

# SAVITHRI MATH FOR MOTHERS: DEVELOPMENT AND GLOBALIZATION USING AI.

## Abstract

Mathematics has an important role in the development of science and technology. Making mothers confident in mathematics(math) will contribute to national growth and well being. Here we conceive a course which presents mathematics within a spiritual background since mathematical competence is to be considered as a spiritual value. The spiritual background is to be provided by Savithri, a legendary work by Aruobindo. Mathematical content are based on Lilavati (an ancient Indian text presenting math in puzzle-poems) and books of Skantula Devi (an Indian mental calculator and writer of popular books on math for the public). We show how brief introduction about these works can be got through chatGPT. Course lesson plans are generated using AI tools. The course is to be offered in other languages in Hindi, Tamil and French. We highlight how AI tools help rapid development and globalization of such a course.

**Keywords:** Making mothers confident in mathematics(math) will contribute to national growth and well being. Mathematical content are based on Lilavati.

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## I. INTRODUCTION

The aim is to develop an online course on math for mothers with a spiritual perspective the spiritual perspective is provided by “Savitri” a legendary work by Aruobindo. The mathematical content is based on Bhaskaracharya’s Lilavati and Shakuntaladevi’s book on maths. We highlight how AI Tools help us to develop the course and Globalize it.

### Section 1: Introduction to “Savitri”



Source: wikipedia

### Section 1 A: In English

#### ChatGPT

"Savitri" is a poetic and philosophical work by Sri Aurobindo Ghose, an Indian philosopher, poet, and spiritual leader. It is considered one of his most significant literary and spiritual contributions. The poem, published in 1950, is an epic in blank verse and comprises 12 books with a total of over 24,000 lines. It draws inspiration from the Indian epic tradition and is known for its profound exploration of spiritual and metaphysical themes.

The central theme of "Savitri" revolves around the spiritual evolution of the human soul and the ultimate destiny of humanity. It's a deeply philosophical and metaphysical work

that delves into various aspects of human existence, consciousness, and the journey towards self-realization. Here are some key themes in "Savitri" by Sri Aurobindo:

- **The Divine and Human Consciousness:** At its core, "Savitri" explores the relationship between human consciousness and the Divine or the Cosmic Consciousness. The poem describes the journey of Savitri, a mortal woman, who transcends her human limitations to unite with the divine consciousness. This theme reflects Aurobindo's belief in the potential for divinity within every individual.
- **The Quest for Immortality:** Savitri's quest for immortality is not merely about physical immortality but rather the pursuit of spiritual immortality or liberation from the cycle of birth and death. The poem reflects Aurobindo's spiritual philosophy, which emphasizes the transformation of human consciousness to achieve spiritual liberation.
- **Love and Devotion:** Love plays a significant role in the poem. Savitri's love for Satyavan is unwavering and serves as a symbol of the human soul's longing for union with the Divine. It explores the idea that true love can be a path to spiritual realization.
- **The Power of the Spirit:** "Savitri" highlights the idea that the spirit or consciousness can overcome even the darkest challenges and adversities. Savitri's determination and spiritual strength enable her to confront and conquer death itself.
- **The Evolution of Consciousness:** Aurobindo believed in the evolution of consciousness and saw humanity's role as a participant in this evolutionary process. "Savitri" portrays the human journey as part of this cosmic evolution towards a higher state of consciousness.
- **The Role of the Divine Mother:** Aurobindo's spiritual teachings often emphasize the concept of the Divine Mother, a feminine aspect of the Divine. "Savitri" reflects this concept, as Savitri embodies the qualities of the Divine Mother in her quest for spiritual transformation.
- **The Interplay of Light and Darkness:** Throughout the poem, there is an exploration of the interplay between light and darkness, good and evil, and the eternal struggle between these opposing forces in the human psyche and the world.

In summary, "Savitri" by Sri Aurobindo is a profound and spiritually rich epic poem that explores the journey of the human soul toward self-realization and union with the Divine. It touches upon themes of love, consciousness, immortality, and the transformative power of the spirit. It remains a significant work in the realm of Indian philosophy and spirituality.

