussion about their essence or physical form, as they are supernatural beings. Instead, the focus is on their origin from a smokeless fire that is hotter than any fire on Earth, as described in the Quran.

In the book “Is God a Mathematician?”, it is mentioned that some parts of the universe are arranged according to the Fibonacci number pattern: one, one, two, three, five, eight, thirteen, twenty-one, and so on; and the division between those numbers: three-halves, five-thirds, eight-fifths, thirteen-eighths, and so on; the longer it goes on, the closer the result gets to the golden ratio 1.61803.

The Kaaba is located at a position of 21.423 degrees North. The ratio of its position to the poles is the sum of 90 and 21.423 divided by the difference of 90 and 21.423, which is approximately 1.625. This value is equal to the ratio of the two consecutive numbers before 21, specifically thirteen-eighths, which is equal to 1.625.

The Kaaba is located at 39.826 degrees East. The ratio calculated from this position relative to the Earth's full circle of longitude is difference of 180 and 39.826 divided by the sum of 180 and 39.826, which approximately 0.638. This value is approximately equal to 5 divided by 8 plus 0.013, which is derived from a sequence involving three consecutive numbers before 21.

# The Cow

The cow is mentioned in Quran Chapter **2**. In fact, Chapter **2** of the Quran is named “Al-Baqarah” (The Cow). Within the chapter, the detailed story of the yellow cow **sacrifice** can be understood on both literally and metaphorically. Yellow coat color typically arises from **2** factors: first, presence of **2** recessive “e” alleles “e/e” at the MC1R gene; second, at least a dominant **dilution** allele (“dominant D”) or “dominant D/dominant D” or “dominant D/d” at PMEL17 gene, where “d” is ressesive dilution allele, lightens red pigment “e” to yellow. The story can be interpreted metaphorically as a lesson about two groups within the faith whose belief is **diluted**. **Sacrifice** it, then return to pure faith.

This surah is named after the cow in this story, which happened at the time of Moses (alayhi salam). A rich man was killed by his nephew, his only heir, and the body was thrown at the door of an innocent man. After a long investigation, no one was identified as the killer. Moses (alayhi salam) prayed for guidance and was told that the only way to find the killer was to sacrifice a cow and strike the victim with a piece of it. When this was done, the victim spoke miraculously and said who the killer was.

> *They said, “Call upon your Lord to clarify for us what type ˹of cow˺ it should be!”*
> *He replied, “Allah says: The cow should neither be old nor young but in between. So do as you are commanded!”.*
> *They said, “Call upon your Lord to specify for us its colour.”*
> *He replied, “Allah says: It should be a bright yellow cow; pleasant to see.”*
> Al Baqarah 2 verse 68-69.

Many mammals, including cows, share a genetic basis for coat color, with a few key genes playing a central role in determining an animal’s appearance. The principles of epistasis, where one gene influences the expression of another, and incomplete dominance, where a heterozygous genotype results in an intermediate phenotype, are common across different species. The Melanocortin 1 Receptor (MC1R) gene, for example, is a

fundamental determinant of whether an animal produces black or brown pigment (eumelanin), or red or yellow pigment (phaeomelanin).

In cows, specific variants of this gene control the base coat color, such as red or black. This same gene is found in a wide variety of other mammals, including dogs, cats, and horses, where its alleles also dictate the primary base coat color. Similarly, dilution genes that act on these base colors are widespread in the mammalian class. The PMEL17 gene, which is responsible for the “yellow bright” phenotype in cows, is an excellent example. This same gene in horses causes the “silver dapple” trait, which specifically dilutes black pigment.

In a similar vein, the MLPH gene is responsible for the common “dilute” coat color in both cats and dogs, turning black fur into blue or gray and red fur into cream. These shared genes and genetic mechanisms highlight the conserved nature of coat color genetics across diverse mammalian species, from livestock to companion animals. While specific mutations and their effects may vary, the underlying genetic principles and the central role of genes like MC1R and various dilution genes remain remarkably consistent.

The “yellow bright” coat color in cows is a result of a specific genetic combination involving two key genes: MC1R and PMEL17.

The first component is the base coat color, which is determined by the MC1R gene.

The “red” allele of this gene is represented by e, and a cow must be homozygous recessive “e/e” to have a red or yellow base coat. This means the cow inherited an “e” allele from both its mother and father, causing its melanocytes to produce only the red or yellow pigment phaeomelanin.

The second component for the yellow coat is the dilution of the red base color, which is controlled by the PMEL17 gene. The allele responsible for dilution is dominant and is often represented by “dominant D”. For a cow to have a diluted coat color, it must have at least one copy of this dominant allele, so its genotype for the dilution gene is “dominant D/dash”, where the

dash signifies that the second allele can be either dominant or the non-diluted "d" allele.

Specifically, the “yellow bright” color is the result of the Dilutor gene acting on a red base coat. The cow must be heterozygous for the dilution gene, having one copy of the dominant dilution allele and one copy of the recessive non-dilution allele, so its genotype for the dilution gene is “dominant D/d”.

If the cow were homozygous for the dominant dilution allele, a pair of “dominant D”, it would be a much lighter, nearly white color. This is the genetic basis for the very light coats seen in breeds like Charolais, where the dominant diluter gene dilutes a black base coat to a creamy white. Therefore, to have the “yellow bright” coat color, a cow must have the combined genotype of ressesive e (for a red base coat); and “dominant D/d” (for a single copy of the dominant diluter gene). This genetic makeup results in a light, yellowish-red appearance.

**Metaphor #1: Munafiq (Hypocrite)**

In this metaphor, a hypocrite’s faith or sincerity could be seen as being “diluted.” Here’s how the metaphor could work:

> The Original Substance: This represents the core, pure, and sincere belief of a true follower. It is a concentrated and genuine conviction.
>
> The Diluting Agent: This represents the hypocrite’s ulterior motives, insincerity, selfish desires, or hidden disbelief. It is the “water” added to the pure substance.
>
> The Diluted Solution: This represents the hypocrite’s outward display of faith. It has the appearance of the original substance; it looks and acts like a believer; but its concentration is weak and its genuineness is compromised. The “color” is there, but it is pale and insipid.

**Methapor #2: Those Who Tamper the Original Message**

The “dilution” then refers to the gradual weakening and corruption of this truth. The Quran in Al-Baqarah details various ways this “dilution” occurred:

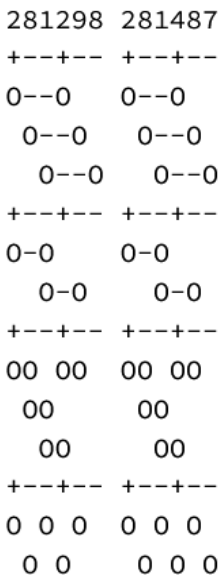
> Adding to the Message: The Quran speaks of them “writing the Book with their own hands” and then claiming, “This is from Allah” to gain a paltry price (chapter 2 verse 79). This act is like adding an impure substance to the original, diluting its purity and authenticity.
>
> Omitting the Message: The Quran also accuses them of “concealing what Allah has sent down of the Book” (2 verse 159) and “distorting the words from their places” (chapter 2 verse 75). This is a form of dilution by omission, where vital parts of the original truth are removed, leaving a less potent and incomplete version.
>
> Prioritizing Worldly Desires: The Quran describes their preference for worldly gain over divine commands, often breaking covenants and turning away from prophets (chapter 2 verse 87−88). This is the “diluting agent”; the desires and greed that corrupt the sincerity of their faith, watering down their commitment to God’s law.

**Fun Math**

A chapter known as Al Baqarah contains a total of 25,900 letters.

Meanwhile, a fundamental genetic rule governed the color of a cow's coat. The MC1R gene, with its unique identifier of 281298, determined whether the animal's pigment would be red or black. A separate gene, PMEL17, bearing the number 281487, had the ability to dilute that base color through a specific mutation.

The two genetic identifiers, 281298 and 281487, when broken down and added together in a particular sequence, resolved to a total of exactly 25,900. The equation was a quiet harmony of numbers:




2812+8129+1298+2814+8148+1487 +

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28+81+12+29+28+81+14+48 +

2+8+1+2+9+2+8+1+4+8+7

## The Cattle

The Cattle is mentioned in Quran Chapter 6. In fact, Chapter 6 of the Quran is named “Al-An’am” (The Cattle). The animals are mentioned in pairs: sheep and goats, and camels and cattle. Interestingly, when their chromosome numbers are mentioned, the pairs are 54 and 60 (for sheep and goats), and 74 and 60 (for camels and cows). A chromosome number of 60 is shared by both goats and cattle, even though they are entirely different animals. However, both are ruminants. All of the mentioned ruminants: sheep, goats, and cattle; have a chromosome count that's divisible by **6**, as their GCD (Greatest Common Divisor) is **6**.

> *˹Allah has created˺ four pairs: a pair of sheep and a pair of goats. Ask ˹them, O Prophet˺, “Has He forbidden ˹to you˺ the two males or the two females or what is in the wombs of the two females? Tell me with knowledge, if what you say is true.” And a pair of camels and a pair of cattle. Ask ˹them˺, “Has He forbidden ˹to you˺ the two males or the two females or what is in the wombs of the two females? Or were you present when Allah gave you this commandment?” Who does more wrong than those who fabricate lies against Allah to mislead others without ˹any˺ knowledge? Surely Allah does not guide the wrongdoing people.*
> Al An’am 6 verse 143-144.

Some animals are grouped together for convenience, but they have distinct biological characteristics, as seen in their chromosome numbers. For example, sheep and goats are often seen together, but they have different chromosome counts: 54 for sheep and 60 for goats. Similarly, camels and cattle are distinct species, with camels having 74 chromosomes and cattle having 60. This difference in genetic material is a key factor in why these animals cannot interbreed successfully.

Lineage:
Eukaryota - Metazoa - Chordata - Mammalia - Artiodactyla:
- Camelidae: Camelus (camel);
- Bovidae: Ovis (sheep), Bos (cattle), Capra (goat).

The significant difference in chromosome numbers is the primary reason why sheep and goats cannot produce fertile offspring. Although they can sometimes be crossbred to create a hybrid known as a "geep," this offspring is almost always sterile. The mismatch in chromosome numbers (27 pairs from one parent and 30 from the other) prevents the proper pairing of chromosomes during the formation of reproductive cells, making the hybrid unable to reproduce. This genetic barrier ensures that these two species remain distinct.

In contrast, a unique connection exists between goats and cattle: they both have 60 chromosomes. Even with this identical number, they are entirely different animals and cannot interbreed. This is because their chromosomes contain different genes arranged in different ways. Both goats and cattle are classified as ruminants, a group of animals with a four-chambered stomach specialized for digesting tough plant material. This shared digestive system is a key biological similarity that links them.

While cattle, goats, and sheep are all true ruminants, camels are an interesting exception. They are often called pseudo-ruminants because they also have a multi-chambered stomach, but with only three compartments instead of four. This biological difference highlights how a shared characteristic, like digesting plant matter, can be achieved through different evolutionary pathways. This helps to further categorize these animals beyond their superficial similarities.

**Fun Math**

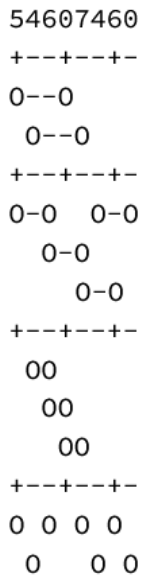
A chapter known as Al An'am existed, containing a total of 12,571 letters.

Within its text, animals were mentioned in pairs, a fact that resonated with their genetic makeup. When their chromosome numbers were considered, a unique pattern emerged:

the pair of sheep and goats held numbers of 54 and 60,

while camels and cows were represented by 74 and 60.

These four numbers, 54607460, held a secret. When broken down and added in a specific order, their sum revealed a profound connection to the chapter's total letter count, 12,571. The equation was a quiet harmony of digits:

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546+607+746+460 +

46+60+07 +

5+4+6+7+4+6+0

# The Thunder

Quran Chapter **13**, Verse four highlights how fruits and crops, despite being irrigated with the same water, can vary in taste and quality, influenced by carbon in the soil. Carbon, as organic matter, impacts nutrient availability, water retention, and microbial activity, all crucial for flavor development. Quran Chapter **13**, Verse 12 speaks of divine signs like thunder and lightning, which contribute to the nitrogen cycle by producing nitrogen compounds that fertilize the earth and support life, underscoring the interconnectedness of natural forces. Both carbon and nitrogen, with atomic numbers **six** and **seven**, are essential for the fertility of the earth and the development of life and flavor.

> *And on the earth there are ˹different˺ neighbouring tracts, gardens of grapevines, ˹various˺ crops, palm trees; some stemming from the same root, others standing alone. They are all irrigated with the same water, yet We make some taste better than others. Surely in this are signs for those who understand.*
> Ar Ra'd 13 verse 4.

**Nitrogen**

The thunder is mentioned in Quran Chapter **13**. In fact, Chapter **13** of the Quran is named "Ar-Ra'd" (The Thunder). Thunder and lightning actually occur at the same time and place. Lightning contributes to fertilizing the soil indirectly with the nitrate ion (**1** atom of N and **3** atom of O) through a process called atmospheric nitrogen fixation, as follows:

> Nitrogen gas and oxygen gas react, with the presence of lightning, to yield two molecules of nitrogen monoxide gas;
> Two molecules of nitrogen monoxide gas and one molecule of oxygen gas react to produce two molecules of nitrogen dioxide gas;
> Two molecules of nitrogen dioxide gas and one molecule of

liquid water react to produce one molecule of aqueous nitric acid and one molecule of aqueous nitrous acid; and
Aqueous nitric acid dissociates to produce a hydrogen ion and a nitrate ion, both in an aqueous solution.

The Earth's atmosphere is composed of several gases, but nitrogen and oxygen are the most abundant, together making up about 99% of the total atmospheric content. These two elements play a central role in sustaining life on Earth and maintaining the balance of our ecosystem.

Nitrogen accounts for approximately 78% of the atmosphere. It is chemically inert in its molecular form, meaning it does not readily react with other compounds. This inertness makes it ideal for maintaining the stability of the atmosphere, ensuring that processes like respiration and combustion can occur without destabilizing the environment.

Oxygen makes up about 21% of the atmosphere. It is highly reactive and plays a vital role in respiration, combustion, and oxidation reactions, all of which are fundamental to life on Earth. Oxygen also reacts with other elements to form essential compounds like water and carbon dioxide, which are central to the processes of photosynthesis and respiration in living organisms.

Together, nitrogen and oxygen are the backbone of the Earth's biogeochemical cycles, providing the necessary components for plant, animal, and microbial life.

Nitrogen oxides (nitrogen monoxide and nitrogen dioxide) are gases formed when nitrogen and oxygen in the atmosphere react under conditions of high energy. One such event that generates these reactions is lightning. During a lightning strike, temperatures can reach up to 30,000° Kelvin, or 53,540 °Fahrenheit, hot enough to break the bonds between nitrogen and oxygen molecules. This extreme heat leads to the formation of nitrogen oxides . These nitrogen oxides are then carried by atmospheric currents and can dissolve in water vapor, falling to Earth as nitric acid and nitrous acid.

Once in the soil, it dissociates, releasing the nitrate ion. Nitrates are a form of nitrogen that plants can readily absorb and use to synthesize

essential proteins and amino acids. The nitrates deposited by lightning-induced rain become part of the soil's nitrogen content, providing a natural source of nutrients for plants and promoting soil fertility.

