

# SOLUTIONS TO PROBLEM SET 1

## STANFORD UNIVERSITY

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#### Solutions to Problem Set 1: Stanford University

**Question 1:** Prove that the equation  $x^2 - 2y^2 = 1$  has infinitely many solutions in positive integers.

**Answer:** Let  $x = u^2 + v^2$  and  $y = uv$ . Then  $x^2 - 2y^2 = (u^2 + v^2)^2 - 2(uv)^2 = (u^2 - v^2)^2$ . Thus,  $x^2 - 2y^2$  is a perfect square, and hence has infinitely many solutions in positive integers.

**Question 2:** Find all the solutions to the equation  $x^2 + y^2 = 100$ .

**Answer:** The solutions are  $(6, 8), (8, 6), (0, 10), (10, 0), (1, 9), (9, 1), (2, 8), (8, 2), (3, 7), (7, 3), (4, 6), (6, 4), (5, 5)$ .

**Question 3:** Prove that the sum of two squares is never a perfect cube.

**Answer:** Suppose that the sum of two squares is a perfect cube. Then we can write  $x^2 + y^2 = z^3$ . But the cube of an odd number is odd, and the sum of two squares is even. Therefore,  $x^2 + y^2$  cannot be a perfect cube.

**Question 4:** Find all the positive integer solutions to the equation  $x^2 + y^2 + z^2 = 100$ .

**Answer:** The solutions are  $(6, 8, 10), (10, 6, 8), (8, 10, 6), (0, 10, 10), (10, 0, 10), (10, 10, 0), (1, 9, 10), (9, 1, 10), (10, 9, 1), (2, 8, 10), (8, 2, 10), (10, 8, 2), (3, 7, 10), (7, 3, 10), (10, 7, 3), (4, 6, 10), (6, 4, 10), (10, 6, 4), (5, 5, 10), (10, 5, 5)$ .

**Question 5:** Prove that the equation  $x^2 + y^2 - z^2 = 1$  has no solutions in positive integers.

**Answer:** Suppose that the equation  $x^2 + y^2 - z^2 = 1$  has a solution in positive integers. Then we can write  $x^2 + y^2 = z^2 + 1$ . But the sum of two squares is never a perfect square, and the sum of a perfect square and 1 is always odd. Therefore,  $x^2 + y^2 - z^2$  cannot be equal to 1.

## **Temple of Elemental Evil Guide**

### **1. What is the Temple of Elemental Evil?**

The Temple of Elemental Evil is a classic Dungeons & Dragons module that has been re-released several times over the decades. It was originally published in 1985 and is considered one of the most challenging adventures ever created. The module is set in the World of Greyhawk and follows a group of adventurers as they investigate a mysterious temple that is rumored to be the source of evil power.

### **2. What are the challenges of the Temple of Elemental Evil?**

The Temple of Elemental Evil is a very difficult module, even for experienced players. The module is filled with traps, puzzles, and monsters, and the final encounter is one of the most difficult in all of D&D. In addition, the module is very non-linear, and it is easy for players to get lost or sidetracked.

### **3. How can I prepare for the Temple of Elemental Evil?**

There are a few things you can do to prepare for the Temple of Elemental Evil. First, make sure that you have a strong party of characters. A party of six to eight characters is ideal. Second, make sure that your characters are well-equipped. The module is filled with traps, so it is important to have characters who are skilled in disarming them. Third, make sure that you have a plan. The module is very non-linear, so it is important to have a plan of what you want to do and where you want to go.

### **4. What are some tips for playing the Temple of Elemental Evil?**

Here are a few tips for playing the Temple of Elemental Evil: \_\_\_\_\_

- Be careful of traps. The module is filled with traps, so it is important to be careful when exploring.
- Be patient. The module is very large and complex, so it is important to be patient when playing through it.
- Don't be afraid to ask for help. If you are stuck, don't be afraid to ask for help from other players or from the DM.

## 5. Where can I find more information about the Temple of Elemental Evil?

There are a few places where you can find more information about the Temple of Elemental Evil. The module is available for purchase from Wizards of the Coast. You can also find information about the module on the official Dungeons & Dragons website.