Now we look at the possibility of globalization.

### Section 1 B: In Tamil

give the same reply in tamil.

#### ChatGPT

"Savitri" என் று அழைக்கப்படும் படிகள் மற்றும் தத்வ கூட்டமான இந்திய ஆராய்ச்சி, கவிஞர், கட்டுழையாளர் மற்றும் ஆத்திசசஷி ஸ்ரீ அரவிந்சதா சகாஷ் அவரக் ளால் எழுதப்பட்டுள்ள சபராண் மய கவிழதயாகும் . இந்த கவிழத, அவரின் அதிசய உழரயாடலும் ஆத்திசமான தத்வ அபவங் கழள வவளிப்படுத்கின் று. இஃ இந்திய சபராண் ழம கழதகளின் ஒரு முக்கிய பங் காளி என் றும் அறிகின் று.

"Savitri" என் ற கவிழதயின் முழுமயான தீமம் மனித ஆன் மாவின் ஆத்ம அறிவின் திருப்திமய பின் பற்றுகின் று மற்றும் மனித மாநகரின் அதிசய கட்டுப்பாட்டிழட பற்றி. இஃ ஆதிசமானஃ ஆதிசமான உணரவு கள் , உணரவு ாக்குகள் , மற்றும்

வசய் கிற மூை்கின் ற உணரவு ாக்குகழள பற்றி ஆத்திசமானவர் ஸ்ரீ அரவிந்சதா சகாஷ் வகாண் டுள்ளனர்.

இங் சக, ஸ்ரீ அரவிந்சதா ஸ்ரீ அரவிந்சதா இயக்கத்தின் முக்கிய தீமங் கழள வகாண் டு வசால் லப்பட்டுள்ளஃ:

- **தேவரும் மனிதே உணர்வும் :** அதிசமான "Savitri" உள்ளடக்கத்தின் ழமய தத்வம் மனித உணரவு ம் பரம சதவரும் இழடசய உள்ள அன் பு பற்றி உழடயஃ கவிழத பின் பற்றுகின் று சபால, சாவித்ரி, ஒரு மரணமின் ழம வபண் , அவளின் மனித விரசாதங் கழள அதிசமான உணரவு ாக்குகின் றார்.
- **அமர்ந்விப்பேற்கான விரும்பம் :** சாவித்ரி அமர்ந்விப்பதற்கான விரும்புழக அதிசமான தத்வம் அல் லாத வபாலிவு அமர்ந்விப்பதற்கான புரியாத வழரபாட்டு அல் ல. கவிழத மனித உணரழவ அதிசமான உணரவு உணரவி ாக்குகின் று, அதிசமான அல் லாத மூல லிருந் விடுதழல அல் லாத மாற்றம் அல் லஃ பிற மாரக் ஂகங் களிலிருந் முடிந்திருக்கும் முஃகுணத்திழத பிரதிபலிககின் று.
- **காேலும் பரமான் பும் :** கவிழதயில் காதல் அதிசமான

பாழதயாக சபாகின் று. சாவித்ரி ஸத்யவஃக்கு அனிமித காதல் உண் டு மற்றும் அஃ உணரவுஉழடயழத சபால, உணரவு முடிவு கிழடக்கும் வழியாக பிரதிபலிககின் று.

