



## Problem of the Week

### Problem E

### Balloons Away!

John has just built a balloon launcher. He is using coordinates and coordinate geometry to describe the location of the balloon.

John launches a balloon from point  $D$  on the ground. The balloon follows a perfect parabolic trajectory so that it passes through the point  $A(9, 8)$ , then reaches its peak at  $E(7, 9)$ , and finally passes through a hoop located at  $B(b, 5)$  before returning to the ground at point  $C$  and bursting. The ground between  $C$  and  $D$  is flat. Determine the area of quadrilateral  $ABCD$ .

