Instructions:
1. Only members are allowed to join.
2. Merit Slips will be awarded only if the questions are answered correctly with detailed steps.
3. You can join this activity by sending your answer to smccmathclub2324@gmail.com on or before the deadline.
4. Please state clearly your name, class, class number and student ID in the email.
5. Each student should only hand in 1 entry. The answer must be sent by the school webmail account. Sending answers for another student is not allowed.
6. Any student who violates the above rules will be disqualified.

Questions for Junior Form students (F1-3)

1. Find the unit digit of the sum of $11^6 + 12^6 + 13^6 + \ldots + 2023^6$

2. When Mary opens a book, the product of the page numbers on the open pages is 506. Find the sum of the two page numbers.

3. Starting with 1, Tom lists the counting numbers in order but omits all those that use the digit 9. What is the 300th number on his list?

4. John, Charlie and Chris each add the lengths of two sides of the same triangle correctly. They get 18 cm, 29 cm and 25 cm respectively. Find the perimeter of the triangle in cm.

5. A square is inscribed inside a circle of circumference 6π cm. Find the perimeter of the square in cm. (Hint: inscribed= largest possible square that can be placed inside the circle) (Circumference=$2\pi r$) (Pyth. theorem: $a^2 + b^2 = c^2$)

Questions for Senior Form students (F4-6)

1. A function, defined on the set of positive integers, is such that $f\ (xy)\ =\ f(x) + f(y)$ for all x and y. It is known that $f\ (10)\ =\ 14$ and $f\ (40)\ =\ 20$. What is the value of $f\ (500)$?

2. In a game, participants have to fill in three squares from left to right. Both the first and the third squares are to be filled by a (possibly the same) positive integer not exceeding 10, while the second square is to be filled by +, -, ×, or ÷. The participant can win a prize if the resulting expression is equal to a positive integer. In how many different ways can one win a prize?

3. On a plane, there are a parabola, a circle, and a straight line. At most how many points of intersection can they form? (Draw the diagram if you can)

4. Let a_k equal the integer closest to $\sqrt{k}$. For example, $a_1 = a_2 = 1$ since $\sqrt{1} = 1$ and $\sqrt{2} \approx 1.41$ and $a_3 = 2$ since $\sqrt{3} \approx 1.73$. Find the sum of $\frac{1}{a_1} + \frac{1}{a_2} + \frac{1}{a_3} + \frac{1}{a_4} + \cdots + \frac{1}{a_{2008}} + \frac{1}{a_{2009}} + \frac{1}{a_{2010}}$.

5. Radford and Peter ran a race, during which they both ran at a constant speed. Radford began the race 30 m ahead of Peter. After 3 minutes, Peter was 18 m ahead of Radford. Peter won the race exactly 7 minutes after it began. How far from the finish line was Radford when Peter won?