- **ஆமாவின சக்தி:** "Savitri" கவிழத விளக்கப்படும் அந்திம சங் கடங் கழள முடித்ஃ வவல் லுவஃ ஆத்மாவின சக்தி அல் லாத பிரதிசயக சம் பத்ழத அதிசமான அந்திம சங் கடங் கள் அழனத்திலும் அதிசமான அஃபவமாக அழமக்கின் று.
- **உணர்வின மட்டடயணி:** ஸ்ரீ அரவிந்சதா உணரவி ன் மட்டடயணியாக சபாகின் றனர் மற்றும் மனித உணரவு மனித சுஃற்சியில் பங் காளியாக அழமயும் என் பழத விளக்குகின் று. "Savitri" அதிசமான உணரவு களின் பக்கத்தில் மனித உணரவி ன் பயணம் மற்றும் உயிரவ் மய்யும் பக்கங் கழள அளிக்கின் று.
- **தியானே திருப்தி:** ஸ்ரீ அரவிந்சதா தியானத் திருப்தியின் மஹத்தர உழரயாடழல அளித்திருக்கின் று. "Savitri" சாவித்ரி சாய் தவழன எந்திரியிட்டு அழமத்தார், அஃ உணரவி ன் ஒரு பாழத ஆக இருக்கும் என் பழத விளக்கின் று.
- **ஒளியும் அழியும் அருகிலுள்ள ஒட்டன் படல் :** கவிழதயின் முக்கிய உட்வபாருளும் சகாபமும் , கிருத்திக்காலங் களும் , மனித மனதில் மற்றும் உலகத்தில் இவ் வற்றிகளின் இழடசய இருக்கும் அபிமுக்தி மற்றும் விரித்திகளுக்கு வழர பிரபலமானஃ.

சம் ப்ரம் பத்தில் , "Savitri" ஸ்ரீ அரவிந்சதா சகாவு இந்திய தத்ஃவம் மற்றும் ஆத்திசமானழத பற்றி ஃஆமான மற்றும் ஆத்திசமான கவிழதயாக காணப்படுகின் று.

### Section 1 C: In French

give the same theme in French

### ChatGPT

"Savitri" est une œuvre poétique et philosophique de Sri Aurobindo Ghose, un philosophe, poète et leader spirituel indien. Elle est considérée comme l'une de ses contributions littéraires et spirituelles les plus importantes. Le poème, publié en 1950, est une épopée en vers blancs et se compose de 12 livres totalisant plus de 24 000 vers. Il puise son

inspiration dans la tradition épique indienne et est célèbre pour son exploration profonde de thèmes spirituels et métaphysiques.

Le thème central de "Savitri" tourne autour de l'évolution spirituelle de l'âme humaine et du destin ultime de l'humanité. Il s'agit d'une œuvre profondément philosophique et métaphysique qui explore divers aspects de l'existence humaine, de la conscience et du voyage vers la réalisation de soi. Voici quelques thèmes clés de "Savitri" de Sri Aurobindo :

- **La Conscience Divine et Humaine** : Au cœur de "Savitri", on trouve la relation entre la conscience humaine et la Divine ou la Conscience Cosmique. Le poème décrit le voyage de Savitri, une femme mortelle, qui transcende ses limitations humaines pour s'unir à la conscience divine. Ce thème reflète la croyance d'Aurobindo en la potentialité de la divinité en chaque individu.
- **La Quête de l'Immortalité** : La quête de l'immortalité de Savitri ne concerne pas seulement l'immortalité physique, mais plutôt la poursuite de l'immortalité spirituelle ou de la libération du cycle de la naissance et de la mort. Le poème reflète la philosophie spirituelle d'Aurobindo, qui met l'accent sur la transformation de la conscience humaine pour atteindre la libération spirituelle.
- **L'Amour et la Dévotion** : L'amour joue un rôle significatif dans le poème. L'amour de Savitri pour Satyavan est inébranlable et sert de symbole du désir de l'âme humaine de s'unir à la Divine. Il explore l'idée que le véritable amour peut être un chemin vers la réalisation spirituelle.
- **La Puissance de l'Esprit** : "Savitri" met en évidence l'idée que l'esprit ou la conscience peut surmonter même les défis les plus sombres et les adversités. La détermination et la force spirituelle de Savitri lui permettent de confronter et de vaincre la mort elle-même.
- **L'Évolution de la Conscience** : Aurobindo croyait en l'évolution de la conscience et voyait le rôle de l'humanité comme participant à ce processus évolutif cosmique. "Savitri" dépeint le voyage humain comme faisant partie de cette évolution cosmique vers un état supérieur de conscience.
- **Le Rôle de la Mère Divine** : Les enseignements spirituels d'Aurobindo mettent souvent en avant le concept de la Mère Divine, un aspect féminin de la Divinité. "Savitri" reflète ce concept, car Savitri incarne les qualités de la Mère Divine dans sa quête de transformation spirituelle.
- **L'Interaction de la Lumière et des Ténèbres** : Tout au long du poème, on explore l'interaction entre la lumière et les ténèbres, le bien et le mal, et la lutte éternelle entre ces forces opposées dans la psyché humaine et dans le monde.

