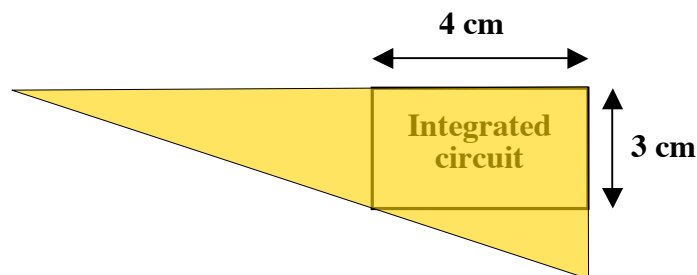


## PROBLEM

Find the line that passes through the point  $(3,4)$  that cuts off the smallest area in the first quadrant.

Solve the problem any way you can and, whether you come up with an exact or approximate solution, pay attention to the process and methods you use in solving it. Record some of your thinking about how to solve the problem, and any insights you gained by thinking about the process/methods used. Make sure to include the different approaches you tried, and which directions or methods failed to help, which seemed most helpful, and why.

Audio Works makes an excellent CD player in its Dexter, Maine facility. (The facility was formerly occupied by a shoe manufacturer.) A thin triangular piece of gold must be manufactured to cover a 3 cm by 4 cm rectangular integrated circuit. This gold triangle shields the other circuitry from the radio frequency waves emitted by the digital-to-analog converter integrated circuit. The two components must be positioned so that one corner of the integrated circuit is on the hypotenuse of the triangle, as shown in the picture.



What is the size of the right triangle that should be manufactured to minimize the costs of the gold radio frequency shield?