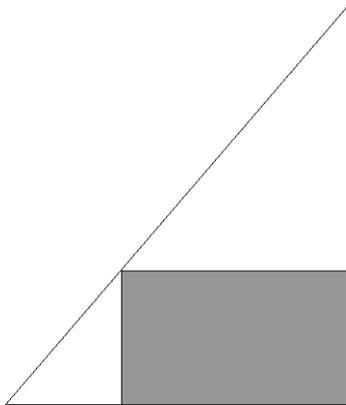


**MA104 - Differential Calculus**  
**Lesson 18: Solving Optimization Problems II**

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1. A plastic cone-shaped pod is to be made to package and hold 27 cubic centimeters of honey. Find the height and radius of the pod that will use the smallest amount of plastic.

2. A rectangle is to be inscribed in a right triangle having sides of length 6 in., 8 in., and 10 in. Find the dimensions of the rectangle with greatest area assuming the rectangle is positioned as in the figure below. Hint: The sides of similar triangles are proportional.



3. A grain silo has the shape of a right circular cylinder surmounted by a hemisphere. If you want the silo to be able to hold  $504\pi$  cubic feet of grain, find the dimensions of the silo that require the least amount of material to construct.