

DWITE Online Computer Programming Contest
January 2007

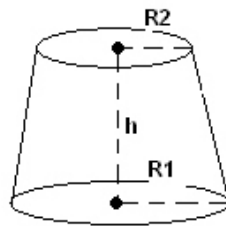
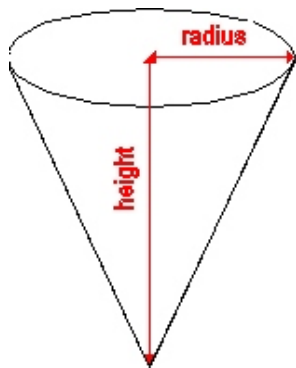
Problem 1

Filling The Cone

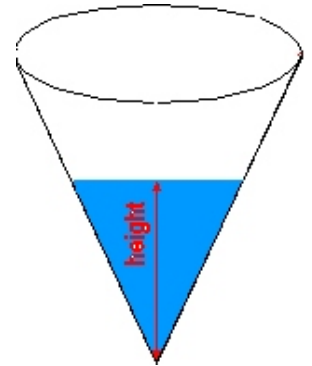
Water is poured into a cone of height, h , centimetres, and radius, r , centimetres. How high will the water rise in the cone?

Here are some diagrams and formula to assist you.

The volume of a cone is $\frac{1}{3}(\text{Area of Base})(\text{height}) = \frac{1}{3} \pi r^2 h$



$$\text{Volume} = \frac{\pi}{3} h (R1^2 + R2^2 + R1 * R2)$$



The input file (**DATA11.txt** for the first submission and **DATA12.txt** for the second submission) will contain five sets of data. Each set of data will contain three lines. The first line will contain h , the height of the cone in centimetres, $0 \leq h \leq 100$. The second line will contain r , the radius of the cone in centimetres, $0 < r \leq 100$. The third line will contain V_w , the volume of water poured into the cone, in cubic centimetres. $0 < V_w \leq \frac{1}{3} \pi r^2 h$.

For purposes of this program, please use 3.1415926 for the value of pi (π).

The output file (**OUT11.txt** for the first submission and **OUT12.txt** for the second submission) will contain five lines of data. Each line will contain the vertical height of the water in the cone, accurate to two decimal places.

<u>Sample Input</u> (3 sets of data only)	<u>Sample Output</u>
10	4.57
10	3.63
100	6.20
10	
10	
50	
20	
20	
250	