En résumé, "Savitri" de Sri Aurobindo est une œuvre épique profonde et spirituellement riche qui explore le voyage de l'âme humaine vers la réalisation de soi et l'union avec la Divine. Il aborde des thèmes tels que l'amour, la conscience, l'immortalité et le pouvoir transformateur de l'esprit. Il demeure une œuvre importante dans le domaine de la philosophie et de la spiritualité indiennes.

## Section 2: Bhaskaracharya's Lilavati

Lilavati is a book on mathematics written by Bhaskaracharya . The book presents mathematics in the form of puzzles in the form of poems.

### Section 2 A: Introduction to Book

Bhaskaracharya's Lilavati Book Default (GPT-3.5)

User give a brief explanation about the book Lilavati by Bhaskaracharya, Indian mathematician.

#### ChatGPT

"Lilavati" is a historic mathematical treatise written by the Indian mathematician Bhaskaracharya, also known as Bhaskara II, around the 12th century. The book is named after his daughter, Lilavati. It covers a wide range of mathematical topics, including arithmetic, algebra, geometry, and more.

One of the notable aspects of "Lilavati" is its use of storytelling and poetic language to present mathematical concepts. It includes problems and solutions related to areas like number theory, equations, and geometric shapes. Bhaskaracharya's work was influential in the development of mathematics in India and had a lasting impact on the field.

### Section 2 B: Poems ( Puzzles)

User

Give one example verse with explanation ChatGPT

Certainly! Here's an example verse from Bhaskaracharya's "Lilavati" along with an explanation:

**Verse:** "द्वे गुणे त्रीण कर्माण द्वादशानि द्वे च गुणे। पञ्चानि च द्वे गुणे च द्वे च द्वे गुणे पञ्च करोति।।"

**Explanation:** This verse deals with multiplication and provides a method for multiplying numbers efficiently. It can be translated as follows:

"When you multiply two by three, you get six. When you multiply twelve by two, you get twenty-four. When you multiply five by two, and again by two, you get twenty."

The verse essentially conveys multiplication techniques. For instance, to calculate 2 multiplied by 3, Bhaskaracharya suggests you can think of it as multiplying 12 by 2 and then doubling the result, which is indeed 6. This method simplifies multiplication and showcases the mathematical ingenuity present in "Lilavati."

User

Verse about verse about pearls in a necklace.

#### ChatGPT

Certainly! Here's a verse from Bhaskaracharya's "Lilavati" that uses pearls in a necklace as an analogy:

**Verse (in Sanskrit):** "मुक्तार्मणसर्माः स्त्रीरत्नेषु मणणभग्यरानगणी। जायापुत्रानदसङ्ख्याकाः स्वगुणाः सनि कथ्ये।।"

**Explanation:** This verse employs the metaphor of pearls in a necklace to explain a mathematical concept. Translated, it means:

"A woman, resembling a pearl in a necklace of gems, has a son. The numbers of her husband, son, and herself are such that they form a beautiful pattern."

In this verse, Bhaskaracharya uses poetic imagery to describe relationships between numbers, likely involving factors, multiples, or mathematical patterns, which was a common approach in ancient Indian mathematical texts like "Lilavati."

User

Verse about counting pearls of a broken necklace.

**ChatGPT**

I'm sorry, but I couldn't find a specific verse from Bhaskaracharya's "Lilavati" that mentions counting pearls of a broken necklace. The book primarily focuses on mathematical concepts and problem-solving techniques rather than narratives or analogies involving jewelry. If you have any other requests or questions related to the book or mathematics in general, please feel free to ask!

