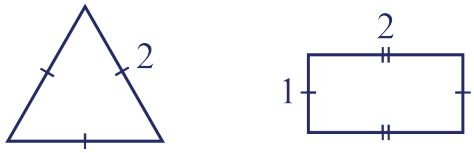
Problem of the Week

Problem B

The Long and the Short of It

Geordie drew an equilateral triangle with side length 2 and a rectangle with length 2 and width 1. He then noticed that each shape had a perimeter of 6.



(a) Geordie drew an equilateral triangle with side length 3. Can Geordie draw a rectangle that has the same perimeter as the equilateral triangle, if the side lengths of the rectangle must be whole numbers? Explain.

(b) Geordie drew equilateral triangles with side lengths 4, 5, 6, and 7. For which of these can he draw a rectangle with the same perimeter, if the side lengths of the rectangle must be whole numbers? Explain.

(c) If the side lengths of an equilateral triangle and a rectangle are all whole numbers, then:

(i) What numbers could be the perimeter of the triangle?

(ii) What numbers could be the perimeter of the rectangle?

(iii) What numbers could be the perimeter of both the triangle and the rectangle?

(iv) If the triangle and the rectangle have the same perimeter, what must be true about the side length of the triangle?