

# History of Mathematics: An Exercise in Strengths Consistency–Harmony–Achiever–Intellection–Responsibility

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## 1. Introduction

As a leader in strengths-based education, Lee University encourages each new student, since fall 2003, to take the Gallup StrengthsFinder to determine their top 5 signature themes (out of a possible 34). At Lee, the syllabus for the History of Mathematics course calls for students to write a paper on a mathematician. In the fall 2009, as an added dimension, students were asked to critically think about and incorporate the strengths they believe that mathematician may have. Each student was required to compare and contrast his or her strengths with those of the mathematician. This was done with the hope that, as aspiring mathematicians, they may be inspired to persevere to make their mark in the history of mathematics, since math is still evolving. In this presentation, through an exercise in strengths, I share 3 examples of how students were inspired by each mathematician.

## 2. Example 1: Laura German on Euclid

Laura’s top 5 strengths themes are: Discipline, Analytical, Deliberative, Significance, and Restorative. She was a Mathematics Education Major who graduated from Lee University in May 2011.

Laura felt there was something in Euclid’s personality that pushed him toward his great achievements. Euclid would not strive so hard to accomplish so much without having such a truly amazing work ethic, which was probably developed through the strengths of arranger, discipline, significance, intellection, and learner.

His top strength was without a doubt arranger because of the immaculate way he was able to organize particularly the Elements, as well as all his other writings. Euclid figured out how the enormous amount of information that comprised his most prestigious work fit together to produce the “maximum productivity” of his book (Gallup, Inc.). He must have done a pretty great job too, because he controlled the teachings of geometry for more than 2200 years (Bell 299).

Not only was Euclid a wonderful organizer, he also had a great deal of discipline. There could not be any other way to explain his ability to focus on the same task for the amount of time it would have taken to complete a tome such as the Elements. Structure and a routine would have been a definite requirement (Gallup, Inc.). “This has been something I find myself needing as well, because without designed structure my plans fall apart and nothing gets finished.”

Another equally important strong suit for Euclid would have been significance. Why else would he have worked so diligently on all his volumes? He had a burning desire to be remembered for his work (Gallup, Inc.), which “in a way I also share. I want to really make a difference, even if only in one person’s life, but not necessarily by facts alone.”

Two additional strengths, which were likely the bottom two, probably still had an effect on Euclid. They were intellection and learner. It would have been impossible to compose all the books he did had he not been able to understand the material. He was likely pensive and pleased with intelligent dialog. Moreover, the progression of obtaining knowledge was more exhilarating for him than simply producing an outcome (Gallup, Inc.). Euclid’s strengths revealed him to be an exceptional scholar.

Laura concluded that Euclid was a complex man and much information could be inferred about him simply from all his written contributions. It was understood why he was important enough for the history books. His Elements alone would have been more than sufficient, but there would be such an inadequate amount of mathematical knowledge without him! He was responsible for organizing and helping preserve all the previous information recorded by those who came before him, but that was not enough for him. He even managed to contribute some of his own original ideas too. “It was inspiring to see just how much one person was able to do, especially one that shared a couple of my strengths!”

## 2.1. References

1. Bell, E. T. *Men of Mathematics*. New York: Simon and Schuster, Inc., 1937.
2. Gallup, Inc. Strengths Quest. 2000. 18 November 2009  
<https://www.strengthsquest.com>.

## 3. Example 2: Carrie Ivester on Euler

Carrie’s top 5 strengths themes are: Developer, Includer, Adaptability, Positivity, and Activator. She was a Chemistry Major and a Mathematics Minor who graduated from Lee University in May 2010. She now teaches in High School while pursuing a Masters in Education.