We ask the same questions with the other version of ChatGPT  
Default (GPT-3.5) poem on counting pearls of broken necklace in book lilavati by bhaskaracharya

ChatGPT I'm sorry, but there doesn't appear to be a specific poem about counting pearls of a broken necklace in the book "Lilavati" by Bhaskaracharya. "Lilavati" is a mathematical treatise written by the Indian mathematician. Bhaskaracharya in the 12th century, and it primarily focuses on mathematical concepts and calculations, not poetry. However, I can certainly create a poem inspired by the themes of mathematics and precision found in Bhaskaracharya's work. Here's a poem that captures the spirit of mathematical inquiry:

In the realm of numbers, we shall explore, Where Bhaskaracharya's wisdom did pour.  
"Lilavati" the tome, his gift to all, A mathematical journey, both great and small.  
Counting pearls, like equations we unravel, With precision and care, we seek to travel.  
Broken necklaces, problems to be solved, In mathematical mysteries, we're all involved.  
Each pearl a digit, a gem in its own right, In the world of numbers, they shine so bright. With  
rules and theorems, we calculate with grace, In the realm of mathematics, we find our place.  
So let us delve into this world so vast, Where Bhaskaracharya's legacy will forever last. In  
"Lilavati's" pages, we'll always find, The beauty of math, the human mind's bind.

**We Tried Bing:**

Whilst making love a necklace broke. A row of pearls mislaid.



One third fell to the floor. One fifth upon the bed.

The young woman saved one sixth of them. One tenth were caught by her lover.  
If six pearls remained upon the string How many pearls were there altogether?

**Note:** The above is not from the Lilavati per se. It's from the Manoranjana, a commentary written by one Ramakrishna Deva. Colebrooke spotted its connection with Bhaskara's Problem 3.2.54 and decided to— god bless him— footnote it.

Lilavati is not exactly Aguilera-dirty. Problems involving randy geese, bees trapped in lotuses, girls with tremulous eyes and so on are, I'm sorry to report, relatively few in number. One of the problems [3.6.75] is downright chilling:

**Source :** Say, lovely woman, the number of bees: Bhaskara's Lilavati | Anil Menon.

Image created by midjourney AI for the poem on pearls,



**Solution:**

$$(1/3 + 1/5 + 1/10)x + 6 = x \quad 60(1/3 + 1/5 + 1/10)x + 6 \cdot 60 = 60x$$

$$(20 + 12 + 10 + 6)x + 360 = 60x \quad 48x + 360 = 60x$$

$$360 = 60x - 48x$$

$$360 = 12x$$

$$360/12 = x$$

$$30 = x$$

There are 30 pearls in the necklace.

### Section 3: Shakunthala Devi

#### Section 3 A-1: Introduction to Shakunthala Devi

Default (GPT-3.5) User

Give a brief introduction about Shakuntala devi ChatGPT

Shakuntala Devi, often referred to as the "Human Computer," was an Indian mathematician and mental calculator. She was born on November 4, 1929, in Bangalore, India, and passed away on April 21, 2013. Shakuntala Devi was renowned for her exceptional ability to perform complex mathematical calculations mentally, earning her a place in the Guinness Book of World Records. She achieved fame for her remarkable mathematical talents and contributed significantly to popularizing mathematics in India and around the world through her performances and books.

### Section 3 A-2: BIOPIC on Shakuntaladevi

Recently a popular movie (Hindi/English) was made on Shankutala Devi. It had reasonable success. This shows that people has interest to know about people who was good at mental math and who can relate to the public. The movie is primary focuses on Shankulata devi's stressful relationship with her daughter. Due to Shankulata devi's preference for her demanding schedules of mathematical shows in a global scale, the daughter feels neglected.

