

The Nine Chapters on the Mathematical Art Contest (NCC) 2009 ©

Time: 1 hour and 15 minutes.

Calculators are permitted. You are also allowed to use rulers, compasses, and graph paper. You will be given scrap paper for working.

This is a fill-in-the-blank test. **Do not write anything on the answer sheet other than the answers and your name; use the scrap paper for your work.** If there are many ways to write the right answer, then any way is fine (for example, $\frac{1}{2}$ and 0.5). However, if you use decimals, make sure you make it clear when the decimal is repeated forever (don't write 0.3333; indicate that the 3's go on forever). Also, your answers should be in simplest form, so if you use fractions make sure they are reduced.

You will be given 3 question sheets, each with 8 questions, of difficulty based on your grade:

- Grades 3 and 4 will get question sheets A, B, and C.
- Grades 5 and 6 will get question sheets B, C, and D.
- Grades 7, 8, 9 and 10 will get question sheets C, D, and E.

Each question is worth 5 points, for a maximum of 120. **There is no penalty for a wrong answer.**

Diagrams are not necessarily drawn to scale; they are merely intended to help you understand the question.

Do not look at the questions until you're instructed to do so. After you start, you will have one hour and 15 minutes. Make sure you write your NAME on each and every page of the answer sheets. Fill in your answers in the answer fields below the corresponding questions, and hand in all the sheets in this package.

Questions, solutions, results, and awards will be posted on the Grand River Chinese School website <http://grandriverchineseschool.com/default.aspx> once the contests are marked.

NCC '09 is intended to be a warm-up for math contests that should be held at your regular school during the year. They can be found at the following websites:

- <http://cemc.uwaterloo.ca/contests/contests.html>
- <http://www.mathematica.ca/eng/index.htm>