Beyond fertilization, the presence of nitrogen oxides in the atmosphere also has a slight acidifying effect on the soil. As nitric acid forms from nitrogen oxides and water vapor, it can lower the pH of the soil. While small amounts of acidity are beneficial for some plants, excessive acidification can harm certain crops and ecosystems. This is an example of how the balance of natural processes is vital for maintaining a healthy environment.

**Carbon**

The carbon content in soil has a significant and multifaceted impact on the taste of fruit. This is primarily through its role in soil organic matter and the soil microbiome, both of which profoundly influence nutrient availability, water retention, and overall plant health.

The foundational element here is soil organic carbon (SOC), which forms the very essence of healthy, vibrant soil. It's not just inert material; rather, it represents the living, breathing component of the soil system, derived from the decomposition of countless generations of plant and animal residues, along with the biomass of the microscopic life that teems within. This rich organic matter serves as an extraordinary nutrient reservoir, a biological "bank" that meticulously stores essential plant nutrients. Unlike synthetic fertilizers that offer a rapid, often fleeting, burst of nutrients, the decomposition of organic matter ensures a gradual, sustained release of these vital elements; nitrogen, phosphorus, potassium, and a spectrum of micronutrients like boron and zinc. This steady, balanced nutrient supply is paramount because it directly fuels the plant's metabolic machinery. It's the engine for photosynthesis, enabling the plant to produce the very sugars that define a fruit's sweetness. It supports the synthesis of organic acids, which are critical for the pleasant tartness and overall balance that makes a fruit truly palatable. Furthermore, this consistent nutrient stream allows for the intricate creation of volatile organic compounds (VOCs) ; the complex, aromatic molecules that give each fruit its unique fragrance and contribute

profoundly to its perceived flavor. Without this stable nutrient delivery, fruits can often taste bland, exhibit underdeveloped sweetness, or lack their characteristic aromatic complexity.

Beyond its role as a nutrient custodian, soil organic carbon profoundly enhances the soil's water-holding capacity. Imagine it as a giant, incredibly efficient sponge woven throughout the soil structure. This remarkable ability to absorb and retain water is a game-changer for fruit quality. It acts as a crucial buffer, protecting fruit development from the detrimental effects of both drought stress and excessive moisture. During dry spells, this stored water is slowly released to the plant's roots, preventing the plant from experiencing the severe stress that can result in smaller, tougher fruits with concentrated, sometimes unpleasant, flavors. Conversely, in periods of heavy rain, the improved soil structure fostered by organic carbon allows for better drainage, preventing waterlogging that can suffocate roots and lead to disease, again compromising fruit quality. A consistent, well-regulated water supply ensures that fruit cells expand properly and sugars are efficiently transported, resulting in juicy, plump fruits with a consistent, delightful taste.

Crucially, soil organic carbon is the lifeblood of the soil microbiome. It provides the primary food source and the intricate architecture for the vast, diverse communities of bacteria, fungi, archaea, and other microorganisms that call the soil home. These microscopic allies are not merely passive residents; they are active partners in the plant's growth and taste development. Many microbes tirelessly work to solubilize nutrients, converting insoluble forms of elements like phosphorus into plant-available compounds. Others engage in the remarkable process of nitrogen fixation, pulling inert nitrogen gas from the atmosphere and transforming it into usable forms for plants. Beyond basic nutrient acquisition, there's growing evidence that the soil microbiome can directly influence a plant's secondary metabolism, subtly guiding the production of compounds that are not strictly for survival but are key to defense, communication, and, most relevantly, flavor. This might involve the production of phytohormones that fine-tune ripening, or even direct precursors to those very VOCs that delight our senses. A thriving, diverse microbial community also bolsters overall plant health and resilience, making the plant less susceptible to pests and diseases.

A less stressed plant can then dedicate more energy and resources to developing highly flavorful fruits.

Finally, soil organic carbon significantly improves soil structure and aeration. By binding tiny soil particles into stable aggregates, it creates a porous environment. These pores allow for optimal air circulation, providing the oxygen essential for healthy root respiration and efficient nutrient uptake. They also ensure proper water infiltration and drainage, preventing root damage from compaction or anaerobic conditions. Healthy, well-aerated roots are fundamental to a plant’s ability to absorb everything it needs from the soil, directly impacting the intricate biochemical processes that culminate in the superior sweetness, acidity, and complex aromas of a truly delicious fruit.

Based on the comprehensive review, the sweetness of grape berries is fundamentally a story of carbon accumulation. Essentially, all the carbon that forms the sweet-tasting sugars is imported from the leaves. Through photosynthesis, leaves fix atmospheric carbon dioxide into sucrose, which is then transported via the phloem to the developing berry. The berry's sweetness is not determined by the leaf's ability to produce sugar but by the berry's own highly regulated capacity to unload, process, and store this imported carbon.

The fate of this carbon changes dramatically at a key developmental stage called véraison, which marks the onset of ripening. Before véraison, most imported carbon is used for growth or channeled into metabolic pathways that produce organic acids, primarily malic acid, making the berry tart. At véraison, a major shift occurs: the berry switches its phloem unloading strategy and its internal metabolism. Now, the imported sucrose is systematically broken down into the hexose sugars glucose and fructose, which are then actively transported for storage.

This final step of storing sugars is managed by specialized transport proteins. Families of transporters like SUTs, HTs, and most importantly, TMTs and SWEETs, act as gatekeepers, moving the hexose sugars across the plasma membrane and into the vacuole of the berry's flesh cells. Here, they accumulate to extremely high concentrations. Therefore, a grape's sweetness

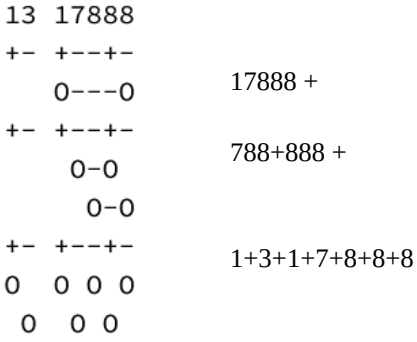
is the direct result of this efficient, multi-stage process of carbon import, metabolic conversion, and active transport into storage within the berry.

**Fun Math**

In a chapter called Ar Ra’d, there was a number that settled with an exact total of 3,500 letters.

Lightning contributes to fertilizing the soil indirectly with the nitrate ion, a molecule containing one atom of nitrogen and three of oxygen. The final result of this transformation was a collection of numerical values: a hydrogen ion and a nitrate ion, both in an aqueous solution; a lone atom of Hydrogen, number one on the great table was met by a complex gathering of atoms: a molecule of Nitrogen, atomic number seven, bound to three atoms of Oxygen, each a number eight: 17888

A hidden harmony was found within these numbers, 13 and 17888. When the values were combined in a specific order, they resolved to a single, profound total. The sum was a silent testament to a cosmic connection that equals to 3,500:



## The Bee

The bee is mentioned in Quran Chapter **16**. In fact, Chapter **16** of the Quran is named “An-Nahl” (The Bee), and bees basically have **32 chromosomes, 16 pairs, for females and 16 chromosomes for males.**

A honey bee’s chromosome number depends on its sex. Males have 16 chromosomes, while females have 32 chromosomes. This difference is due to a unique system of sex determination called haplodiploidy, which is found in all Hymenoptera insects, including bees, wasps, and ants.

Verses 68 and 69 specifically talk about the bee and its role, describing how Allah inspired the bee to build its hives in mountains, trees, and structures, and to eat from various fruits to produce honey, which is described as having healing properties.

In verse 69 there is a line:

> *…There emerges from **their bellies/her (two) bellies (butuniha)** a drink (honey), varying in colors, in which there is healing for people…*
> An Nahl 16 verse 69.

The word “butuniha” is an Arabic word. Here’s a breakdown:

> “Butun” is the plural of “batn”, which means **belly** or **abdomen**. “Ha” is a feminine singular possessive pronoun meaning **her** or **its** (referring to a feminine noun). So, “butuniha” means **“their bellies”** or **“her bellies”** (if referring to multiple bellies belonging to a single feminine entity).

The use of “butuniha” in this verse has led to various interpretations and discussions, particularly in the context of scientific compatibility with the Quran:

> **Referring to multiple “stomachs” of a single female bee:** Some interpretations highlight that “butuniha” (plural bellies, singular female pronoun) could subtly indicate that a *single* female bee has *multiple* internal compartments or “stomachs.” As we discussed, bees do indeed have two main internal compartments that function like stomachs: the honey stomach (crop) for nectar storage and the midgut for digestion. This is seen by some as a scientific marvel mentioned in the Quran long before modern biology.
>
> **Referring to the bellies of the “bees” (plural, feminine grammatical gender):** Other interpretations argue that “An-Nahl” (The Bees) is a collective noun, and while the pronoun “ha” is grammatically singular feminine, it can refer back to the collective plural “bees.” In this view, “butuniha” means “from their (the bees’) bellies,” acknowledging that honey comes from the collective effort of many bees, each with its own internal system. The use of feminine grammatical forms for the verbs preceding “butuniha” (like “kuli”: eat, and “usluki”: follow) also points to the female worker bees, which are indeed the honey producers.

Both interpretations highlight the Quran’s precision in language and its alignment with scientific facts discovered much later, particularly regarding the female bee’s role in honey production and its unique digestive system.

Fact:
**The female bees** foraging for nectar and pollen, **then converting nectar into honey** through a process of regurgitation and fanning to reduce water content. Female worker bees, like all honey bees, have **two main “stomachs”** that are distinct in their function. The male bees primary purpose

is to mate with the queen. They do not collect nectar or pollen, do not produce honey, and do not have stingers. They are often larger than worker bees.

## The Cave

The cave is mentioned in Quran Chapter **18**. In fact, Chapter **18** of the Quran is named “Al-Kahf” (The Cave). The story of Al-Kahf is about a group of young men who sought refuge in a cave and were put into a miraculous, prolonged sleep. A SNP "RS1539808", located on chromosome **18** at position 5,978,932, has been identified as a candidate with the strongest effect on increasing sleep time, with the reference code of OBA:2040173. In one study, the T allele of this SNP showed a suggestive but not definitive association with the effect, with a p-value of four millionths. Therefore, this finding requires replication in other studies to be confirmed as a true genetic link.

> *And you would have thought they were awake, though they were asleep. We turned them over, to the right and left, while their dog stretched his forelegs at the entrance. Had you looked at them, you would have certainly fled away from them, filled with horror.*
> Al Kahf 18 verse 18.

OBA:2040173 and EFO:0005274 represent terms from two different biological ontologies that serve distinct purposes. OBA:2040173 corresponds to the term “sleep onset quality,” a highly specific concept from an ontology designed for making granular biological assertions. This level of detail is used for precise scientific descriptions of a particular aspect of the sleep process. In contrast, EFO:0005274 represents the much broader term “sleep time” from the Experimental Factor Ontology (EFO). The EFO is primarily used for annotating and integrating data across large-scale databases, such as those used in genome-wide association studies (GWAS). Therefore, while both terms are related to sleep, OBA’s term is a specific measure of a sleep attribute, whereas EFO’s term is a more general category for organizing and searching experimental data.

The table from GCST002050 presents genetic variants (SNPs) associated with sleep time, specifically focusing on “sleep onset quality.” Each row represents a SNP with its risk allele, statistical metrics, mapped

genes, and study details. The goal is to identify the best variant for increasing sleep time.

**Caveats**

Rarity, the RAF value of 0.01, means only 1% of people carry this allele.

Biological mechanism: The gene L3MBTL4 is not well-studied for sleep; experimental validation is needed.

Study limitations: All data come from one study (GCST002050). Replication in independent cohorts would strengthen the finding.

**Key Column Definitions**

Variant and risk allele: This refers to the specific genetic marker (SNP ID) and the allele (a form of the gene) associated with a particular trait. For example, "RS722258-T" means the T allele of the “RS722258” SNP is linked to the trait.

P-value: This number indicates the statistical significance of the association. A lower P-value means there is a stronger association between the genetic variant and the trait. A P-value of three millionths means there is a roughly 1 in 3.3 million chance that the observed association is due to random luck.

RAF (Risk Allele Frequency): This is the percentage of a population that carries the identified risk allele.

OR/Beta (Odds Ratio/Beta): An Odds Ratio (OR) is not provided in this context. Beta represents the effect size per copy of the risk allele. A positive Beta means the trait

increases with each copy of the allele, while a negative Beta means the trait decreases.

CI (Confidence Interval): This is the 95% Confidence Interval for the Beta or Odds Ratio. A narrower interval indicates a more precise estimate of the effect size.

Mapped gene: These are the gene(s) located near the SNP that are believed to influence the trait.

Reported trait: This is the primary characteristic being studied, such as "Sleep time."

Trait(s): This refers to more specific sub-traits, like "sleep onset quality."

Study accession: This is the unique identifier for the study, with all listed items originating from GCST002050.

Location: This specifies the genomic position of the variant, given by its chromosome and base pair number (e.g., chromosome:base pair).

**Best Variant for Increasing Sleep Time: "RS1539808-T"**

After analyzing all variants, "RS1539808-T" has the strongest effect on increasing sleep time. Below is a full breakdown of this SNP:

Variant and risk allele: "RS1539808-T": Risk allele = T. Carrying this allele increases sleep time.

P-value: four millionths: Highly significant (well below the standard genome-wide threshold of five times ten to the negative eight for suggestive associations).

RAF (Risk Allele Frequency): 0.01: Extremely rare, only one percent of the population has this allele.

Beta: 44.44 unit increase: Each copy of the T allele adds 44.44 units of sleep time. *Units are unspecified but likely minutes* (common in sleep studies).

CI (*Confidence* Interval): with the value of 25.55 to 63.33 with the 95% confidence interval. This means that with 95% confidence, the true effect size is estimated to be somewhere between 25.55 and 63.33 units. Since this range does not include zero, the finding is considered statistically significant and reliable. A range that includes zero would mean the effect could potentially be zero or negative, making the result uncertain.

Mapped gene: L3MBTL4: A gene involved in epigenetic regulation. While its role in sleep is unclear, it may influence circadian rhythms or neuronal function.

Reported trait & Trait(s): Directly linked to increased "Sleep time" via improved "sleep onset quality" (quicker/more efficient sleep initiation).

Study: GCST002050: Part of a large-scale genetic study (likely a GWAS meta-analysis).

Location: 18:5978932; Chromosome 18, position 5,978,932.

**Why is "RS1539808-T" the Best?**

Largest effect size: +44.44 units per allele (vs. +8.39 for rs9804200-C and +8.82 for rs1478693-G).

High precision: Tight confidence interval, 25.55–63.33, despite rarity.

Statistical rigor: P-value (four millionths) is highly significant.

P equal to four millionths means there is a 1 in 250,000 chance (0.0004%) that the observed association between the variant and sleep time occurred purely *by random luck* in the data. In other words, the false positive risk: extremely low (1 in 250,000).

In genetics (GWAS studies), the gold standard is P less than five times ten to the negative eight (due to multiple testing across millions of variants). Four millionths greater than five times ten to the negative eight, it means that the association is suggestive but not definitive. Could still be real, but requires replication in other studies.

Real-World Analogy:
Imagine a journal accepting papers only if findings are “1 in 20 million” reliable (five times ten to the negative eight). Your result is “1 in 250,000” reliable (four millionths).