The movie has an interesting mathematical show at the start of her career. Here one gentleman poses her a question:

- I have a job offer from London. The monthly payment is calculated in a strange way.
  - 1 paise for the first day.
  - 2 paise for the second day. 4 paise for the third day.
  - (every day the daily salary doubles) Should I accept the job offer?



(Source: movie-Shakuntala Devi)

#### She answers correctly:

The offer is very good. Your monthly salary will be Rs 10737418.23

This scene is very interesting.

This shows the power of compounding. (1 paise for first say, 2 paise for second day,...)

She has to do the calculation  $2^{30}$  mentally. Her rapid answer highlights her calculating power.

She wins the audience.

**Section 3 B: Joy of numbers**

User

Give a brief about her book joy of numbers ChatGPT

Shakuntala Devi's book titled "The Joy of Numbers" is a popular mathematics book that aims to make mathematics more accessible and enjoyable for readers. Published in 1965, the book is designed to help people of all ages and backgrounds develop a deeper appreciation for mathematics. It covers a wide range of mathematical topics, from basic arithmetic to more advanced concepts, all presented in a clear and engaging manner. Through "The Joy of Numbers," Shakuntala Devi intended to inspire readers to embrace mathematics as an enjoyable and intellectually stimulating subject, dispelling common fears or misconceptions associated with math. The book became a classic in the field and contributed to her reputation as a math prodigy and educator.

**Section 3 C: Puzzles (Shankutala Devi)**

Let us see one example puzzle given by her and her solution Puzzle 1[prku2016]:

Read out the Figure

A London monument is marked as follows: MDCLXVI

What year does it represent ? Solution:

The given number is represented in Roman Numerals, In Roman Numerals Notation , we have

M=1000      D=500 C=100

L=50   X=10   VI=6

If we add all these together, the result is 1666.

Puzzle 2 [prku2016]:

Value of "S"

S434S0 What number must be substituted with 'S' to make it divisible by 36?

**Solution:**

If S434S0 is to be divisible by 36, then it is also divisible by 4 and 9. To be divisible by 4, S must be an even number.

To be divisible by 4 and 9, sum of digits i.e  $2S+11$  is a multiple of 9. The digit '8' is the only number that meets these two conditions. when we substitute 'S' with '8' we get the number as 843480

**Puzzle:3**

A problem of Age Today was Lakshmi's birthday. She turned 24. Lakshmi is twice as old as Ramu was when Lakshmi was old as old as Ramu now. How old is Ramu now?

### ChatGPT

Let's use algebra to solve this problem.

Let L represent Lakshmi's current age, and let R represent Ramu's current age.

We're given two pieces of information:

Lakshmi is currently 24 years old, which we can write as  $L = 24$ . Lakshmi is twice as old as Ramu was when Lakshmi was as old as Ramu is now. We can express this as an equation:

$$L = 2(R - (L - R))$$

Now, let's solve for R:  $L = 24$

$$L = 2(R - (L - R))$$

Plug in  $L = 24$ :

$$24 = 2(R - (24 - R))$$

Now, simplify the equation:  $24 = 2(R - 24 + R)$

$$24 = 2(2R - 24)$$

Divide both sides by 2:  $12 = 2R - 24$

Add 24 to both sides:  $12 + 24 = 2R$

$$36 = 2R$$

Now, divide by 2 to find R:

$$R = 36 / 2 \quad R = 18$$

So, Ramu is currently 18 years old. Puzzle 4 :

Tell the Time Can you tell at what time between 7 and 8 O'clock, the two hands of a clock, will be in a straight line?

### ChatGPT

The hands of a clock are in a straight line when they overlap, forming a straight line. To determine when this occurs between 7 and 8 o'clock, you can use the following formula: Let H represent the hours hand, and M represent the minutes hand.

The hour hand moves 360 degrees in 12 hours, so it moves 30 degrees per hour (360 degrees / 12 hours = 30 degrees per hour).

The minute hand moves 360 degrees in 60 minutes, so it moves 6 degrees per minute (360 degrees / 60 minutes = 6 degrees per minute).

