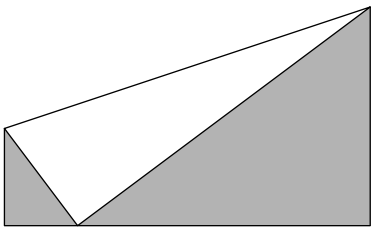
Pythagorean Paper Sprint

All-Day Sprint
Math Meet 2007
College of Charleston

You can a make a collection of three right triangles such as the one shown in the figure from any rectangular piece of paper. Hold the paper so that it is wider than it is tall, and fold the top-left corner down until it just touches the bottom edge. Then flatten it out so that the crease is straight. Pythagoras would love it, don't you think?



But, not every piece of paper you start with will produce triangles with nice measurements!

You see, I really like *whole* numbers. I started with a piece of paper whose length and width (measured in centimeters) were both two-digit, whole numbers. Moreover, when I folded it I found that the triangle on the right was a perfect 3-4-5 right triangle. (That is, 5 times the length of one leg is the same as 3 times the length of the hypotenuse and 5 times the length of the other leg is 4 times the length of the hypotenuse.) Finally, I was so pleased when I computed the area of the two shaded triangles (in square centimeters) and found that they *also* were two-digit, whole numbers!

The question you must answer is this: What were the areas of the two shaded triangles (in square centimeters)?