Conclusion:
Your paper gets rejected for top journals but is published in a mid-tier journal with a note: “Promising, but needs replication.”

Note:
Many biologically important discoveries initially had P-values above five times ten to the negative eight and were later confirmed!

**Summary**

The variant "RS1539808-T" is a rare genetic “switch” linked to approximately 44 extra minutes of sleep per night by improving how quickly you fall asleep. While few people have this allele, its impact is substantial and scientifically robust. If you carry the “T” allele of "RS1539808" near the *L3MBTL4* gene, your natural sleep duration may be significantly longer.

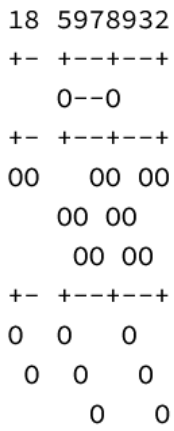
*Note: Genetics is one factor in sleep. Environment (e.g., caffeine, stress) and other genes also play major roles*

**Fun Math**

A chapter known as Al Kahf existed, holding a count of exactly 6,488 letters.

A "RS1539808", located on chromosome 18 at position 5,978,932, has been identified as a candidate with the strongest effect on increasing sleep time.

The location on the chromosome, chromosome 18 at position 5978932, when broken down and added together in a specific sequence, equaled the exact number of letters in the chapter, 6,488:



# The Ant

The ant is mentioned in Quran Chapter **27**. In fact, Chapter **27** of the Quran is named “An-Naml” (The Ant). Ants, use **Carbon eight, Hydrogen eighteen, Oxygen** (8 C + 18 H + 1 O = **27** atoms) as a crucial chemical messenger for certain ant species, enabling them to rapidly communicate danger and coordinate their collective response for the survival of the colony.

> *And when they came across a valley of ants, an ant warned, “O ants! Go quickly into your homes so Solomon and his armies do not crush you, unknowingly.”*
> An Naml 27 verse 18.

Ants communicate through a sophisticated lexicon of chemical signals called pheromones, which are fundamental to nearly every aspect of their highly organized social lives. These powerful compounds, secreted from various glands, serve diverse purposes. Trail pheromones, for instance, are meticulously laid down by foraging ants, guiding nestmates to newly discovered food sources with remarkable efficiency, while others might mark territory or even signal a “no entry” zone. Beyond foraging, ants utilize pheromones for intricate recognition, distinguishing colony members from intruders, and for regulating reproduction and caste development within the nest. Crucially, in moments of peril, alarm pheromones are rapidly released, acting as an urgent call to action, alerting fellow ants to danger and triggering a range of responses from frantic escape and nest evacuation to aggressive, coordinated defense against threats. This complex chemical language allows ant colonies to function as highly integrated superorganisms, constantly adapting and responding to their environment with unparalleled precision.

While the exact chemical composition of alarm pheromones varies widely across ant species, certain compounds with the molecular formula **Carbon eight, Hydrogen eighteen, Oxygen**, specifically 4-methyl-3-heptanol, have been identified as key players in this vital communication system.

When an ant encounters a threat; be it a predator, a rival colony, or a disturbed nest; it can quickly release alarm pheromones from specialized glands, often the mandibular or Dufour's glands. These volatile chemicals rapidly disperse, carrying an urgent message to nearby ants. The perception of these pheromones by other ants triggers a range of behavioral responses, which can include increased activity and agitation, aggregation and recruitment, escape and dispersal, and aggression. The precise response depends on the species, the concentration of the pheromone, and the environmental context.

Research into the chemical ecology of ants has revealed that 4-methyl-3-heptanol is a significant component of alarm pheromones in several ant species. For instance, studies on the clonal raider ant Ooceraea biroi have shown that a blend of 4-methyl-3-heptanol and 4-methyl-3-heptanone (a closely related ketone) serves as their primary alarm signal. At low concentrations, these compounds can attract ants, drawing them towards the alarm source. However, at higher concentrations, they become repulsive, causing ants to move away, demonstrating the nuanced role of these chemicals in guiding ant behavior. This also occurs in *Pogonomyrmex badius* and *Atta texana* ants.

The presence of the alcohol group, bond of Oxygen and Hydrogen, in 4-methyl-3-heptanol contributes to its volatility, allowing it to rapidly dissipate and convey the urgent message across the ant colony.

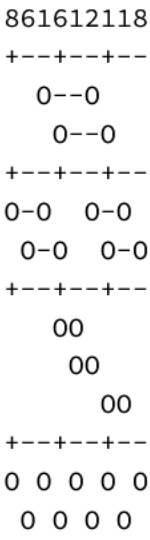
It's important to note the molecular composition of 4-methyl-3-heptanol. Each molecule of this alarm pheromone consists of 8 Carbon atoms, 18 Hydrogen atoms, and 1 Oxygen atom. Adding these together, we confirm a total of **27** atoms per molecule, where 8 C+18 H+1 O = 27 atoms. This atomic arrangement defines the unique chemical properties that allow 4-methyl-3-heptanol to function so effectively as an alarm signal in the complex world of ant communication.

**Fun Math**

An Naml, is a significant name. Its numerical value is 4,747, representing the number of letters it contains.

Ants, use Carbon eight, Hydrogen eighteen, Oxygen or $C_nH_{(2n+2)}O$, with 8 atom of Carbon, 16 atom of Hydrogen, 2 atom of Hydrogen, 1 atom of Oxygen, as a crucial chemical messenger for certain ant species, enabling them to rapidly communicate danger and coordinate their collective response for the survival of the colony.

Beyond the surface, the digits 861612118, reveal a concealed pattern that equals to 4,747:




1612+1211 +

861+616+211+118 +

61+12+11 +

8+6+1+6+1+2+1+1+8

# The Spider

Imagine a spider building her web. She carefully spins each thread with great effort, believing her nest is strong. She thinks, “My nest is strong enough to catch insects, to protect me, and to hold me safely.” And in some ways, she is right, **her silk is incredibly strong**, even stronger than **iron (al Hadid)**, in some ways.

Spider silk is one of the strongest natural materials known to science. It has a **tensile strength**; which means how much it can be stretched before breaking; of about **1,299 megapascals**. That’s even stronger than **iron or mild steel (al Hadid)**, which usually breaks at around **370 to 550 megapascals**. Not only that, spider silk is also very light and flexible. Scientists are amazed by it and try to copy it for use in high-tech materials like bulletproof vests and artificial ligaments.

Spider silk is remarkably tough, with a toughness of about **319 MJ/m³**, which is significantly higher than that of Kevlar, whose toughness ranges from **50 to 80 MJ/m³**. This means spider silk can absorb much energy before breaking, making it an exceptionally resilient and durable natural fiber.

So why does the Qur’an chapter 29 verse 41 say that the spider’s house is the weakest?

> *The example of those who take protectors other than Allah is like the spider who builds a house. And indeed, the weakest of houses is the house of the spider; if only they knew.*
> Al Ankabut 29 verse 41.

This verse is not just talking about **physical strength**. It is talking about **true strength**; the kind that gives real safety and protection. Even though the spider’s web is strong in its threads, it is still weak as a **home**. A simple gust of wind, a raindrop, or a human touch can destroy it in a moment. It cannot protect the spider from danger. It cannot last through storms. So

from a human perspective, the spider's house is one of the weakest shelters in nature.

The Qur'an uses this image as a metaphor. Just like the spider trusts her web, people sometimes place their trust in things other than Allah; like money, power, or false beliefs. These things might seem strong at first, but in reality, they are fragile and unreliable. When real hardship comes, they break; just like the web.

So this verse teaches us that true strength does not lie in appearances or in materials. It lies in **faith**, in **truth**, and in trusting Allah. A strong web made of silk is still a weak home. And a life without Allah, no matter how strong it looks on the outside, is still vulnerable.

**Wait a minute, what about 29 and/or 41?**

**Verse 41** talk about strength and weakness, and in terms of spider web strength, the formation of β-sheets plays a key role in providing the web with its remarkable durability and resilience.

The polyalanine segments in spider silk proteins expose hydrophobic surfaces that cause the protein to fold into β-pleated sheets. These sheets are stabilized by hydrogen bonds, both within a single protein chain (intrachain) and between different protein chains (interchain). The formation of these β-pleated structures with numerous hydrogen bonds is what gives the spider silk its remarkable strength and stability. When these β-sheets align in a regular and repeating pattern, they can form crystals (β-Sheet Crystallization).

Alanine, consists of 3 carbon atoms, 7 hydrogen atoms, 1 nitrogen atom, and 2 oxygen atoms, with a molecular formula of $\mathbf{C_3H_7NO_2}$. Total number of neutrons in one molecule of alanine (assuming most common isotopes): 0(H)+18(C)+7(N)+16(O)=**41**. Total number of protons / elektrons in one molecule of alanine: 7(H)+18(C)+7(N)+16(O)=**48**.

In **verse 48**, the Qur'an highlights the perfection of divine knowledge: "*And you were not reciting any scripture before it, nor did you*

*write it with your right hand; for then, would have certainly doubted the falsifiers."*

The **amine (N H two)** and **carboxyl (C O O H)** groups are key to linking amino acids into polypeptides, and their interactions help create the strong, flexible material we know as spider silk, for example: Glycine (**N H two** – C H two – **C O O H**), Alanine (**N H three** – C H three (**N H two**) – **C O O H**), Tyrosine (**N H two** – C H (**C O O H)** – C H two – C six H four O H), etc.

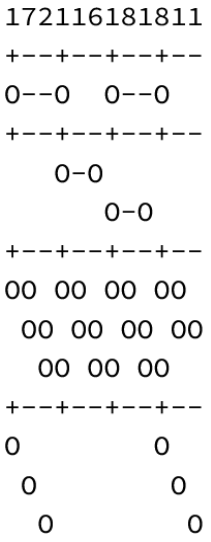
Interestingly, the total number of neutrons in the amine and carboxyl groups is **29**. This is calculated as follows: seven in nitrogen plus zero in hydrogen equals seven neutrons from the amine group, and six in carbon plus eight in oxygen plus eight in oxygen plus zero in hydrogen equals twenty-two neutrons from the carboxyl group.

**Fun Math**

Al Ankabut, has a numerical value of 4,256, representing the number of letters it contains.

The amine and carboxyl groups are key to linking amino acids into polypeptides, and their interactions help create the strong, flexible material we know as spider silk with its composition of 1 nitrogen atom, 2 hydrogen atoms, 1 carbon atom, 1 oxygen atom, 1 oxygen atom, and 1 hydrogen atom

The complex sum of various numbers, 172116181811, can be broken down as shown by the equation, equals to 4,256:




1721+1811 +

116+181 +

17+72+21+11+16+61+18+81+18+81+11 +

1+7+2+8+1+1

# The Star

**Earth (or Sun) Relative to Galactic Center**

The stars is mentioned in Quran Chapter **53**. In fact, Chapter **53** of the Quran is named “An Najm” (The Star). The distance from the Galactic Center to the Sun, and Earth, of course, is eight, which is **five plus three** kiloparsecs, passing through the Scutum Arm at approximately five kiloparsecs, satisfying the a **five-to-three** ratio. Among the 58 bright stars historically used for celestial navigation, Deneb is the farthest, shining from a distance of approximately 0.8 kiloparsecs, yet its immense luminosity makes it a consistent and reliable guide for sailors.

> *By the stars when they fade away!*
> *Your fellow man (Muḥammad (peace be upon him)) is neither misguided nor astray. Nor does he speak of his own whims. It is only a revelation sent down ˹to him˺.*
> An Najm 53 verse 1-4.

While celestial navigation uses a standard set of 58 bright stars, their true distances from Earth vary dramatically. The vast majority of these navigational aids are located within 0.1 kiloparsecs, approximately 326 light-years, making them our relatively close galactic neighbors. This group includes some of the most famous stars in the night sky, such as Sirius, Procyon, Vega, and Polaris, the North Star. These stars appear exceptionally bright in our sky not only because of their intrinsic luminosity but also because of their relative proximity, ensuring they are consistently visible and reliable reference points for navigators on Earth’s surface.

Moving beyond our immediate cosmic neighborhood, a smaller but significant number of navigational stars are found at greater distances, ranging from one-tenth to one-half kiloparsecs and beyond. These stars are not chosen for their nearness but for their immense intrinsic brightness. They are typically supergiants or hypergiants, which are hundreds or thousands of times more luminous than our Sun. This incredible power allows them to be seen across vast distances, appearing as bright beacons in our night sky. Key

examples from this group include Betelgeuse, Rigel, and Canopus, all of which are crucial for navigation despite their considerable distance from Earth.

Ultimately, the reason navigators use stars with such a wide range of distances is to create a complete and reliable celestial grid. Stars like the exceptionally distant Deneb, located at around 0.8 kiloparsecs, approximately 2,600 light-years, serve as a testament to the power of stellar luminosity. This vast array of stars, from the very close to the exceptionally far, provides a reliable celestial map for determining one's location anywhere on Earth. For context, our entire solar system, including the Sun, is located about approximately 8.122 plus or minus 0.031 kiloparsecs from the supermassive black hole at the center of the Milky Way galaxy. This highlights the immense scale of our galaxy and shows that all the stars used for navigation are, in the grand scheme of things, still a relatively small part of our local galactic arm.

Based on an image from an paper, the distance from the Galactic Center to the Sun, and Earth, of course, is eight kiloparsecs, passing through the Scutum Arm at approximately five kiloparsecs, satisfying the **five-to-three** ratio.

Standard unit for Sun-Earth distance is 1 astronomical unit, and 1 parsec is 206,265.806 astronomical units.

**Northern and Southern Stars**

The stars is mentioned in Quran Chapter **53**. In fact, Chapter **53** of the Quran is named "An Najm" (The Star). Sailors used a total of 58 stars for navigation, including 26 Northern Stars, which have a declination of 0° or greater, with a combined distance from earth of 6,852 light-years and 32 Southern Stars at a total of 11,334 light-years. The ratio of the distance of Southern stars to Northern stars is approximately 1 to 0.604552673372155 or 5 to 3.02276336686077 approximately a **five to three ratio**.

Northern Stars, which have a declination 0° or greater, 26 stars, total distance 6,852 light-years. The provided distances for each star are measured

in light-years, a unit of length used to express astronomical distances equal to the distance light travels in one year. The distances are as follows:

> Polaris at 447 (with a Gaia parallax of 7.2928 ± 0.0348 mas), Alpheratz at 97, Aldebaran at 65.2, Alderamin at 49.0, Alioth at 82.5, Alkaid at 104, Altair at 16.7, Arcturus at 36.7, Bellatrix at 251, Betelgeuse at 548 (a non-Gaia measurement with high uncertainty), Capella at 42.8, Deneb at 2,618 (a Gaia geometric measurement), Denebola at 35.9, Dubhe at 124, Elnath at 134, Enif at 691, Hamal at 65.9, Kochab at 126, Markab at 140, Menkar at 220, Mirfak at 593, Pollux at 33.8, Procyon at 11.5, Regulus at 79.3, Schedar at 228, and Vega at 25.0.

