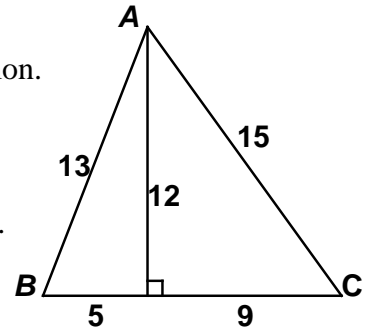


**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2014
ROUND 7 TEAM QUESTIONS**

- E) A triangle with sides whose lengths are consecutive integers and which also has an integer area is not unique, but it is very uncommon. The 3-4-5 right triangle is the first example that comes to mind. The non-right triangle with the smallest perimeter (42) and smallest area (84) is shown at the right. The triangle with the next smallest perimeter P has area A . Compute the ordered pair (P, A) .



- F) One of my favorite T-shirts says the following:

ONLY SMART PEOPLE CAN READ THIS

It deos not mtttaer in waht oredr the ltteers in a wrod are, the olny
iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset
can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is
bcuseae the bairn deos not raed ervey lteter by istlef, but the wrod as a
wlohe. Taht is the phaonmneal pweor of the hmuan mnid!

The quote (starting with It) contains 72 words and I bet you can still read it.

There are thirty five words with 3 or fewer letters, fifteen 4-letter words, twelve 5-letter words and ten words with 6 or more letters.

Without changing the order of the words or the punctuation, if the letters of each word (except for the first and last) are randomly arranged, there are many versions of this T-shirt.

The probability that all the words would be spelled correctly is $\frac{1}{2^A 3^B 5^C 7^D}$. Determine the ordered quadruple (A, B, C, D) .