

Challenge 2010 Long Task 1

Counting Triangles

I made some triangles out of sticks. The sticks are all the same length.

I can make a triangle out of three sticks:



- call this (1, 1, 1).

Note 1; (4, 3, 5) = (4, 5, 3) = (5, 3, 4) = (5, 4, 3) = (3, 4, 5) = (3, 5, 4).

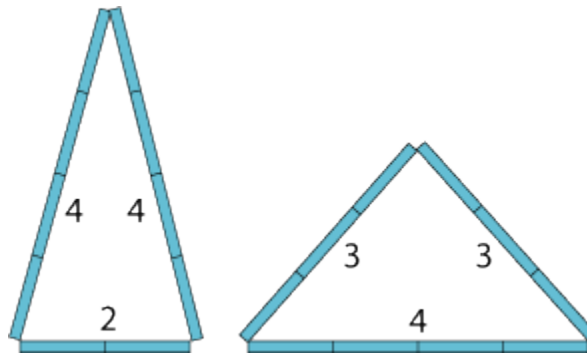
Note 2; (5, 4, 1) does not make a triangle.)

a. What about four sticks? [1 mark]

b. Five sticks? [2 marks]

c. Six sticks? [2 marks]

I can make two different triangles out of ten sticks:



d. Can you find any others? [1 mark]

e. What about triangles made from twenty sticks? [3 marks]

f. 21 sticks? g. 22 sticks? h. 23 sticks? [3 marks each]

i. Which numbers of sticks do you think make the most triangles? [2 marks]