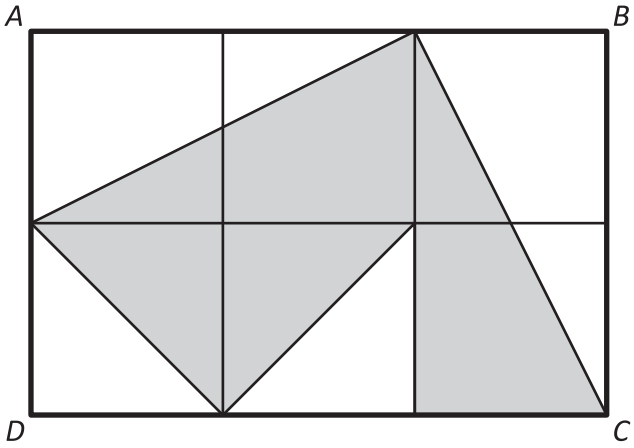
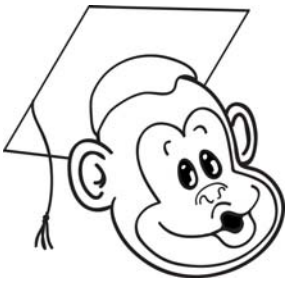
This brainteaser was supplied by the Mathematical Olympiads for Elementary and Middle Schools (www.moems.org).

Three lines cut rectangle *ABCD* into six congruent (identical) squares. The perimeter of rectangle *ABCD* is 30 cm. What is the area of the shaded region, in square centimeters?





Solution: 27 square centimeters.

The perimeter consists of ten sides of the squares. Since the perimeter is 30 cm, the side length of each square is 30 ÷ 10 = 3 cm.

Further, the gray area can be decomposed into three triangles, as shown below, each of which has an area equal to one of the six squares. (Note that the two pieces of each triangle can be configured to form a square.) Therefore, the gray area is equal to the area of three squares. The area of one square is 3^2 = 9 sq cm, so the area of three squares is 3 × 9 = 27 sq cm.