

Kwantlen Polytechnic University

Mathematics Problem of the Week

This is the last problem for this academic year. We will be back again in September with more fun math problems.



Problem number 259

Posted Monday April 13th 2015

Submit by noon, Monday April 20th 2015

Find the smallest value of n so that $n!$ ends in exactly 6 zeros.
How many zeros are at the end of $100!$?

Do not use a calculator or computer. Explain your reasoning.

Recall that

$$\begin{aligned} 1! &= 1 \\ 2! &= 2 \cdot 1 \\ 3! &= 3 \cdot 2 \cdot 1 \\ 4! &= 4 \cdot 3 \cdot 2 \cdot 1 \\ &\vdots \\ n! &= n \cdot (n-1) \cdot (n-2) \cdot \dots \cdot 2 \cdot 1 \end{aligned}$$

Submit your solution by

- emailing it to MathProblem@kpu.ca
- putting it in the MPOW box in the Math Assistance Centre on the Surrey campus (library, main floor)
- putting it in the MPOW box in the Learning Centre on the Richmond campus (located in the library)
- giving it to Lin Hammill (Surrey Fir 348) or Judy Bicep (Richmond 3335)

Be sure to include your name. In order to be eligible for the prize, KPU students should also include their student numbers. Winners names will be posted on the Problem of the Week web page. You can have the Problem of the Week emailed to you each week. Just go to the website and sign up.

Web site: <http://www.kpu.ca/mathematics-problem-week> .