

# CWSF 2013 - Lethbridge, Alberta



## Helen Czapor

### Of Prime Importance - Testing For Prime And Composite Numbers

**Challenge:** Discovery

**Category:** Junior

**Region:** Sudbury

**City:** Sudbury, ON

**School:** R.L. Beattie P.S.

**Abstract:** Two methods of testing integers for primality were studied and compared. First, the trial division method was improved by avoiding unnecessary divisions. I found that at best a 63% improvement was possible, but that the time needed still grew exponentially. This makes it useless for primes over 40 digits. Second, the Miller-Rabin method was shown to work well on primes of 40000 digits or more.

#### Biography

I am a grade eight student, and my favourite subjects are Math and Science. My hobbies include piano, squash, badminton, and origami. Although it is a long way off, I would someday like to have a job that involves some kind of Math or Science. My project was inspired by a quote from a famous mathematician, as well as my desire to combine math with computer programming. My advice to students that are thinking about doing a Science project would be to try to find a topic that really interests you. That way, it still feels like fun even when you are working hard.

#### Awards

#### Value

The Actuarial Foundation of Canada Award - Junior	\$500
Excellence Award - Junior - Silver Medal Sponsor: Youth Science Canada	\$300
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
<b>Total</b>	<b>\$2 800</b>