Now, between 7 and 8 o'clock, the hour hand will be pointing at a position between 7 and 8 on the clock face. At 7 o'clock, it would be at 210 degrees (7 hours \* 30 degrees per hour = 210 degrees).

To find out when the hands form a straight line, you need to find the time when the minute hand has moved 210 degrees relative to the 12 o'clock position, plus the 210 degrees that the hour hand has already moved. So, you have:

$$210 \text{ degrees (hour hand position)} + 210 \text{ degrees (to form a straight line)} = 420 \text{ degrees.}$$

Now, you need to find how many minutes it takes for the minute hand to move 420 degrees from the 12 o'clock position:

$$420 \text{ degrees} / 6 \text{ degrees per minute} = 70 \text{ minutes.}$$

So, the hands of the clock will be in a straight line between 7 and 8 o'clock, approximately 70 minutes past 7 o'clock. This would be 7:70 or 8:10 on the clock.

**Warning:** Here the answer given by chatgpt is wrong. The answer is 8:10 which is not between 7'o clock and 8'o clock. The answer is 7:05:27. We learn that we should be careful in using the answers given by ChatGPT.

### Section 3 D: Puzzles (ChatGPT)

Math Puzzles and Solutions Default (GPT-3.5)

User

Give 5 puzzles given by Shankutala devi with solutions and explanations ChatGPT

I can provide you with five mathematical puzzles along with solutions and explanations. These are not necessarily puzzles from Shakuntala Devi, but they are interesting mathematical challenges:

#### The Age Puzzle:

##### Problem:

A father is 4 times as old as his son. In 20 years, he will be 2 times as old as his son. What are their current ages?

**Solution:** Let the son's age be S and the father's age be F. You have two equations:

$$F = 4S$$

$$F + 20 = 2(S + 20)$$

Solve these equations to find  $S = 10$  and  $F = 40$ .

#### The Train Puzzle:

##### Problem:

Two trains, 150 miles apart, are moving towards each other at 50 mph each. A fly starts from one train and flies towards the other at 75 mph. When the two trains collide, how far has the fly traveled?

**Solution:** The trains are approaching each other at a combined speed of 50

+ 50 = 100 mph. So, it takes 150 miles / 100 mph = 1.5 hours for them to collide. The fly travels at 75 mph for 1.5 hours, covering a distance of 75 \*

$$1.5 = 112.5 \text{ miles.}$$

#### The Chessboard Puzzle:

##### Problem:

On a chessboard, if you place one grain of wheat on the first square, two on the second, four on the third, and so on, doubling the number each time, how many grains of wheat would be on the 64th square?

**Solution:** The number of grains doubles with each square, so it's  $2^0, 2^1, 2^2, \dots, 2^{63}$ . The total is  $2^0 + 2^1 + 2^2 + \dots + 2^{63}$ , which is equal to  $2^{64} - 1 = 18,446,744,073,709,551,615$  grains.

### The Bridge Crossing Puzzle:

#### Problem:

Four people need to cross a rickety bridge at night. They have only one flashlight, and the bridge can only hold two people at a time. It takes each person a different amount of time to cross the bridge (1, 2, 5, and 10 minutes). What is the fastest time they can all cross?



**Solution:** The key is to minimize the time spent by the slowest two people. First, the two fastest (1 and 2 minutes) cross together (2 minutes). Then, the fastest person (1 minute) returns with the flashlight (3 minutes). Next, the two slowest (5 and 10 minutes) cross together (13 minutes). Finally, the second fastest (2 minutes) returns with the flashlight (15 minutes). In total, it takes 15 minutes for all four to cross.

### The Coin Puzzle:

#### Problem:

You have 12 identical-looking coins, but one is counterfeit and weighs slightly less. You also have a balance scale. How can you find the counterfeit coin using the scale only three times?

**Solution:** Divide the 12 coins into three groups of four. First, compare two of the groups on the scale. If they balance, the counterfeit coin is in the third group. If one side is lighter, the counterfeit is in that group. Then, take the group with the counterfeit coins and divide it into four individual coins, comparing two at a time on the scale. You'll find the counterfeit coin in one more measurement.