**What is the unemployed millionaire about?** The Unemployed Millionaire (2009) takes you on a transformative journey from financial despair to self-made prosperity. It provides actionable insights and strategies for aspiring entrepreneurs, emphasizing the significance of mindset, persistence, and smart decisions in achieving financial freedom.

**What is the primary message of The Model Millionaire?** The story's focus on the ideas of the perception of class, beauty, wealth, and generosity makes for a tale with a strong lesson for readers: that beauty is in the eye of the beholder and that wealth and generosity are not always inextricably linked.

**What is the missing millionaire story?** In December 1919, Ambrose Small, the mercurial owner of the Grand Opera House in Toronto, closed a deal to sell his network of Ontario theatres, deposited a million-dollar cheque in his bank account, and was never seen again.

**What is the instant millionaire about?** Known as the “Instant Millionaire” because he grasped the true secret of making a fortune overnight, this sage mentors a young man with frustrated dreams and nine-to-five disappointments. In practical, ready-to-implement lessons, he reveals the ideas and actions that can give anyone the mentality of a millionaire.

**What is The Model Millionaire about in short?** Oscar Wilde's "The Model Millionaire" is a short story that revolves around the plight of Hughie Erskine, a charming but penniless and jobless young man, who wants to marry Laura Merton. Though the two love each other, Laura's father will consent to the match only if Hughie can raise £10,000.

**What is the millionaire mind about?** The Millionaire Mind is the more thoughtful and insightful look into the psychology of millionaires, the 'soft' factors in terms of attitudes and beliefs that have made these people so successful. The research base was broadened to encompass an even wealthier set of millionaires (including many 'decamillionaires').

**What is the plot of Quit Like a Millionaire?** Brief summary Quit Like a Millionaire by Kristy Shen and Bryce Leung is a personal finance guide offering unconventional yet proven methods to retire early and build wealth quickly by adopting a frugal lifestyle, investing in real estate, and diversifying income streams.

**How much is Russell Simmons worth?** He has promoted veganism and a yoga lifestyle, and published books on lifestyle, health, and entrepreneurship. Simmons' net worth was estimated at \$340 million in 2011. New York City, U.S.

**Does Phat Farm still exist?** In 2004, Phat Farm was sold to the Kellwood Company for a reported \$140 million. Despite the change in ownership, the brand continued to develop and remained popular with hip-hop fans and urban fashion enthusiasts until 2010, when the excess of early 2000's popular culture became passé.

**How is Gene Simmons so rich?** According to Celebrity Net Worth, Gene Simmons is worth a staggering \$400 million. ??He's earned that from his hugely successful music career with KISS, his business ventures and his work as a media personality over the years.

**Does Kimora Lee Simmons still have a clothing line?** And now, one of the most popular brands from the decade is also making a comeback. Today, Kimora Lee Simmons officially relaunches Baby Phat—the 2000s label that became a hip-hop sensation, not to mention a worldwide billion-dollar empire at its peak, complete with fashion, jewelry, and fragrances (remember Goddess?).

**Does Jay Z still own Rocawear?** In March 2007, Jay-Z sold the rights to the Rocawear brand to Iconix Brand Group for \$204 million. Jay-Z retained his stake in the company and continued to oversee the marketing, licensing, and product development.

**How much money did Phat Farm make?** He built an entire lifestyle around this genre of music, and launched the Phat Farm label with the tagline: "Classic American Flava." Total annual turnover for Phat Fashions, including the Baby Phat label, currently is roughly \$750 million at retail.

**Who is the richest rock star?** Paul McCartney claims the title of the richest rock star in the world with a worth of \$1.2 Billion. We wouldn't expect any wild destruction stories from a legend like McCartney, but he did get busted with a bit of Mary Jane back in the 80s.

**How much is Bon Jovi worth?** What is Jon Bon Jovi's net worth in 2024? According to Celebrity Net Worth, Bon Jovi is worth \$410 million dollars. He made the bulk of his money through his entertainment empire, which controls all things Bon Jovi—the recordings, touring and merchandising.

**How much is Cher's estate worth?** Cher's estimated Net Worth is \$360 million, while Elijah Blue's net worth is around \$100,000.

[temple of elemental evil guide, the unemployed millionaire escape the rat race fire your boss and live life on your terms by morris matt author 2009 hardcover, super rich a guide to having it all by russell simmons](#)

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