Problem D - The tortoise and the hare

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CSC1015F - 2016 - problem set

Tortoises and hares move at different speed—and have different intelligence as well. They do want to take a stroll, and start and finish at the same time and location, so that they can deliberate and discuss together whatever philosophical conundrums they were thinking about during their walk. The hare runs A kilometres and the tortoise crawls B kilometres, with B being less than A. They have decided they want to set out a track so they can walk in circles, and that they can say hi every now and then when the hare is passing the tortoise. They have found possible routes of lengths 1, 2, ..., N. Your task now is to find the longest route.

Let's illustrate this with an example. Suppose the hare runs 105km (A = 105), the tortoise 42 (B = 42) and the circular route is 10km (N=10). Then the hare will make 10 full circles and finish 5 kilometres along the route, while the tortoise will make 4 full circles and finish 2 kilometres along the route. Since they don't finish in the same place, this is not acceptable, as it deprives them of the philosophical debates. With a 9 kilometre long circular route, the hare will make 11 full circles and finish 6 kilometres along the route, while the tortoise will make 4 full circles and also finish 6 kilometres along the route. The longest valid route in this case is thus 9.

Input The input describes a number of test cases. Each line consists of the three positive integers A, B and N, separated by single spaces. The end of the input is marked by a line containing only the value -1. There are at most 20 test cases, and in each test case $1 \leq B < A \leq 200$ and $1 \leq N \leq 200$.

Output For each test case, print out a single line containing the length (in kilometres) of the longest valid circuit.

Sample input

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105 42 10
103 42 10
145 21 15
-1
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Sample output

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9
1
4
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