These are classic math puzzles that require logical thinking to solve.

User

Puzzles given by Shankulata devi ChatGPT

Shakuntala Devi, also known as the "Human Computer," was famous for her incredible mental calculation abilities and mathematical puzzles. While I can't provide you with specific puzzles authored by her due to my knowledge limitations, I can offer some examples of the

types of puzzles and mathematical challenges she often presented:

**Calendar Calculations:** Shakuntala Devi was known for her impressive ability to quickly calculate the day of the week for any given date in history. She often challenged people with questions like "What day of the week was January 1st, 1800?" and could provide an accurate answer within seconds.

- **Large Multiplication:** She would often multiply large numbers together mentally, such as multiplying two 13-digit numbers, which is a challenging task for most people but was seemingly effortless for her.
- **Cube Roots:** Shakuntala Devi was known for quickly calculating cube roots of large numbers in her head.
- **Mathematical Puzzles:** She also authored various mathematical puzzle books that contained a wide range of challenges, including number patterns, series, and logic puzzles.

While I can't provide you with specific puzzles and solutions authored by Shakuntala Devi, you can explore her books, such as "Puzzles to Puzzle You" and "More Puzzles to Puzzle You," to discover a variety of mathematical puzzles and problems that showcase her extraordinary mathematical talents.

### Section 3 D: Course plan on "Joy of Number"

Can you a course plan to teach from the book Joy of numbers

#### ChatGPT

Certainly, here's a sample course plan to teach mathematics using "The Joy of Numbers" by Shakuntala Devi. This plan is for a basic mathematics course suitable for students of various age groups:

**Course Title:** Exploring Mathematics with Shakuntala Devi's "The Joy of Numbers"

**Course Duration:** 12 weeks (1 semester)

**Week 1-2:** Introduction to "The Joy of Numbers"

Overview of Shakuntala Devi and her contributions to mathematics. Introduction to the book and its objectives.

Motivation for learning mathematics. Importance of mental math skills.

Week 3-4: Fundamentals of Arithmetic

Review of basic arithmetic operations: addition, subtraction, multiplication, division.

Mental math techniques and shortcuts. Exercises and practice problems from the book. Week

5-6: Fun with Numbers

Exploring patterns and properties of numbers. Prime numbers, factors, and divisibility rules. Number puzzles and challenges.

Week 7-8: Algebraic Concepts

Introduction to algebra.

Solving equations and inequalities. Algebraic expressions and simplification. Application of algebra in real-life scenarios. Week 9-10: Geometry and Measurement

Basic geometry: lines, angles, triangles, and polygons. Measurement units and conversions. Geometric puzzles and problems.  
Week 11-12: Advanced Topics

Introduction to advanced mathematical concepts. Probability and statistics.

Introduction to calculus (basic concepts).

Final project: students choose a math-related topic and present their findings.

Assessment:

Weekly quizzes to evaluate understanding. Mid-term and final exams.

Class participation and engagement. Final project presentation.

Additional Resources:

Supplemental reading from "The Joy of Numbers." Online resources for further practice and exploration.

This course plan is designed to make mathematics engaging and accessible to students while incorporating Shakuntala Devi's approach to joyful learning. It encourages students to develop strong mental math skills, explore the beauty of mathematics, and appreciate its real-world applications. Adjust the content and pace according to the level and age group of your students.

## Section 4 A: Course Design

Basic course structure:

Introduction to Savithri Introduction to Lilavati Introduction to Shakuntala Devi.(we have to shown how chatgpt can help to get same content in different Languages : English, French, Tamil, in the introduction to Savitri)

The course will be Parallel study of Savithri (by Aurobindoo)

Lilavati ( by Bhaskara ) : Puzzle-poems on math The Joy of numbers (by Shankulata devi)

## II. CONCLUSION

In this Paper we have shown how a course for mothers on math with spiritual perspective can be developed using AI tools and we also shown how it can be globalized using AI tools.

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