G: The Old McDonald Farm

Old MACDONALD had a farm E-I-E-I-O
With a tau tau here, and a tau tau there,
he saw that this farm was a quadrilateral ABCD.
Old MACDONALD had a farm E-I-E-I-O
With a mu mu here and a mu mu there,
he was told that the farm had an area of M.
Old MACDONALD had a farm E-I-E-I-O
With a rho rho here and a rho rho there,
he saw that the diagonal BD bisected the angle at D.
Old MACDONALD had a farm E-I-E-I-O
With a kappa kappa here, and a kappa kappa there,
he saw that the angle at A was the same as $\angle$CBD.
Old MACDONALD had a farm E-I-E-I-O
With a pi pi here, and a pi pi there,
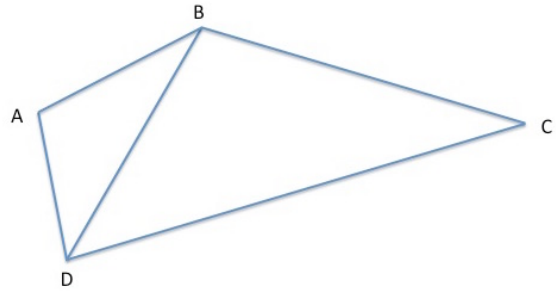he saw that it takes him twice the time to walk the fence CD as the diagonal BD.
Old MACDONALD had a farm E-I-E-I-O
With a zeta zeta here, and a zeta zeta there,
he saw that the amount of time for him to walk the fence AD
was N times the time it does for him to walk from B to the nearest point on fence CD.
Old MACDONALD had a farm E-I-E-I-O
With a chi chi here, and a chi chi there,
he walks the diagonal BD once every day to feed the chickens
Old MACDONALD had a farm E-I-E-I-O

Input and Output
The first line of input contains C, the number of test cases, where 0 < C < 1000. Each test contains two integers: the integer area M (at most 10,000 square meters) of the quadrilateral, and N, a real value. For each test case, print a single line of output showing how far MacDonald must walk in order to see the chickens. Print the result with accuracy up to two decimal places.

Sample Input and Output

Input	Output
1 500 1	28.28