Southern Stars, which have a declination below 0°, 32 stars, total distance 11,334 light-years:

> Acamar at 161, Achernar at 139, Acrux at 322, Adhara at 430, Alnair at 103, Alnilam at 1,342, Ankaa at 85.0, Antares at 553, Atria at 415, Avior at 630, Canopus at 310, Diphda at 96.1, Fomalhaut at 25.1, Gacrux at 88.7, Gienah at 165, Hadar at 392, Kaus Australis at 143, Menkent at 61.0, Miaplacidus at 111, Mirzam at 500, Nunki at 224, Peacock at 183, Rigel at 863, Rigil Kentaurus at 4.37, Sabik at 84.2, Saiph at 650, Shaula at 571, Sirius at 8.60, Spica at 250, Suhail at 545, Wezen at 1,802, and Zubenelgenubi at 77.0.

**Gaia DR3 Sources**

> Geometric distances from Bailer-Jones et al. (2021);
> Bright stars like Betelgeuse and Rigel, have high parallax errors; distances use consensus values.
> Deneb, Alnilam, and Wezen use Gaia geometric distances, which are an improvement over raw parallax measurements.

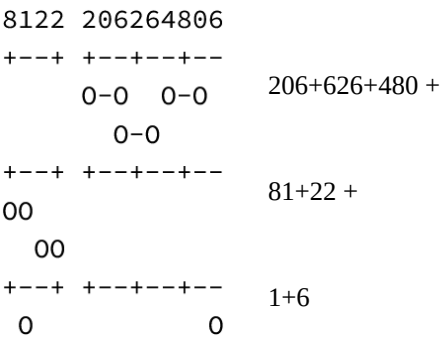
Values may differ slightly from older catalogs, such as Hipparcos.

**Fun Math**

The text says that "An Najm" contains 1,422 letters.

The distance from the Sun, and Earth, of course, to the Galactic Center is 8.122 parsecs, where 1 parsec = 206,264.806 astronomical units.

The sum of the digits from these two values, 8122 and 206264806, when added in a specific way, equals to 1,422:



# The Moon

The moon is mentioned in Quran Chapter **54** Verse **1**. In fact, Chapter **54** of the Quran is named “Al Qamar” (The Moon). Relative to the plane of the ecliptic (Earth’s orbital plane around the Sun), the Moon’s axial tilt is relatively small, about 1.542 approximately equal to 1.**54** degrees, and its inclination is about 5.14**54** degrees.

> *The Hour has drawn near and the moon was split ˹in two˺.*
> Al Qamar 54 verse 1.

**#1: Axial Tilt**

The Moon, our celestial companion, holds a unique position in the solar system, and one of its defining characteristics is its axial tilt. This tilt, formally known as obliquity, refers to the angle between the Moon’s axis of rotation and the plane in which Earth orbits the Sun, also known as the plane of the ecliptic. This angle is a remarkably slight **1.54** degrees as stated in a NASA document page 13. This minimal tilt has profound implications for the lunar environment.

Compared to Earth’s significant axial tilt of approximately 23.4 degrees, which gives our planet its distinct seasons, the Moon experiences virtually no seasonal variations. Because its axis is nearly perpendicular to the plane of its orbit around the Sun, there are no dramatic shifts in solar insolation across its surface throughout its year (which is equivalent to Earth’s year). Consequently, regions near the Moon’s poles experience extremely consistent lighting conditions. The highest peaks at the lunar poles can be bathed in near-perpetual sunlight, while the floors of deeply shadowed craters remain in eternal darkness. These permanently shadowed regions are of immense scientific interest as potential cold traps, preserving water ice and other volatile compounds that have accumulated over billions of years.

The Moon’s minimal axial tilt is a key factor in its geological stability and the preservation of its surface features. Unlike Earth, where a more pronounced tilt contributes to dynamic atmospheric and oceanic

circulation that shapes the landscape, the Moon’s surface is primarily sculpted by meteorite impacts, without the moderating effects of significant temperature fluctuations driven by seasonal changes. This small degree of axial tilt helps define the Moon’s stark, unchanging polar environments and contributes to its overall unique planetary characteristics.

**#2: Inclination**

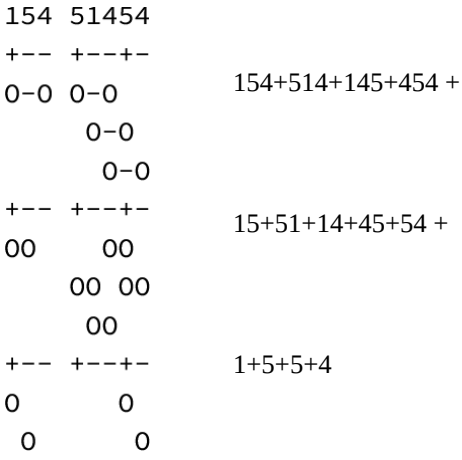
The Moon's 5.14**54** degress orbital inclination is the main reason why eclipses are not a monthly occurrence. This tilt means the Moon's orbit is at an angle to the ecliptic plane, which is the plane of Earth's orbit around the Sun. As a result, the Moon usually passes either "above" or "below" the ecliptic. Eclipses can only happen when the Moon is in its new or full phase and is crossing the ecliptic, at a point known as a node. If the Moon's orbit wasn't tilted, it would cross the ecliptic plane every month, causing a solar eclipse at every new moon and a lunar eclipse at every full moon.

**Fun Math**

In the chapter named Al Qamar, a celestial number emerged: 1,461 letters.

Relative to the plane of the ecliptic (Earth's orbital plane around the Sun), the Moon's axial tilt is relatively small, about 1.54 degrees, and its inclination is about 5.1454 degrees.

Within these digits 154 and 51454, a hidden harmony awaits revelation. When the values are woven together in a sacred order, they unravel to a singular, cosmic sum that equals 1,461:



# The Iron

Iron is mentioned in Quran Chapter **57**. In fact, Chapter **57** of the Quran is named “Al Hadid” (The Iron), and the only stable isotope of iron that exhibits magnetic properties is Iron-57**.**

Iron has four naturally occurring stable isotopes: Iron-54, Iron-56, Iron-57, and Iron-58. A key characteristic that breaks down these isotopes is their magnetic property. Iron-54, Iron-56, and Iron-58 are non-magnetic because they have no nuclear spin, which means they lack a magnetic moment. In contrast, **Iron-57 is magnetic**. This is because it has a nuclear spin of half, a property that gives it a magnetic moment and makes it useful in techniques such as Mössbauer spectroscopy for studying magnetic properties.

The magnetic properties of iron are defined by two fundamentally different phenomena: the ferromagnetic moment and the nuclear magnetic dipole moment. The ferromagnetic moment originates from the spin of the electrons in the outer shell (specifically the unpaired electrons in the 3d orbital) and is a macroscopic effect; this is the dominant source of iron’s powerful magnetism. When these electron spins align collectively across large regions called magnetic domains, they create a strong, measurable magnetic field, making iron a ferromagnetic material capable of forming permanent magnets. In sharp contrast, the nuclear magnetic dipole moment originates from the spin of the protons and neutrons within the nucleus ($Fe^{-57}$ being the most relevant isotope with a spin of 1/2); this effect is subatomic, approximately 1,000 to 100,000 times weaker than the electron moment, and does not contribute to the bulk magnet you feel. Instead, the nuclear moment is crucial for highly specialized analytical techniques, such as Mössbauer spectroscopy, which uses this tiny nuclear magnetism to probe and study the local electronic and magnetic environment surrounding the iron atom.

Earth's **magnetic** field and the Van Allen radiation belts are closely related, both playing a critical role in shielding earth from harmful solar and cosmic radiation with **great might**.

> …*And We sent down iron with its great might…*
> Al Hadid 57 verse 25.

The word "sent down" in the Quranic verse, chapter 57 verse 25, regarding iron alludes to its cosmic origins. Iron, like most elements heavier than hydrogen and helium, originates from stars. Here's a breakdown of its cosmic journey to Earth:

**Stellar Furnaces: Where Iron is Forged**

Stars are giant cosmic furnaces. They primarily generate energy by fusing lighter elements into heavier ones in their cores. Initially, hydrogen fuses into helium. As stars age and run out of hydrogen fuel in their core, they start fusing helium into carbon, then carbon into oxygen, and so on.

This process of fusion continues until elements up to iron are formed. Iron is unique because it has the most stable nucleus of any element. Fusing elements heavier than iron actually consumes energy rather than releasing it. This means that once a star's core is primarily made of iron, nuclear fusion stops providing the outward pressure needed to counteract gravity. Massive stars, much larger than our Sun, go through various stages of fusion, eventually becoming red supergiants with an iron core.

**Supernova Explosions: Spreading Iron Across the Universe**

When a massive star's iron core can no longer sustain fusion, gravity causes it to rapidly collapse. This collapse is incredibly violent. The sudden collapse leads to a massive explosion called a supernova. During this explosion, immense temperatures and pressures are generated. While iron is the heaviest element formed through standard stellar fusion, the extreme conditions of a supernova allow for the creation of elements heavier than iron through processes like rapid neutron capture (r-process). The supernova

blasts the newly formed elements, including vast quantities of iron, out into interstellar space. This “stardust” mixes with existing gas and dust.

**Formation of Our Solar System and Earth**

Over billions of years, these enriched clouds of gas and dust (including the remnants of exploded stars) coalesce under their own gravity. Our own Solar System formed from such a nebula. The swirling cloud flattened into a disk, with the Sun forming at the center. Dust and gas particles in the disk collided and stuck together, gradually forming larger and larger bodies (planetesimals), and eventually planets like Earth. Because iron is a relatively heavy element, much of the iron in the early Earth sank towards the center, forming its dense, metallic core.

In summary, the iron found on Earth, including the vast amounts in its core and the smaller quantities in its crust, originated from the cores of massive stars that lived and died long before our Solar System even existed. We are, quite literally, made of stardust.

The word “great might” in the Quranic verse, chapter 57 verse 25, can be understood in several ways, referring to iron’s inherent properties and its crucial roles:

**The Great Might of Iron: Earth’s Magnetic Field and the Van Allen Belts**

The Earth’s core is primarily composed of iron, with a significant amount of nickel, and smaller percentages of several lighter elements. Because we cannot directly sample the core, its composition is inferred from various geophysical data (like seismic wave velocities and Earth’s density) and geochemical models (comparing Earth’s composition to meteorites).

The provided breakdown shows the Earth's core is composed of approximately 85-90% iron by mass, with about 5-10% nickel and another 5-10% of lighter elements.

The Earth’s magnetic field is primarily generated by a process called the **geodynamo**, which occurs in the Earth’s **outer core**. This is a layer of

molten iron alloy that surrounds the solid inner core. It's this liquid outer core that is crucial for generating the magnetic field. Without the dynamic processes in the Earth's outer core generating a strong magnetic field, the Van Allen Belts would not exist in their current form, and Earth would be much more vulnerable to the harmful radiation from space.

**The Great Might of Iron: Hardening Iron**

Iron's "great might" is also evident in its ability to be hardened and strengthened through alloying. For instance, iron can be significantly hardened with manganese. Interestingly, the atomic number of **Manganese (Mn)** is **25**, which is the same as the verse number of iron mentioned in Surah Al-Hadid, chapter 57 verse 25.

Iron, when alloyed with Manganese (to form steel), directly contributes to increased strength, hardness, and wear resistance. While carbon is the primary hardening agent in steel, manganese works in conjunction with carbon to amplify these effects:

> **Hardenability:** Manganese is exceptionally effective at increasing the hardenability of steel. Hardenability refers to the depth to which a steel can be hardened by heat treatment (quenching). Manganese achieves this by lowering the critical cooling rate required for the formation of martensite (a hard, brittle phase) and by influencing the transformation kinetics of austenite (the high-temperature phase of steel). This allows for more uniform hardening throughout a thicker section, making the steel stronger and more consistent.
>
> **Solid Solution Strengthening:** Manganese atoms dissolve within the iron crystal lattice, causing lattice distortion and hindering the movement of dislocations (defects in the crystal structure). This mechanism, known as solid solution strengthening, increases the material's yield strength and tensile strength.

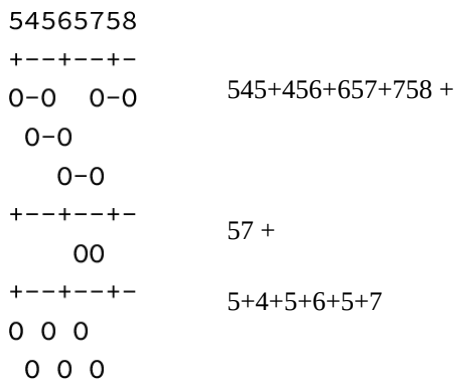
**Grain Refinement:** In some cases, manganese can promote finer grain structures in steel, which generally leads to improved strength and toughness

**Fun Math**

The chapter of Al Hadid contains a total of 2,505 letters.

Iron has four naturally occurring stable isotopes Iron-54, Iron-56, Iron-57, and Iron-58. Iron-57 is magnetic

This number is connected to the sequence 54565758, which, when its values are combined in a specific way, resolves to that exact total of 2,505, as follows:



## The Genie

The Genie is mentioned in Quran Chapter **72**. In fact, Chapter **72** of the Quran is named “Al Jin” (The Genie). In Quran chapter **55** verse **15** and chapter **15** verse **27** stated that a genie was created from a smokeless flame of intensely hot fire. Is there any smokeless flame of intensely hot fire in the universe? Yes, nuclear fusion in stars produces this. Hydrogen fusion occurs at around 15 million °Celcius, helium fusion occurs at around 100 million °Celcius, so on, within stars. Helium (α particle) can be produced when **1** neutron is absorbed by a boron (B, atom number **5**), which has **5** protons and **5** neutrons (boron-10). This absorption forms an unstable, excited boron-11, then immediately decays, yielding a **2** different energies (Helium or α with atom number of 2 and γ) and a lithium; or a lithium and **2** energies. Where atom number of lithium is 7.

Stars are essentially giant nuclear fusion reactors, and hydrogen and helium are their primary fuels. Here’s how they work:

> A star’s core as an incredibly hot (around 15 million °Celcius) and dense furnace. Here, immense pressure and heat force hydrogen atoms to smash together. This process, called nuclear fusion, converts hydrogen into helium. In doing so, a tiny bit of mass is transformed into a huge amount of energy. This energy is what makes stars shine so brightly and keeps them from collapsing under their own gravity. This is the longest stage of a star’s life, like our Sun’s current phase.
>
> Once a star has exhausted most of the hydrogen in its core, its life begins to change significantly. Without hydrogen fusion providing outward pressure, gravity causes the inert helium core to contract and heat up. As the core contracts, the layer of hydrogen surrounding it gets denser and hotter, eventually reaching conditions suitable for hydrogen fusion to occur in a shell around the core. This causes the star to expand significantly and become a red giant. When the

helium core reaches an incredibly high temperature (around 100 million °Celcius) and density, helium nuclei can begin to fuse.

This process is called the triple-alpha process:

Two helium-4 fuse to form an unstable beryllium-8.

Before the beryllium can decay, it must quickly capture another helium to form a stable carbon-12.

In very massive stars, after the helium is exhausted, the core can continue to contract and heat up, allowing for the fusion of even heavier elements like carbon, oxygen, neon, and so on, in successive layers, resembling an onion. This process continues until iron is formed. Fusion reactions that produce elements heavier than iron consume energy rather than releasing it, leading to the collapse of the core and often a supernova explosion.