“I believe Euler and I share the strength of being an activator.” Euler has written so many works and I think it is due to the strength of being an activator. Euler had to know that action is the best advice for learning and that is a characteristic for this strength. He put his name out there and followed his dream from such a young age. “Restorative, according to me, would be Euler’s first strength.” Anyone who has read about Euler would know that he loved to solve problems. Problems were Euler’s gift even outside of mathematics; he helped the King in Prussia with problems dealing with the government. Euler had to have felt an adrenalin rush

when it came to solving problems, because when reading about his life it seemed that all he was concerned with was solving problems. “Euler also without a doubt has the analytical strength.” This strength comes from all the problems he has solved like the Königsberg bridge problem. He digs deeply to find the root to the problems and determines the right questions. “Competition is also a strength I see in Euler.” He entered so many competitions and even though he was denied because he was young, it did not stop him from entering in the following year. No one could even compare Euler to another mathematician at the time except Bernoulli which Euler succeeded. This is due to Euler’s competitive spirit; he needed the Bernoulli family to get where he was going to follow his dream. Lastly, learner had to be one of his strengths, because plainly he loved to learn. Bradley states in his book, “One of his [Euler’s] most admirable qualities was a willingness to explain how he did mathematics, how he made discoveries” (22). He wanted others to learn and see what he had seen. At a young age he took all the classes he could and this was before he became interested in mathematics. Thereafter, he would read and be interested in just learning and the knowledge he could gain from other people. His whole life, seventy-six years, was all about learning and writing about all of what he learned. “Euler was clearly having fun, pursuing the game for its own enjoyment, and exhibiting a pervasive confidence that his quest would be successful” (Dunham xvi). Learning for Euler was not about receiving the prize or the best position; learning for Euler was about gaining and sharing knowledge and gaining more knowledge. “Although Euler did not take the StrengthsFinder Quest, I know without a doubt these would be his top five strengths.” Carrie concludes that “Euler is one of the greatest mathematicians, and without his works, I would not be able to explore the science of mathematics. My interest is in science and even though Euler was a mathematician, I have dealt with his works on a regular basis. The thought of not having ideas that Euler has observed or calculated is not imaginable.”

### 3.1. References

1. Bradley, Robert E. *Euler at 300: An Appreciation*. 5 vol Washington, DC: The Mathematical Association of America, 2007.
2. Dunham, William. *Euler: The Master of Us All*. Washington, DC: The Mathematical Association of America, 1999.

## 4. Example 3: Michael Yokosuk on Cantor

Michael’s top 5 strengths themes are: Competition, Includer, Restorative, Learner, and Discipline. Michael is a Mathematics Major. He is still attending Lee University. “I believe that Georg Cantor had several strengths that were in his favor. I feel that he had several strengths that I also share. First, I feel as if Cantor was a type of “includer”.” Cantor often wanted to include people in his mathematical findings. He continually had correspondents to whom he would write about his innovations and papers. He had several correspondents, including Dedekind, Mittag-Leffler, and Jourdain.

“I believe that Cantor was also a ‘learner’.” He was a person who had a great desire to learn and wanted to continuously improve. Cantor was very accepting of new challenges. For example, his contemporaries Dirichlet, Lipschitz, Riemann, and Heine proposed a problem to Cantor. The problem was to prove or disprove the uniqueness of the representation of a function by

trigonometric series. He solved this problem in 1869. He also worked for years on certain problems. He would often think he had the correct proof, but he would often times find an error or mistake in that proof the very next day. He also worked continuously on the Continuum Hypothesis, though he never found a proof for it.

“I also believe that Cantor had a “restorative” quality. I do believe this only applies to certain aspects of his life.” He was given a problem and wouldn’t stop working on it until he solved it. He also resolved many problems in his personal life, along with in his mathematical endeavors. At one time, he and Dedekind were good friends. They had a falling out when Dedekind rejected his offer of a job. Eventually, however, they rekindled their friendship. Cantor also had a stressful relationship with Kronecker. Kronecker rebuked Cantor’s works on set theory. Cantor eventually invited Kronecker to a meeting, in which they settled their differences. However, other parts of his life were not represented by the restorative quality. He never truly could get over his troubles of depression, though he was later thought to be diagnosed with bi-polar disorder.

“As an aspiring mathematician, these three similarities between Cantor and me are very motivating. As an includer, I hope to surround myself with brilliant minds of our generation. By engaging in mathematical discussions and conversations, I can only become more interested in finding solutions. I am also a competitor, as I am an athlete. I always want to win. Therefore, I will try and find a solution to each problem presented before everyone else. As a learner, I would hope to find problems to solve and use my competitiveness to beat everyone else to their solutions. As a restorative person, I would look over my work many times in order to ensure clarity and correct work.”