CS1 Program 3- Algorithm & Test Data- Seth Miller

1. Import Scanner, File, IOException, FileNotFoundException, and text classes
2. Initialize all variables:

* drop height, bounce height, bounces, initial bounces, bounce counter, distance, total distance, bounce index, and negligible distance

1. Set decimal format to two decimal places
2. Set up input file and file scanner
3. If file has another integer, run following steps if so (hasNextInt while loop)
4. Set first integer in file to drop height, the second to bounce height, and the third to bounces
5. Set initial bounces to value of bounces
6. Calculate bounce index
7. Set distance and total distance to 0.00
8. If bounce height is greater than negligible distance and there are bounces left, run following steps (inner while loop)
9. Set distance to drop height + bounce height
10. Set drop height to bounce height
11. Set bounce height to drop height \* bounce index
12. Set total distance to total distance + distance
13. Decrease bounces and increase bounce counter each by 1
14. Print calculations made in inner loop (drop height, bounce height, distance, and total distance) in nice and readable format
15. Repeat steps 11-16 until bounce height is negligible or bounces = 0 (end inner loop)
16. Print bounce index, bounces (number of bounces), and bounce counter (actual number of bounces) in nice and readable format
17. Reset bounces and bounce counter to 0
18. Repeat steps 6-19 until there are no more integers in file (end hasNextInt loop)

**Test Cases:**

Test 1:

Input: 20 10 6

Drop height = 20 bounce height = 10 bounces = 6

Expected Output:

Actual bounces: 6 total distance = 59.06 ft. bounce index = 0.5

Results: Success

Test 2:

Input: 30 10 6

Drop height = 30 bounce height = 10 bounces = 6

Expected Output:

Actual bounces: 6 total distance = 58.9 (58.90) ft. bounce index = 0.3 or 0.33

Results: Slightly off; total distance was 59.92 ft., success otherwise

Test 3:

Input: 10 10 5

Drop height = 10 bounce height = 10 bounces = 5

Expected Output:

Actual bounces: 5 total distance: 100 ft. bounce index: 1

Results: Success