

# Mathematics Problem of the Week (247)

This week's winner is:

**Matt Potma**

Contact Lin Hammill (Surrey Fir 348) or Judy Bicep (Richmond,3335) for your prize or email [MathProblem@kpu.ca](mailto:MathProblem@kpu.ca).

Also submitting correct solutions to problem 247 were:

**David Luna and Suzanne Pearce**

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## Problem 247 solution:

There are only 3 ways to cut the 13 cm sticks into lengths of 3, 4 and 5 cm:

Plan 1: 3, 5, 5

Plan 2: 4, 4, 5

Plan 3: 3,3,3,4

Let  $x$  be the number of sticks cut with plan 1,  $y$  the number cut with plan 2, and  $z$  the number cut with plan 3.

We need 13 pieces of length 3 so we need  $x + 3z = 13$  (1)

We need 13 pieces of length 4 so we need  $2y + z = 13$  (2)

We need 13 pieces of length 5 so we need  $2x + y = 13$  (3)

Solve equations (1) for  $z$  and (3) for  $y$  and substitute into (2) to obtain

$$2(13 - 2x) + \frac{1}{3}(13 - x) = 13.$$

Solve this to get  $x = 4$  and the substitute to get  $y = 5$  and  $z = 3$ .

So we cut 4 sticks into 3cm, 5cm, 5cm lengths, 5 sticks into 4cm, 4cm, 5 cm lengths and 3 sticks into 3 cm, 3 cm, 3cm, 4 cm lengths.