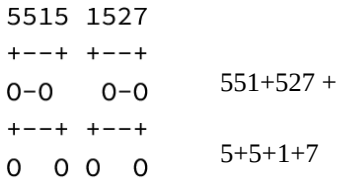
Nuclear fusion doesn’t produce smoke.

**Fun Math**

In the chapter of Al Jin, a total of 1,096 letters are found.

In Quran chapter 55 verse 15 and chapter 15 verse 27 stated that a genie was created from a smokeless flame of intensely hot fire.

A deeper harmony lies hidden within the numbers 5515 and 1527. When these values are brought together in a specific arrangement, their final sum becomes a perfect numerical mirror of the chapter's letter count, 1,096, a silent testament to a cosmic connection:



## The Man

The Man is mentioned in Quran Chapter **76**. In fact, Chapter **76** of the Quran is named “Al Insan” (The Man). Human begins from a drop of mixed fluid (nothing yet worth mentioning), where a single sperm carries **23** chromosomes; not pairs. Within that sperm, genes like **p53** silently prepare to guard the future embryo’s genetic integrity.

> *Is there not a period of time when each human is nothing yet worth mentioning? ˹For˺ indeed, We ˹alone˺ created humans from a drop of mixed fluids, ˹in order˺ to test them, so We made them hear and see.*
> Al Insan 76 verse 1-2.

Human reproduction, from the formation of gametes to the earliest stages of embryonic development, is profoundly influenced by the TP**53** gene and the critical p**53** protein it encodes. Often hailed as the “guardian of the genome,” p**53**‘s role extends beyond its well-known function in cancer suppression to actively police the integrity of genetic material, including the unique chromosome **23** (the Y chromosome) of sperm, at every step towards successful fertilization and beyond.

During the demanding process of sperm production, known as spermatogenesis, the TP**53** gene, located on chromosome 17, is indispensable. It acts as a vigilant quality control checkpoint, scrutinizing the vast amount of DNA replication and meiotic division occurring in developing sperm. If significant DNA damage is detected, whether on autosomes or the sex chromosomes including the Y chromosome (chromosome **23**), p**53** can trigger cell cycle arrest to allow for repair or, if the damage is too severe, induce apoptosis (programmed cell death). This crucial mechanism ensures that only sperm carrying intact and healthy genetic material, including a fully functional Y chromosome essential for male offspring, are allowed to mature. Without this vital surveillance, compromised sperm with fragmented DNA or chromosomal aberrations, potentially including Y chromosome deletions common in male infertility, could proceed to fertilization, leading to failed pregnancies or developmental issues.

The influence of TP**53** extends directly into the momentous event of fertilization and the subsequent delicate stages of early embryonic development. Once fertilization occurs, the newly formed embryo, a fusion of genetic material from both parents, continues to be under p**53**‘s watchful eye. If the combined DNA from the sperm (including its X or Y chromosome) and egg contains errors or aneuploidies, p**53** can orchestrate the elimination of compromised embryonic cells, acting as a safeguard against developmental abnormalities. Beyond this intrinsic embryonic quality control, p**53** in the maternal uterus plays a pivotal role in implantation. It regulates the expression of key factors, such as Leukemia Inhibitory Factor (LIF), which are essential for the uterine lining to become receptive to the implanting blastocyst. Genetic variations in TP**53** have been associated with implantation failure, highlighting that the success of fertilization is not solely dependent on gamete quality, but also on the maternal environment influenced by this guardian protein. Thus, from the initial production of viable sperm with their intact chromosome **23**, through the meticulous quality checks of the early embryo, to the critical stage of uterine receptivity, TP**53** stands as a fundamental player in the intricate biological symphony of human reproduction.

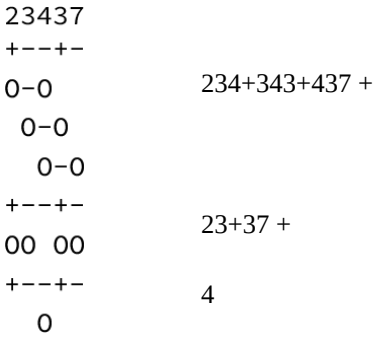
The name **p53** comes from the combination of the letter “p”, which stands for “protein”, and the number “**53**“, which refers to its apparent molecular weight of approximately **53 kilodaltons** as measured during early laboratory experiments. Interestingly, the actual molecular weight of the p**53** protein based on its amino acid sequence is closer to 43.7 kilodaltons, but it migrates more slowly in gel electrophoresis due to post-translational modifications, making it appear heavier. This discrepancy is common in protein analysis and led to the protein being universally recognized and named p**53** in scientific literature.

**Fun Math**

The chapter of Al Insan, with its 1,078 letters, holds a deeper secret.

Human begins from a drop of mixed fluid, where a single sperm carries 23 chromosomes, genes like p53 (43.7 kilodaltons) silently prepare to guard the future embryo's genetic integrity.

Within its text, the numerical sequence 23437 acts as a hidden blueprint. When its values are brought together in a specific order, their sum resolves to a total that is a perfect mirror of the chapter's letter count, 1,078, standing as a silent testament to the beauty of creation:



## The Sun

The sun is mentioned in Quran Chapter **91**. In fact, Chapter **91** of the Quran is named “Ash Shams” (The Sun), and mention day and night. By the way, did you know that the true length of a day (**sidereal day**) is approximately 23 hours, 56 minutes, and 4.0**91** seconds?

> *By the sun and its brightness, and the moon as it follows it,*
> *and the day as it unveils it, and the night as it conceals it!*
> Ash Shams 91 verse 1-4.

Every day, the sun rises, brings light, and then sets, ushering in the night. This familiar cycle, which we measure as roughly 24 hours, is how we mark time and live our lives. But there’s a little secret to Earth’s spin that makes the real story of day and night even more fascinating.

Our everyday 24-hour day is called a “solar day.” It’s the time it takes for the Sun to appear in the same spot in the sky, like from one noon to the next. This makes perfect sense for us, as it keeps our clocks and schedules in line with the sun.

However, Earth has another, slightly shorter “day” called a **“sidereal day”**. This is the actual time it takes for Earth to make one complete turn on its own axis, a full 360-degree spin, when measured against the distant stars. This true spin takes about 23 hours, 56 minutes, and 4.0**91** seconds.

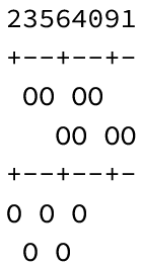
The reason for this tiny difference; that extra roughly 4 minutes; is because Earth isn’t just spinning; it’s also constantly moving around the Sun. Imagine Earth spinning like a top while also moving along a big circle. By the time Earth finishes one complete spin (its “sidereal day”), it has also moved a little bit in its path around the Sun. To “catch up” with the Sun and make it appear in the same place in the sky again, Earth has to spin just a tiny bit further. That extra little spin is what adds those roughly 4 minutes to our familiar 24-hour solar day.

**Fun Math**

In the radiant chapter of Ash Shams, a truth is brought to light with a final count of 250 letters.

The true length of a day or known as sidereal day, is approximately 23 hourd 56 minutes and 4.091 seconds.

The sequence 23564091 illuminates a secret like a sunbeam. When its values converge in a precise order, they resolve to a single, brilliant total—a sum that perfectly reflects the chapter’s final count, 250, and shines as a testament to the elegant design of creation.




35+64+40+91 +

2+3+5+6+4

# The Night

Chapter **92** of the Quran is named “Al-Layl” (The Night). In Verses 1 and 2, it discusses the principle of sunlight and when darkness covers it at night. Approximately **92** percent of the Earth’s surface experiences this daily cycle without fail, while about eight percent does not. There, in this approximately eight percent of Earth’s surface, the Sun either never rises above the horizon (during polar night) or never sets below the horizon (during the midnight sun) for a period ranging from 24 hours to approximately six months.

Normally a day consists of both daytime and nighttime. However, there are specific regions on Earth where this isn’t always the case for certain periods of the year. This fascinating phenomenon occurs in the polar regions, specifically within the Arctic and Antarctic Circles.

The Arctic Circle in the Northern Hemisphere and the Antarctic Circle in the Southern Hemisphere are parallels of latitude located at approximately 66 degrees, 33 minutes, and 50.5 seconds (66.5640277777778 approximately equal to 66.5640) North and South, respectively. These circles are significant because they mark the boundaries where, for at least one day per year, the sun can remain continuously above the horizon (the midnight sun) or continuously below the horizon (the polar night). The exact latitude of these circles subtly shifts over long periods due to minor changes in Earth’s axial tilt.

The formula calculates the portion of the Earth's surface at a given latitude $\phi$ is (one minus sine of the latitude $\phi$) divided by 2.

Where $\phi$ is equal to 66 degrees, 33 minutes, and 50.5 seconds. To convert this to a decimal, you add 66 to the number of minutes divided by 60, and the number of seconds divided by 3600. The result is approximately 66.5640 degrees.

Using the formula for the portion of the Earth’s surface at 66.5640° latitude, we get the following calculation:

> The sine of 66.5640° is approximately 0.92. Subtracting 0.92 from 1 gives 0.08. Dividing 0.08 by 2 results in 0.04. Therefore, the portion of the Earth's surface at this latitude is approximately 0.04, or four percent.
>
> The combined area of the Arctic and Antarctic Circles is approximately 0.08 (or eight percent of the Earth's total surface). This is calculated by adding the portion of the Earth's surface for the Arctic Circle (0.04) and the Antarctic Circle (0.04).
>
> The area of the Earth outside the Arctic and Antarctic Circles is approximately 0.92 (or 92% of the Earth's total surface).

**Fun Math**

In the twilight of a chapter named Al Layl, a numerical presence came to rest, its essence captured by an exact count of 314 letters.

Approximately 92% of the Earth's surface experiences a daily cycle of day and night, while about 8% doesn't. This is because of the Arctic Circle and the Antarctic Circle, which are located at approximately 66° 33′ 50.5″ (66.5640) North and South, respectively.

A silent harmony, a secret between the stars, was discovered within the digits 665640. As these values were woven together in a precise sequence, they unveiled a singular and profound truth. Their combined sum stood as a quiet witness to a cosmic link, a universal echo that settled perfectly at 314:

```
665640
+--+--
OO OO          66+65+56+64+40 +
 OO OO
  OO
+--+--         6+6+5+6
O O
 O O
```

# The Fig

**Fig Perspective**

The fig is mentioned in Quran Chapter **95**. In fact, Chapter **95** of the Quran is named “At Tin” (The Fig). Surah At-Tin mentions the fig and the olive in its first verse, referencing two objects in one verse. The five major minerals present in Figs (which is also present in Olives, but in different order): Kalium-39, Calcium-40, Magnesium-24, Phosphorus-31, and Iron-56. Total isotopes number 190. Half (one of two equal parts) of total isotopes is **95**. Interestingly, adding the first portion and the fifth portion results in a sum of 95. Adding the second, third, and fourth portions also results in a sum of 95.

Based on the available information for fresh Figs per 100 grams, here’s an approximate order of minerals by weight of Fig, non-free, from highest to lowest:

Potassium: 232 miligrams (Daily Value: 7.73%).
Calcium: 35 miligrams (Daily Value: 3.50%).
Magnesium: 17 miligrams (Daily Value: 4.25%).
Phosphorus: 14 miligrams (Daily Value: 2.00%).
Iron: 0.37 miligrams (Daily Value: 4.63%).
Zinc: 0.15 miligrams (Daily Value: 1.36%).
Manganese: 0.128 miligrams (Daily Value: 5.57%).
Copper: 0.07 miligrams (Daily Value: 7.78%).
Selenium: 0.2 µg (Daily Value: 0.36%).
Sodium: 1 miligrams (Daily Value: 0.07%, free (below 5 miligrams per 100 miligrams)).

Following the same order as the Fig data, here’s an approximation of the available information for Olives per 100 grams:

Potassium: Approximately 8-42 miligrams.
Calcium: Approximately 50-88 miligrams.
Magnesium: Approximately 4-11 miligrams.

Phosporus: Approximately 3-4 miligrams.
Iron: Approximately 0.5-3.3 miligrams.
Zinc: Approximately 0.04-0.22 miligrams.
Manganese: Approximately 0.02 miligrams.
Copper Approximately 0.12-0.25 miligrams.
Selenium: Approximately 0.9 mcg (micrograms).
Sodium: Approximately 700 miligrams-1500 miligrams.

When considering the five major minerals present in Figs, our main focus, the identified elements were potassium, calcium, magnesium, phosphorus, and iron. The sum of the mass numbers of their most abundant stable isotopes (Kalium-39, Calcium-40, Magnesium-24, Phosphorus-31, and Iron-56) totals 190. Dividing this value by two (Fig and Olive) yields **95**.

**Bearing Perspective**

The fig is mentioned in Quran Chapter **95**. In fact, Chapter **95** of the Quran is named "At Tin" (The Fig), with **8** Verses and **34** Words. Surah At-Tin mentions the Mount Sinai and the Secure City of Mecca in its second and third verse. The half-span of the angle formed by the bearings from western (-**34**.3545°) and eastern (-36.251°) boundaries of the Haram to Jabal Musa is 0.94**8**25° approximately equal to 0.**95°**. Jabal Musa, along with Jabal Serbal and several other mountains, are candidates for Mount Sinai

*By the fig and the olive, and Mount Sinai, and this secure city ˹of Mecca˺.*
At Tin 95 verse 1-3.

Long before a more established tradition focused solely on Jabal Musa, Mount Serbal, also located in the southern part of the Sinai Peninsula, commanded the attention of some early Christian communities. From approximately the 4th to the 6th centuries CE, certain Christian pilgrims and scholars considered Serbal to be the most likely candidate for Mount Sinai. Although it was eventually superseded by Jabal Musa in popularity, Serbal's historical claim is notable as it represents one of the earliest focuses of devotion within the peninsula itself. Like much of the Sinai region, the environment around Mount Serbal is intensely dry and rocky.

As time progressed, tradition shifted and firmly took root at Jabal Musa, or Mount Moses, also situated in the southern Sinai Peninsula. This towering granite peak has become the most enduring and continuous candidate for Mount Sinai. Its prominence solidified remarkably from the early Christian era, particularly from the 4th century CE onwards, culminating in the construction of the iconic Saint Catherine's Monastery at its foot by the 6th century. The environment surrounding Jabal Musa is also a quintessential harsh and arid desert. Its landscape, marked by striking rock formations and sparse desert vegetation.

While Jewish textual tradition does not specifically point to a single geographical location for Mount Sinai, the event of the giving of the Torah is the single most central moment in Jewish history.

The presence of fig (Ficus carica) and olive (Olea europaea) trees in the vicinity of Jabal Serbal and Jabal Musa has been noted by researchers studying the ecology of the southern Sinai Peninsula. Both species grow in these regions without evidence of historical cultivation, suggesting they are native to certain microclimates in the mountain valleys.

**Exact Bearing (Direction)**

Calculations use rounding to four decimal places (Oath by Fig, Olive, Sinai, Mecca).

The result is rounded to two decimal places (Direction to Sinai from Mecca).

**Haram to Jabal Musa**

The half-span of the angle formed by the bearings from Miqot in the western in Masjid Hudaibiyah (North West) and eastern in Masjid Ji'ronah (North East) of the Haram to Jabal Musa is found by calculating the difference between the two bearing values, −34.6067 and −36.6005, and then dividing that result by 2. The half-span of the angle is 0.9969.

