Practice resources in preparation for Mani-Cretin mathematics examinations and for general development of problem-solving skills
Written by Kevin Shi, director of MCMA Global

1. Preparation for MCME (Difficulty level 1-2 out of 10):
   a. https://artofproblemsolving.com/wiki/index.php/AMC_8_Problems_and_Solutions
      (AMC8/AJHSME, difficulty level 1-2)
   b. https://mathleague.com/ml-files/grade_8_2018-19_contest.pdf
      (Mathleague.com, difficulty level 1-2)
   c. https://moems.org/wp-content/uploads/2021/10/SampleM.pdf
      (MOEMS, difficulty level 1)

2. Preparation for MCOMT (Difficulty level 2-4 out of 10):
   a. https://artofproblemsolving.com/wiki/index.php/AMC_10_Problems_and_Solutions
      https://artofproblemsolving.com/wiki/index.php/AMC_12_Problems_and_Solutions
      (AMC10/12/AHSME, difficulty level 1-6)
   b. http://www.360doc.com/content/18/0911/10/47813312_785609343.shtml
      (The Chinese National High-School Mathematics Contest, Round 1 Part 1, difficulty level 3-4)

3. Preparation for MCIME (Difficulty level 3-6 out of 10):
   a. https://artofproblemsolving.com/wiki/index.php?title=AIME_Problems_and_Solutions
      (AIME, difficulty level 3-7)
   b. http://www.360doc.com/content/18/0911/10/47813312_785609343.shtml
      (The Chinese National High-School Mathematics Contest, Round 1 Part 2, difficulty level 4-7)
   c. https://www.usamts.org/Problems/U_Problems.php
      (USAMTS, level 3-6)

4. Preparation for the Mani-Cretin Mathematical Marathon (Difficulty level 1-2 out of 10):
   a. https://www.mathcounts.org/resources/past-competitions
      (Mathcounts, 1-3.5)

5. Past problems (MCOMT):

   1. 2021 Fall MCOMT Problem 1:

      Solve for all positive integers x other than 1 such that $x^2 + 2$ is divisible by $2x + 1$ and x is not divisible by 2.

   2. 2022 Spring MCOMT Mock Problem 5:

      A recurrence relation is such that $x_n = \frac{x_{n-2}+x_{n-1}}{(x_{n-2})(x_{n-1})\log_{x_{n-2}} x_{n-1}} + 1$. If $x_{2022} = 2$, calculate

      $$\prod_{i=2018}^{2022} x_i$$

      in terms of x_{2021}.