***Solution to the Perimeter Expressions problem***

If the smaller rectangle is placed as below (with the shorter side adjoining the larger rectangle), which is what Alison must have done, then the shape would have a perimeter of 8a+6b.

When the largest and the smallest rectangles are joined together, then the area is always 9ab and the perimeter is 10*a* + 4*b* **or** 8*a* + 6*b*.   
**If someone told you the area altogether of the two rectangles and the perimeter of the shape made from the rectangles joined together, then you can work out the lengths of the sides *a* and *b*.**

**The largest perimeter you can make using all the pieces is as follows**

A

E

C

D

B

The dimensions of the rectangles being as follows:

Rectangle A = 4*a* and 2*b*,

Rectangle B and D would both be *a* and b

Rectangle C would be 2a and 2b

Rectangle E would be 2*a* and b

The total perimeter would be

(8*a* + 4b – *a)* + (2*b)* + (4*a* + 4*b – 2a) + (2b)* + (4*a* + 2*b – a)* = 12*a* + 14*b*