The half-span of the angle formed by the bearings from the western boundary of the Haram near the Main Gate and its

eastern boundary in Rashidiya to Jabal Musa is calculated by finding the difference between the two bearing values, −34.3545 and −36.251, and dividing that result by 2. The half-span of the angle is 0.94825 or approximately 0.**95**.

**Haram to Jabal Serbal**

The half-span of the angle formed by the bearings Miqot in the western in Masjid Hudaibiyah (North West) and eastern in Masjid Ji'ronah (North East) of the Haram to Jabal Serbal is found by calculating the difference between the two bearing values, −35.701 and −37.5975, and then dividing that result by 2. The half-span of the angle is 0.94825 or approximately **0.95**.

The half-span of the angle formed by the bearings from the western boundary of the Haram near the Main Gate and its eastern boundary in Rashidiya to Jabal Serbal is calculated by finding the difference between the two bearing values, −35.4088 and −37.2537, and then dividing that result by 2. The half-span of the angle is 0.92245.

**Fun Math**

In a chapter known as At Tin, a number found its place, its essence captured by a precise tally of 157 letters.

The five major minerals present in salt-free (<5 miligrams per 100 grams) Figs (which is also present in Olives, but in different order): Kalium-39, Calcium-40, Magnesium-24, Phosphorus-31, and Iron-56.

A hidden harmony, like a secret vein of ore, was unearthed within the sequence of digits: 3940243156. When these values were brought together in a specific arrangement, they yielded a single, powerful sum. The final total stood as a silent testament to a terrestrial and cosmic connection that resolves to 157.

```
3940243156
+--+--+--+
  OO          40+24+56 +
    OO
+--+--+--+    3+9+4+0+2+4+3+1+5+6
O O O O O
 O O O O O
```

In a chapter known as At Tin, a number came to rest, its essence captured by a precise tally of 157 letters.

The half-span of the angle formed by the bearings from western (-34.3545°) and eastern (-36.251°) boundaries of the Haram to Jabal Musa is -0.94825°.

A hidden harmony, much like the precise bearing between two distant points, was discovered within the digits 94825. When these values were brought together in a specific arrangement, they converged on a single, powerful sum. The final total stood as a silent testament to a precise, cosmic connection that resolves to 157:

```
94825
+--+-
00          94+48 +
 00
+--+-
  0 0       8+2+5
   0
```

# The Time

Surah Al-Asr is the **103rd chapter** of the Quran. Its location in the Quran is in **Juz' 30**. In Arabic, "Asr" generally refers to Epoch, Era, Age, Time, or Afternoon. **Cesium-133 atom** unique properties are used to precisely define the **second (time)** within the International System of Units. Hmm… 103, 30, and 133.

For millennia, humanity has sought to measure time with increasing accuracy, from sundials to intricate mechanical clocks. Yet, the pursuit of truly universal and unwavering temporal precision reached its zenith with the advent of the **atomic clock**, an innovation inextricably linked to a singular, remarkable element: **Cesium-133**.

The unparalleled stability and measurability of this hyperfine transition led to a monumental decision by the 13th General Conference on Weights and Measures (CGPM) in 1967.

They formally redefined the **second** as: "The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom."

This definition decoupled time from astronomical observation and grounded it in a fundamental, invariant property of matter itself.

**Fun Math**

In the swift current of a chapter named Al Asr, a number found its final resting place, its essence captured by a precise count of 71 letters.

Second: “The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom.”

A hidden harmony, much like the subtle ticking of time itself, was discovered within the digits 133 and 9192631770. As these values were brought together in a specific, unfolding sequence, they converged on a single, powerful sum. The final total stood as a silent testament to a temporal and cosmic connection that resolves to 71.

```
133 9192631770
+-- +--+--+--+
     OO          19 +
+-- +--+--+--+
O O  O O O O O   1+3+3+9+1+9+2+6+3+1+7+7+0
 O  O O O O O
```

## The Daybreak

In the context of the Quran, specifically Surah Al-Falaq, Chapter **113**, “Falaq” means daybreak or dawn. Indium Gallium Arsenide (InGaAs, total atomic number: **113**) is known for its ability to detect light across NIR and SWIR regions. It can detect light during Astronomical Twilight (possibly weak), Nautical Twilight, and Civil Twilight.

Indium Gallium Arsenide (InGaAs) is a semiconductor material known for its exceptional ability to detect light across the near-infrared (NIR) and short-wave infrared (SWIR) regions. The NIR spectrum generally spans from 0.75 to 1.4 microns, while the SWIR spectrum extends from 1.4 to 3.0 microns. InGaAs is uniquely suited for these wavelengths, making it an essential material for applications such as telecommunications, environmental monitoring, and industrial imaging. By tuning the ratio of indium and gallium, the bandgap of InGaAs can be adjusted, allowing for precise detection in these critical infrared ranges.

The atomic structure of InGaAs is composed of indium (atomic number 49), gallium (atomic number 31), and arsenic (atomic number 33), with a total atomic number of **113**. These elements combine in a crystal lattice that optimizes the material’s ability to absorb and convert infrared light into electrical signals. This allows InGaAs to be highly sensitive to low-light conditions, such as those found during dawn or twilight, where infrared radiation is often the first to appear before visible light becomes detectable by the human eye.

InGaAs sensors are particularly powerful in detecting light during daybreak, especially in the NIR and SWIR ranges, where sunlight begins to emerge in the early morning. As the sun rises, its infrared light is often the first indicator of daylight, and InGaAs detectors are capable of picking up these subtle changes in light long before visible light is noticeable. This makes InGaAs an invaluable tool for detecting daybreak or other low-light events, enabling early detection and response in various automated systems, from smart buildings to scientific applications.

While InGaAs is excellent for NIR and SWIR light detection, other semiconductor materials like silicon and germanium are also used in light sensing. Silicon-based sensors are typically designed for visible light, but they lose effectiveness in the infrared spectrum. Germanium performs better in the infrared range than silicon but does not match the versatility of InGaAs for both NIR and SWIR. InGaAs provides superior performance across a broader range of wavelengths, making it the preferred choice for high-precision light sensing in the infrared spectrum.

**InGaAs At -18° (Astronomical Twilight)**

At -18°, the sun is in the astronomical twilight phase, where it is well below the horizon. During this time, both visible and most infrared light from the sun are effectively absent, although some residual SWIR radiation from airglow or scattering may still be detectable by InGaAs sensors. This would be a weakest signal, and detection would depend on the sensitivity of the infrared sensors. Even in this phase, the sensor's ability to detect faint SWIR signals can still be critical, especially in applications such as astronomy or atmospheric research.

**InGaAs At -12° (Nautical Twilight)**

As the sun reaches -12° below the horizon, this is the phase known as nautical twilight. During this time, the light in the NIR and SWIR regions becomes stronger and is still detectable by InGaAs sensors. The infrared radiation is still scattered in the atmosphere, but it is much brighter compared to the later twilight phases. SWIR light, which begins at around 1.4 microns, can be captured by the sensor, and the signal strength is increasing. InGaAs sensors can effectively detect these strengthening signals, allowing them to be used in applications like remote sensing or low-light monitoring.

**InGaAs At -6° (Civil Twilight)**

During civil twilight, the sun is just below the horizon (around 6° below). At this stage, there is still some weak infrared radiation (mostly NIR) that is scattered by the atmosphere. While visible light is not yet detectable by the human eye, infrared light, especially in the NIR range, can be picked up by InGaAs sensors. This makes InGaAs sensors highly effective at

detecting early changes in light conditions, such as at the start of dawn, before visible light gradually becomes visible to the human eye.

**Fun Math**

In a chapter known as Al Falaq, a number found its final resting place, its essence captured by a precise count of 71 letters.

Indium (atom number 49) Gallium (atom number 31) Arsenic (atom number 33), InGaAs, total atomic number: 113, is known for its ability to detect light across NIR and SWIR regions. It can detect light during Astronomical Twilight (possibly weak), Nautical Twilight, and Civil Twiligh (3 twilight).

A hidden harmony, like the first light that splits the darkness, was discovered within the digits 493133. As these values were brought together in a specific sequence, they converged on a single, powerful sum. The final total stood as a silent testament to a cosmic connection that resolves to 71.

```
493133
+--+--
00 00          49+13 +
+--+--
  0  0         3+3+3
    0
```

## Post Test

Given the knowledge and science of the 7th century, how is it possible for a Surah (Chapter) to be placed in a specific number? It's not as random as you might think, is it?

On a scale of 0% to 100%,What is the probability that the following statements were known in the 7th century?

Al Baqarah is placed in chapter 2.
Yellow coat color typically arises from 2 factors: first, presence of 2 recessive “e” alleles “e/e” at the MC1R gene; second, at least a dominant dilution allele (“dominant D”) or “dominant D/dominant D” or “dominant D/d” at PMEL17 gene, where “d” is ressesive dilution allele, lightens red pigment “e” to yellow.
What is the probability that this science information was already known or discovered in the 7th century?

Al An’am is placed in chapter 6.
The animals are mentioned in pairs: sheep and goats, and camels and cattle. Interestingly, when their chromosome numbers are mentioned, the pairs are 54 and 60 (for sheep and goats), and 74 and 60 (for camels and cows). A chromosome number of 60 is shared by both goats and cattle, even though they are entirely different animals. However, both are ruminants. All of the mentioned ruminants: sheep, goats, and cattle; have a chromosome count that's divisible by 6, as their GCD (Greatest Common Divisor) is 6.
What is the probability that this science information was already known or discovered in the 7th century?

Ar Ra’du is placed in chapter 13.
Carbon, as organic matter, impacts nutrient availability, water retention, and microbial activity, all crucial for flavor development. Thunder and lightning contribute to the nitrogen cycle by producing nitrogen compounds that fertilize the earth and support life, underscoring the interconnectedness of natural forces. Both carbon and nitrogen, with atomic numbers six and seven, where six plus seven equals thirteen, are essential for the fertility of the earth and the development of life and flavor.
What is the probability that this science information was already known or discovered in the 7th century?

Ar Ra’du is placed in chapter 13.
Thunder and lightning actually occur at the same time and place. Lightning contributes to fertilizing the soil indirectly with the nitrate ion (1 atom of N and 3 atom of O) through a process called atmospheric nitrogen fixation, as follows:
Nitrogen gas and oxygen gas react, with the presence of lightning, to yield two molecules of nitrogen monoxide gas;
Two molecules of nitrogen monoxide gas and one molecule of oxygen gas react to produce two molecules of nitrogen dioxide gas;
Two molecules of nitrogen dioxide gas and one molecule of liquid water react to produce one molecule of aqueous nitric acid and one molecule of aqueous nitrous acid; and
Aqueous nitric acid dissociates to produce a hydrogen ion and a nitrate ion, both in an aqueous solution.
What is the probability that this science information was already known or discovered in the 7th century?

An Nahl is placed in chapter 16.
Bees basically have 32 chromosomes, 16 pairs, for females and 16 chromosomes for males.
What is the probability that this science information was already known or discovered in the 7th century?

Al Kahf is placed in chapter 18.
A SNP "RS1539808", located on chromosome 18 at position 5,978,932, has been identified as a candidate with the strongest effect on increasing sleep time, with the reference code of OBA:2040173. In one study, the T allele of this SNP showed a suggestive but not definitive association with the effect, with a p-value of four millionths. Therefore, this finding requires replication in other studies to be confirmed as a true genetic link.
What is the probability that this science information was already known or discovered in the 7th century?

An Naml is placed in chapter 27.
Ants, use Carbon eight, Hydrogen eighteen, Oxygen (8 C + 18 H + 1 O = 27 atoms) as a crucial chemical messenger for certain ant species, enabling them to rapidly communicate danger and coordinate their collective response for the survival of the colony.
What is the probability that this science information was already known or discovered in the 7th century?

Al Ankabut is placed in chapter 29.
The amine (N H two) and carboxyl (C O O H) groups are key to linking amino acids into polypeptides, and their interactions help create the strong, flexible material we know as spider silk, for example: Glycine (**N H two** – C H two – **C O O H**), Alanine (**N H three** – C H three (**N H two**) – **C O O H**), Tyrosine (**N H two** – C H (**C O O H)** – C H two – C six H four O H), etc. Interestingly, the total number of neutrons in the amine and carboxyl groups is 29. This is calculated as follows: seven in nitrogen plus zero in hydrogen equals seven neutrons from the amine group, and six in carbon plus eight in oxygen plus eight in oxygen plus zero in hydrogen equals twenty-two neutrons from the carboxyl group.
What is the probability that this science information was already known or discovered in the 7th century?

An Najm is placed in chapter 53.
The distance from the Galactic Center to the Sun, and Earth, of course, is eight, which is five plus three kiloparsecs, passing through the Scutum Arm at approximately five kiloparsecs, satisfying the a five-to-three ratio.
What is the probability that this science information was already known or discovered in the 7th century?

An Najm is placed in chapter 53.
Sailors used a total of 58 stars for navigation, including 26 Northern Stars, which have a declination of 0° or greater, with a combined distance from earth of 6,852 light-years and 32 Southern Stars at a total of 11,334 light-years. The ratio of the distance of Southern stars to Northern stars is approximately 1 to 0.604552673372155 or 5 to 3.02276336686077 approximately a five to three ratio.
What is the probability that this science information was already known or discovered in the 7th century?

Al Qamar is placed in chapter 54.
Relative to the plane of the ecliptic (Earth's orbital plane around the Sun), the Moon's axial tilt is relatively small, about 1.542 approximately equal to 1.54 degrees, and its inclination is about 5.1454 degrees.
What is the probability that this science information was already known or discovered in the 7th century?

Al Hadid is placed in chapter 57.
Iron has four naturally occurring stable isotopes: Iron-54, Iron-56, Iron-57, and Iron-58. A key characteristic that breaks down these isotopes is their magnetic property. Iron-54, Iron-56, and Iron-58 are non-magnetic because they have no nuclear spin, which means they lack a magnetic moment. In contrast, Iron-57 is magnetic. This is because it has a nuclear spin of half, a property that gives it a magnetic moment and makes it useful in techniques such

as Mössbauer spectroscopy for studying magnetic properties.
What is the probability that this science information was already known or discovered in the 7th century?

Al Jin is placed in chapter 72.
In Quran chapter 55 verse 15 and chapter 15 verse 27 stated that a genie was created from a smokeless flame of intensely hot fire. Is there any smokeless flame of intensely hot fire in the universe? Yes, nuclear fusion in stars produces this. Hydrogen fusion occurs at around 15 million °Celcius, helium fusion occurs at around 100 million °Celcius, so on, within stars. Helium (α particle) can be produced when 1 neutron is absorbed by a boron (B, atom number 5), which has 5 protons and 5 neutrons (boron-10). This absorption forms an unstable, excited boron-11, then immediately decays, yielding a 2 different energies (Helium or α with atom number of 2 and γ) and a lithium; or a lithium and 2 energies. Where atom number of lithium is 7.
Note: Science, which is based on empirical observation and measurable evidence, cannot explain a concept like "spirit, or ginie," which is, by its very nature, considered non-physical and outside the realm of natural laws.
What is the probability that this science information was already known or discovered in the 7th century?

Al Insan is placed in chapter 76.
Human begins from a drop of mixed fluid (nothing yet worth mentioning), where a single sperm carries 23 chromosomes; not pairs. Within that sperm, genes like p53 silently prepare to guard the future embryo’s genetic integrity, which fifty-three plus twenty-three equals seventy-six.
What is the probability that this science information was already known or discovered in the 7th century?

As Shams is placed in chapter 91.
The true length of a day (sidereal day) is approximately 23 hours, 56 minutes, and 4.091 seconds.
What is the probability that this science information was already known or discovered in the 7th century?

Al Layl is placed in chapter 92.
Approximately 92 percent of the Earth's surface experiences this daily cycle without fail, while about eight percent does not. There, in this approximately eight percent of Earth's surface, the Sun either never rises above the horizon (during polar night) or never sets below the horizon (during the midnight sun) for a period ranging from 24 hours to approximately six months.
What is the probability that this science information was already known or discovered in the 7th century?

At Tin is placed in chapter 95.
Based on the available information for fresh Figs per 100 grams, here's an approximate order of minerals by weight of Fig, non-free, from highest to lowest: The five major minerals present in Figs (which is also present in Olives, but in different order): Kalium-39, Calcium-40, Magnesium-24, Phosphorus-31, and Iron-56. Total isotopes number 190. Half (one of two equal parts) of total isotopes is 95. Interestingly, Adding the first portion and the fifth portion results in a sum of 95. Adding the second, third, and fourth portions also results in a sum of 95.
What is the probability that this science information was already known or discovered in the 7th century?

At Tin is placed in chapter 95.
The half-span of the angle formed by the bearings from western (-34.3545°) and eastern (-36.251°) boundaries of the Haram to Jabal Musa is 0.94825° approximately equal to 0.95°. Jabal Musa, along with Jabal Serbal and several other mountains, are candidates for Mount Sinai.
What is the probability that this science information was already known or discovered in the 7th century?

Al Asr is placed in chapter 103, Juz' 30.
Surah Al-Asr is the 103rd chapter of the Quran. Its location in the Quran is in Juz' 30. In Arabic, "Asr" generally refers to Epoch, Era, Age, Time, or Afternoon. Cesium-133 atom unique properties are used to precisely define the second (time) within the International System of Units. One hundred three plus thirty equals one hundred thirty-three.
What is the probability that this science information was already known or discovered in the 7th century?

Al Falaq is placed in chapter 113.
Indium Gallium Arsenide (InGaAs, total atomic number: 113) is known for its ability to detect light across NIR and SWIR regions. It can detect light during Astronomical Twilight (possibly weak), Nautical Twilight, and Civil Twilight.
What is the probability that this science information was already known or discovered in the 7th century?

## Conclusion

*˹He is the One˺ Who created seven heavens, one above the other. You will never see any imperfection in the creation of the Most Compassionate. So look again: do you see any flaws?*
Al Mulk 67 verse 3.

*Indeed, in the creation of the heavens and the earth and the alternation of the day and night there are signs for people of reason. ˹They are˺ those who remember Allah while standing, sitting, and lying on their sides, and reflect on the creation of the heavens and the earth ˹and pray˺, "Our Lord! You have not created ˹all of˺ this without purpose. Glory be to You! Protect us from the torment of the Fire…"*
Ali Imron 3 verse 190-191.

*Do the disbelievers not realize that the heavens and earth were ˹once˺ one mass then We split them apart? And We created from water every living thing. Will they not then believe?*
Al Anbiya 21 verse 30.

*We also showed Abraham the wonders of the heavens and the earth, so he would be sure in faith. When the night grew dark upon him, he saw a star and said, "This is my Lord!" But when it set, he said, "I do not love things that set." Then when he saw the moon rising, he said, "This one is my Lord!" But when it disappeared, he said, "If my Lord does not guide me, I will certainly be one of the misguided people." Then when he saw the sun shining, he said, "This must be my Lord; it is the greatest!" But again when it set, he declared, "O my people! I totally reject whatever you associate ˹with Allah in worship˺."*
Al An'am 6 verse 76-78.

*They ask you ˹O Prophet˺ about the spirit (soul). Say, "Its nature is known only to my Lord, and you ˹O humanity˺ have been given but little knowledge."*
Al Isra 17 verse 85.

Did every single things in details, from atoms (or smaller) to the observerable universe (or bigger), happen by chance? The key word is "**impossible, unless**", that is, it is impossible for all of this to happen, unless Allah created it.

*So, know ˹well, O Prophet,˺ that there is no god ˹worthy of worship˺ except Allah. And seek forgiveness for your shortcomings and for ˹the sins of˺ the believing men and women. For Allah ˹fully˺ knows your movements and places of rest ˹O people˺.*
Muhammad 47 verse 19.

*˹O believers!˺ Do not insult what they invoke besides Allah or they will insult Allah spitefully out of ignorance. This is how We have made each people's deeds appealing to them. Then to their Lord is their return, and He will inform them of what they used to do.*
Al An'am 6 verse 108.

## Source Code for One of the God’s Signs

Source code ta calculates the bearing from a starting point to a destination point, especially from Haram (Macca) to Sinai.

```
from openlocationcode import openlocationcode as olc_lib
import math


def plus_code_to_lat_lon(plus_code):
  """
  Converts a Plus Code to its corresponding latitude and longitude.
  """
  try:
    decoded_code = olc_lib.decode(plus_code)
  return decoded_code.latitudeCenter, decoded_code.longitudeCenter
  except ValueError:
    print(f"Error: Invalid Plus Code '{plus_code}'")
    return None
  except Exception as e:
    print(f"An unexpected error occurred during decoding: {e}")
    return None


def calculate_bearing_plus_code(plus_code1, plus_code2, log=True, rounding=200):
  """
  Calculates the bearing from a starting point to a destination point, using plus code.
  """
  lat1, lon1 = plus_code_to_lat_lon(plus_code1.PLUSCODE_)
  lat2, lon2 = plus_code_to_lat_lon(plus_code2.PLUSCODE_)
  if log :
    print("\n++++++++++++++++++++++++++++++++++++")
          print(f"{plus_code1.NAME_}:  {plus_code1.PLUSCODE_}  {lat1},  {lon1}
({math.radians(lat1)} rad, {math.radians(lon1)} rad )")
          print(f"{plus_code2.NAME_}:  {plus_code2.PLUSCODE_}  {lat2},  {lon2}
({math.radians(lat2)} rad, {math.radians(lon2)} rad )")
    print("++++++++++++++++++++++++++++++++++++")
   return calculate_bearing(plus_code1.NAME_, plus_code2.NAME_, lat1, lon1, lat2,
lon2, log, rounding)
```

```
def calculate_bearing(label1, label2, lat1, lon1, lat2, lon2, log=True, rounding=200):
  """
  Calculates the bearing from a starting point to a destination point.
  """

  # Convert degrees to radians
  lat1_rad = round(math.radians(lat1), rounding)
  lon1_rad = round(math.radians(lon1), rounding)
  lat2_rad = round(math.radians(lat2), rounding)
  lon2_rad = round(math.radians(lon2), rounding)

  delta_lon = round(lon2_rad - lon1_rad, rounding)

     x = round(round(math.sin(delta_lon), rounding) * round(math.cos(lat2_rad), rounding), rounding)
     y = round(round(math.cos(lat1_rad), rounding) * round(math.sin(lat2_rad), rounding) - round(math.sin(lat1_rad), rounding) * round(math.cos(lat2_rad), rounding) * round(math.cos(delta_lon), rounding), rounding)
  if log :
    print(f"x = math.sin({delta_lon}) * math.cos({lat2_rad})")
      print(f"x = {round(math.sin(delta_lon), rounding)} * {round(math.cos(lat2_rad), rounding)}")
    print(f"x = {x}")
      print(f"y = math.cos({lat1_rad}) * math.sin({lat2_rad}) - math.sin({lat1_rad}) * math.cos({lat2_rad}) * math.cos({delta_lon})")
       print(f"y = {round(math.cos(lat1_rad), rounding)} * {round(math.sin(lat2_rad), rounding)} - {round(math.sin(lat1_rad), rounding)} * {round(math.cos(lat2_rad), rounding)} * {round(math.cos(delta_lon), rounding)}")
    print(f"y = {y}")

  initial_bearing = round(math.atan2(x, y), rounding)

  # Convert bearing from radians to degrees
  initial_bearing_deg = round(math.degrees(initial_bearing), rounding)
  if log :
         print(f"Initial Bearing: \nmath.atan2({x}, {y}) = {initial_bearing} rad = {initial_bearing_deg} degrees")

  # Normalize bearing to a 0-360 degree range
```

```
  compass_bearing = round((initial_bearing_deg + 360) % 360, rounding)
  if log :
    print(f"Normalized Bearing: \n{compass_bearing} degrees")
  return compass_bearing

class MapPoint:
  NAME_    = ""
  PLUSCODE_  = ""


#makkah boundary
nearMainGate = MapPoint()
nearMainGate.NAME_   = "Haram Border [Near Main Gate (W)]"
nearMainGate.PLUSCODE_ = "7GHX9J2P+W4V"

MainGate = MapPoint()
MainGate.NAME_   = "Haram Border [Main Gate (W)]"
MainGate.PLUSCODE_ = "7GHX9M68+WP"

Hudaibiyah = MapPoint()
Hudaibiyah.NAME_   = "Haram Border [Al Hudaibiyah (NW)]"
Hudaibiyah.PLUSCODE_ = "7GHXCJJW+7W"

Taneem = MapPoint()
Taneem.NAME_   = "Haram Border [Near Masjid Aisha 'Umm al-Mumineen' (Masjid
Al-Taneem) (N)]"
Taneem.PLUSCODE_ = "7GHXFR82+JC"

Kaaba = MapPoint()
Kaaba.NAME_   = "Kaaba"
Kaaba.PLUSCODE_ = "7GHXCRFG+2F"

#aproximately south of Saud Al Ruwais mosque God's mercy, GWMR+V2X, Al
Ju'ranah 24434, Arab Saudi
Juranah = MapPoint()
Juranah.NAME_   = "Haram Border [Al Ju'ranah (E}']"
Juranah.PLUSCODE_ = "7GHXGWJQ+FHP"

Rashidiya = MapPoint()
Rashidiya.NAME_   = "Haram Border [Rashidiya (E)]"
Rashidiya.PLUSCODE_ = "7GHXFWPR+4JW"
```

```
#miqot
MasjidHudaibiyah = MapPoint()
MasjidHudaibiyah.NAME_   ="Miqot [Masjid Hudaibiyah NW]"
MasjidHudaibiyah.PLUSCODE_ = "7GHXCJRG+Q7X"

MasjidJironah = MapPoint()
MasjidJironah.NAME_   = "Miqot [Masjid Ji'ronah (NE)]"
MasjidJironah.PLUSCODE_ = "7GHXHX92+8F"



#mount sinai
JabalMoses = MapPoint()
JabalMoses.NAME_   = "Jabal Musa"
JabalMoses.PLUSCODE_ = "7GWMGXQG+C3"

JabalSerbal = MapPoint()
JabalSerbal.NAME_   = "Jabal Serbal"
JabalSerbal.PLUSCODE_ = "7GWMJMW2+HM"



loc_ = JabalMoses
rounding_ = 4
rounding_result_ = 2
cb1 = calculate_bearing_plus_code(nearMainGate, JabalMoses, True, rounding_)
cb2 = calculate_bearing_plus_code(MainGate, JabalMoses, True, rounding_)
cb3 = calculate_bearing_plus_code(Hudaibiyah, JabalMoses, True, rounding_)
cb4 = calculate_bearing_plus_code(Taneem, JabalMoses, True, rounding_)
cb5 = calculate_bearing_plus_code(Kaaba, JabalMoses, True, rounding_)
cb6 = calculate_bearing_plus_code(Juranah, JabalMoses, True, rounding_)
cb7 = calculate_bearing_plus_code(Rashidiya, JabalMoses, True, rounding_)

mq1 = calculate_bearing_plus_code(MasjidHudaibiyah, JabalMoses, True,
rounding_)
mq2 = calculate_bearing_plus_code(MasjidJironah, JabalMoses, True, rounding_)

print("")
point1 = MasjidHudaibiyah
point2 = MasjidJironah
bear1 = calculate_bearing_plus_code(point1, loc_, False, rounding_)
bear2 = calculate_bearing_plus_code(point2, loc_, False, rounding_)
```

```
hh = round(bear1-bear2, rounding_)
print(f"The half-span of the angle formed by the bearings from western ({point1.NAME_}) and eastern ({point2.NAME_}) boundaries of the Haram to {loc_.NAME_}=({round(bear1-360, rounding_)}-{round(bear2-360, rounding_)})/2={hh/2}\n\n")

point1 = nearMainGate
point2 = Rashidiya
bear1 = calculate_bearing_plus_code(point1, loc_, False, rounding_)
bear2 = calculate_bearing_plus_code(point2, loc_, False, rounding_)
hh = round(bear1-bear2, rounding_)
print(f"The half-span of the angle formed by the bearings from western ({point1.NAME_}) and eastern ({point2.NAME_}) boundaries of the Haram to {loc_.NAME_}=({round(bear1-360, rounding_)}-{round(bear2-360, rounding_)})/2={hh/2}\n\n")
print(f"{hh/2}≈{round(hh/2, rounding_result_)} --> Surah At-Tin (Quran Chapter 95) mentions the Mount Sinai and the Secure City of Mecca in its second and third verse.")

loc_ = JabalSerbal
cb1 = calculate_bearing_plus_code(nearMainGate, JabalSerbal, True, rounding_)
cb2 = calculate_bearing_plus_code(MainGate, JabalSerbal, True, rounding_)
cb3 = calculate_bearing_plus_code(Hudaibiyah, JabalSerbal, True, rounding_)
cb4 = calculate_bearing_plus_code(Taneem, JabalSerbal, True, rounding_)
cb5 = calculate_bearing_plus_code(Kaaba, JabalSerbal, True, rounding_)
cb6 = calculate_bearing_plus_code(Juranah, JabalSerbal, True, rounding_)
cb7 = calculate_bearing_plus_code(Rashidiya, JabalSerbal, True, rounding_)

mq1 = calculate_bearing_plus_code(MasjidHudaibiyah, JabalSerbal, True, rounding_)
mq2 = calculate_bearing_plus_code(MasjidJironah, JabalSerbal, True, rounding_)

print("")
point1 = MasjidHudaibiyah
point2 = MasjidJironah
bear1 = calculate_bearing_plus_code(point1, loc_, False, rounding_)
bear2 = calculate_bearing_plus_code(point2, loc_, False, rounding_)
hh = round(bear1-bear2, rounding_)
print(f"The half-span of the angle formed by the bearings from western ({point1.NAME_}) and eastern ({point2.NAME_}) boundaries of the Haram to
```

{loc_.NAME_}=({round(bear1-360, rounding_)}-{round(bear2-360, rounding_)})/2={hh/2}\n\n")

point1 = nearMainGate
point2 = Rashidiya
bear1 = calculate_bearing_plus_code(point1, loc_, False, rounding_)
bear2 = calculate_bearing_plus_code(point2, loc_, False, rounding_)
hh = round(bear1-bear2, rounding_)
print(f"The half-span of the angle formed by the bearings from western ({point1.NAME_}) and eastern ({point2.NAME_}) boundaries of the Haram to {loc_.NAME_}=({round(bear1-360, rounding_)}-{round(bear2-360, rounding_)})/2={hh/2}\n\n")

++++++++++++++++++++++++++++++++++++
Haram Border [Near Main Gate (W)]: 7GHX9J2P+W4V 21.352362499999998, 39.635296874999995 (0.3726690287043677 rad, 0.6917664304741693 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
++++++++++++++++++++++++++++++++++++

x = math.sin(-0.0988) * math.cos(0.4981)
x = -0.0986 * 0.8785
x = -0.0866
y = math.cos(0.3727) * math.sin(0.4981) – math.sin(0.3727) * math.cos(0.4981) * math.cos(-0.0988)
y = 0.9313 * 0.4778 – 0.3641 * 0.8785 * 0.9951
y = 0.1267
Initial Bearing:
math.atan2(-0.0866, 0.1267) = -0.5996 rad = -34.3545 degrees
Normalized Bearing:
325.6455 degrees

++++++++++++++++++++++++++++++++++++
Haram Border [Main Gate (W)]: 7GHX9M68+WP 21.3623125, 39.6668125 (0.3728426889649412 rad, 0.6923164818962432 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
++++++++++++++++++++++++++++++++++++

x = math.sin(-0.0993) * math.cos(0.4981)
x = -0.0991 * 0.8785
x = -0.0871
y = math.cos(0.3728) * math.sin(0.4981) – math.sin(0.3728) * math.cos(0.4981) * math.cos(-0.0993)
y = 0.9313 * 0.4778 – 0.3642 * 0.8785 * 0.9951
y = 0.1266
Initial Bearing:
math.atan2(-0.0871, 0.1266) = -0.6026 rad = -34.5264

degrees
Normalized Bearing:
325.4736 degrees

++++++++++++++++++++++++++++++++++++
Haram Border [Al Hudaibiyah (NW)]: 7GHXCJJW+7W 21.430687499999998, 39.6473125 (0.37403605784099225 rad, 0.6919761426921043 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
++++++++++++++++++++++++++++++++++++

x = math.sin(-0.099) * math.cos(0.4981)
x = -0.0988 * 0.8785
x = -0.0868
y = math.cos(0.374) * math.sin(0.4981) – math.sin(0.374) * math.cos(0.4981) * math.cos(-0.099)
y = 0.9309 * 0.4778 – 0.3653 * 0.8785 * 0.9951
y = 0.1254
Initial Bearing:
math.atan2(-0.0868, 0.1254) = -0.6055 rad = -34.6926 degrees
Normalized Bearing:
325.3074 degrees

++++++++++++++++++++++++++++++++++++
Haram Border [Near Masjid Aisha ‘Umm al-Mumineen’ (Masjid Al-Taneem) (N)]: 7GHXFR82+JC 21.466562500000002, 39.8010625 (0.3746621947101453 rad, 0.6946595864170456 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.1017) * math.cos(0.4981)
x = -0.1015 * 0.8785
x = -0.0892
y = math.cos(0.3747) * math.sin(0.4981) –

math.sin(0.3747) * math.cos(0.4981) * math.cos(-0.1017)
y = 0.9306 * 0.4778 – 0.366 * 0.8785 * 0.9948
y = 0.1248
Initial Bearing:
math.atan2(-0.0892, 0.1248) = -0.6206 rad = -35.5578 degrees
Normalized Bearing:
324.4422 degrees

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Kaaba: 7GHXCRFG+2F 21.422562499999998, 39.82618749999999 (0.3738942498392677 rad, 0.695098100391609 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.1021) * math.cos(0.4981)
x = -0.1019 * 0.8785
x = -0.0895
y = math.cos(0.3739) * math.sin(0.4981) – math.sin(0.3739) * math.cos(0.4981) * math.cos(-0.1021)
y = 0.9309 * 0.4778 – 0.3652 * 0.8785 * 0.9948
y = 0.1256
Initial Bearing:
math.atan2(-0.0895, 0.1256) = -0.6191 rad = -35.4718 degrees
Normalized Bearing:
324.5282 degrees

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Haram Border [Al Ju'ranah (E}']: 7GHXGWJQ+FHP 21.5312125, 39.938953125 (0.37579055007155954 rad, 0.6970662318309284 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.1041) * math.cos(0.4981)
x = -0.1039 * 0.8785
x = -0.0913
y = math.cos(0.3758) * math.sin(0.4981) – math.sin(0.3758) * math.cos(0.4981) * math.cos(-0.1041)
y = 0.9302 * 0.4778 – 0.367 * 0.8785 * 0.9946
y = 0.1238
Initial Bearing:
math.atan2(-0.0913, 0.1238) = -0.6354 rad = -36.4057 degrees
Normalized Bearing:
323.5943 degrees

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Haram Border [Rashidiya (E)]: 7GHXFWPR+4JW 21.4853625, 39.94157812500001 (0.3749903166095202 rad, 0.6971120467237933 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.1041) * math.cos(0.4981)
x = -0.1039 * 0.8785
x = -0.0913
y = math.cos(0.375) * math.sin(0.4981) – math.sin(0.375) * math.cos(0.4981) * math.cos(-0.1041)
y = 0.9305 * 0.4778 – 0.3663 * 0.8785 * 0.9946
y = 0.1245
Initial Bearing:
math.atan2(-0.0913, 0.1245) = -0.6327 rad = -36.251 degrees

Normalized Bearing:
323.749 degrees

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Miqot [Masjid Hudaibiyah NW]: 7GHXCJRG+Q7X 21.4419875, 39.62573437499999 (0.37423328004646766 rad, 0.6915995333644473 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.0986) * math.cos(0.4981)
x = -0.0984 * 0.8785
x = -0.0864
y = math.cos(0.3742) * math.sin(0.4981) – math.sin(0.3742) * math.cos(0.4981) * math.cos(-0.0986)
y = 0.9308 * 0.4778 – 0.3655 * 0.8785 * 0.9951
y = 0.1252
Initial Bearing:
math.atan2(-0.0864, 0.1252) = -0.604 rad = -34.6067 degrees
Normalized Bearing:
325.3933 degrees

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Miqot [Masjid Ji’ronah (NE)]: 7GHXHX92+8F 21.568312499999998, 39.95118749999999 (0.37643806722404943 rad, 0.6972797619566019 rad )
Jabal Musa: 7GWMGXQG+C3 28.538562499999998, 33.975187500000004 (0.4980918794111842 rad, 0.592978885857421 rad )
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x = math.sin(-0.1043) * math.cos(0.4981)
x = -0.1041 * 0.8785
x = -0.0915
y = math.cos(0.3764) * math.sin(0.4981) – math.sin(0.3764) * math.cos(0.4981) * math.cos(-0.1043)
y = 0.93 * 0.4778 – 0.3676 * 0.8785 * 0.9946
y = 0.1232

Initial Bearing:
math.atan2(-0.0915, 0.1232) = -0.6388 rad = -36.6005 degrees
Normalized Bearing:
323.3995 degrees

The half-span of the angle formed by the bearings from western (Miqot [Masjid Hudaibiyah NW]) and eastern (Miqot [Masjid Ji’ronah (NE)]) boundaries of the Haram to Jabal Musa=(-34.6067 - -36.6005)/2=0.9969

The half-span of the angle formed by the bearings from extreme western (Haram Border [Near Main Gate (W)]) and eastern (Haram Border [Rashidiya (E)]) boundaries of the Haram to Jabal Musa=(-34.3545 - -36.251)/2=0.94825

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Haram Border [Near Main Gate (W)]: 7GHX9J2P+W4V 21.352362499999998, 39.635296874999995 (0.3726690287043677 rad, 0.6917664304741693 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1045) * math.cos(0.5)
x = -0.1043 * 0.8776
x = -0.0915
y = math.cos(0.3727) * math.sin(0.5) – math.sin(0.3727) * math.cos(0.5) * math.cos(-0.1045)
y = 0.9313 * 0.4794 – 0.3641 * 0.8776 * 0.9945
y = 0.1287
Initial Bearing:
math.atan2(-0.0915, 0.1287) = -0.618 rad = -35.4088 degrees
Normalized Bearing:
324.5912 degrees

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Haram Border [Main Gate (W)]: 7GHX9M68+WP 21.3623125, 39.6668125 (0.3728426889649412 rad, 0.6923164818962432 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.105) * math.cos(0.5)
x = -0.1048 * 0.8776
x = -0.092
y = math.cos(0.3728) * math.sin(0.5) – math.sin(0.3728) * math.cos(0.5) * math.cos(-0.105)
y = 0.9313 * 0.4794 – 0.3642 * 0.8776 * 0.9945
y = 0.1286
Initial Bearing:
math.atan2(-0.092, 0.1286) = -0.621 rad = -35.5807

degrees
Normalized Bearing:
324.4193 degrees

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Haram Border [Al Hudaibiyah (NW)]: 7GHXCJJW+7W 21.430687499999998, 39.6473125 (0.37403605784099225 rad, 0.6919761426921043 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1047) * math.cos(0.5)
x = -0.1045 * 0.8776
x = -0.0917
y = math.cos(0.374) * math.sin(0.5) – math.sin(0.374) * math.cos(0.5) * math.cos(-0.1047)
y = 0.9309 * 0.4794 – 0.3653 * 0.8776 * 0.9945
y = 0.1274
Initial Bearing:
math.atan2(-0.0917, 0.1274) = -0.6239 rad = -35.7468 degrees
Normalized Bearing:
324.2532 degrees

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Haram Border [Near Masjid Aisha ‘Umm al-Mumineen’ (Masjid Al-Taneem) (N)]: 7GHXFR82+JC 21.466562500000002, 39.8010625 (0.3746621947101453 rad, 0.6946595864170456 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1074) * math.cos(0.5)
x = -0.1072 * 0.8776
x = -0.0941
y = math.cos(0.3747) * math.sin(0.5) – math.sin(0.3747) *

math.cos(0.5) * math.cos(-0.1074)
y = 0.9306 * 0.4794 – 0.366 * 0.8776 * 0.9942
y = 0.1268
Initial Bearing:
math.atan2(-0.0941, 0.1268) = -0.6384 rad = -36.5776 degrees
Normalized Bearing:
323.4224 degrees

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Kaaba: 7GHXCRFG+2F 21.422562499999998, 39.82618749999999 (0.3738942498392677 rad, 0.695098100391609 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1078) * math.cos(0.5)
x = -0.1076 * 0.8776
x = -0.0944
y = math.cos(0.3739) * math.sin(0.5) – math.sin(0.3739) * math.cos(0.5) * math.cos(-0.1078)
y = 0.9309 * 0.4794 – 0.3652 * 0.8776 * 0.9942
y = 0.1276
Initial Bearing:
math.atan2(-0.0944, 0.1276) = -0.6369 rad = -36.4917 degrees
Normalized Bearing:
323.5083 degrees

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Haram Border [Al Ju'ranah (E}']: 7GHXGWJQ+FHP 21.5312125, 39.938953125 (0.37579055007155954 rad, 0.6970662318309284 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1098) * math.cos(0.5)
x = -0.1096 * 0.8776
x = -0.0962
y = math.cos(0.3758) * math.sin(0.5) – math.sin(0.3758) * math.cos(0.5) * math.cos(-0.1098)
y = 0.9302 * 0.4794 – 0.367 * 0.8776 * 0.994
y = 0.1258
Initial Bearing:
math.atan2(-0.0962, 0.1258) = -0.6528 rad = -37.4027 degrees
Normalized Bearing:
322.5973 degrees

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Haram Border [Rashidiya (E)]: 7GHXFWPR+4JW 21.4853625, 39.94157812500001 (0.3749903166095202 rad, 0.6971120467237933 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
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x = math.sin(-0.1098) * math.cos(0.5)
x = -0.1096 * 0.8776
x = -0.0962
y = math.cos(0.375) * math.sin(0.5) – math.sin(0.375) * math.cos(0.5) * math.cos(-0.1098)
y = 0.9305 * 0.4794 – 0.3663 * 0.8776 * 0.994
y = 0.1265
Initial Bearing:
math.atan2(-0.0962, 0.1265) = -0.6502 rad = -37.2537 degrees

Normalized Bearing:
322.7463 degrees

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Miqot [Masjid Hudaibiyah NW]: 7GHXCJRG+Q7X 21.4419875, 39.62573437499999 (0.37423328004646766 rad, 0.6915995333644473 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
++++++++++++++++++++++++++++++++++

x = math.sin(-0.1043) * math.cos(0.5)
x = -0.1041 * 0.8776
x = -0.0914
y = math.cos(0.3742) * math.sin(0.5) – math.sin(0.3742) * math.cos(0.5) * math.cos(-0.1043)
y = 0.9308 * 0.4794 – 0.3655 * 0.8776 * 0.9946
y = 0.1272
Initial Bearing:
math.atan2(-0.0914, 0.1272) = -0.6231 rad = -35.701 degrees
Normalized Bearing:
324.299 degrees

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Miqot [Masjid Ji’ronah (NE)]: 7GHXHX92+8F 21.568312499999998, 39.95118749999999 (0.37643806722404943 rad, 0.6972797619566019 rad )
Jabal Serbal: 7GWMJMW2+HM 28.646437499999998, 33.6516875 (0.4999746533417731 rad, 0.5873327457272193 rad )
++++++++++++++++++++++++++++++++++

x = math.sin(-0.11) * math.cos(0.5)
x = -0.1098 * 0.8776
x = -0.0964
y = math.cos(0.3764) * math.sin(0.5) – math.sin(0.3764) * math.cos(0.5) * math.cos(-0.11)
y = 0.93 * 0.4794 – 0.3676 * 0.8776 * 0.994
y = 0.1252

Initial Bearing:
math.atan2(-0.0964, 0.1252) = -0.6562 rad = -37.5975 degrees
Normalized Bearing:
322.4025 degrees

The half-span of the angle formed by the bearings from western (Miqot [Masjid Hudaibiyah NW]) and eastern (Miqot [Masjid Ji’ronah (NE)]) boundaries of the Haram to Jabal Serbal=(-35.701 - -37.5975)/2=0.94825

The half-span of the angle formed by the bearings from western (Haram Border [Near Main Gate (W)]) and eastern (Haram Border [Rashidiya (E)]) boundaries of the Haram to Jabal Serbal=(-35.4088 - -37.2537)/2=0.92245

## Fun Math Rules

Number of letters for each Verse is taken from Binimad.

Final Result: The sum of all substrings must equal the determined target number (e.g., 6461).

Full String Usage: A substring can be the entire original number (e.g., for “5978932”, the substring “5978932” is allowed).

Digit Coverage: All digits from the original number must be used at least once in a combination of substrings, with the substring length being flexible (1 digit, 2 digits, etc.).

Substring Flexibility: You can use a substring from any part of the number (front/middle/back).

Substring Formation:
Substrings must consist of consecutive digits without being reversed (valid example: “5978”; invalid example: “8795” because it’s not consecutive).
A single substring with an identical index range cannot be repeated (example: in “5978932”, the substring “9” at [1-1] and [4-4] can only be used once).
Digits at different positions can be used again as long as the substrings have a different index range (example: the digit “9” at index 1 and 5 can be used in two different substrings), or in other words, the index range must be unique for each substring, even if overlapping. For example, subtring “97” (index [1-2]) and substring “9” (index [1-1]) are both valid because their index ranges are different, even though they both use the digit “9.”

Example of Original Number: 5978932

Example of Target Number: 6461

Example of Substring Sum:
5978+59+97+78+89+93+32+5+9+7+9+3+2