11.15 (*Area of a convex polygon*) A polygon is convex if it contains any line segments that connects two points of the polygon. Write a program that prompts the user to enter the number of points in a convex polygon, then enter the points clockwise, and display the area of the polygon. Here is a sample run of the program:

```
Enter the number of the points: 7 ↵
Enter the coordinates of the points:
  -12 0 -8.5 10 0 11.4 5.5 7.8 6 -5.5 0 -7 -3.5 -3.5 ↵
The total area is 250.075
```

11.17 (*Algebra: perfect square*) Write a program that prompts the user to enter an integer `m` and find the smallest integer `n` such that `m * n` is a perfect square. (*Hint:* Store all smallest factors of `m` into an array list. `n` is the product of the factors that appear an odd number of times in the array list. For example, consider `m` = 90, store the factors 2, 3, 3, 5 in an array list. 2 and 5 appear an odd number of times in the array list. So, `n` is 10.) Here are sample runs:

```
Enter an integer m: 1500 ↵
The smallest number n for m * n to be a perfect square is 15
m * n is 22500
```

12.2 (*`InputMismatchException`*) Write a program that prompts the user to read two integers and displays their sum. Your program should prompt the user to read the number again if the input is incorrect.

12.3 (*`ArrayIndexOutOfBoundsException`*) Write a program that meets the following requirements:

- Creates an array with `100` randomly chosen integers.
- Prompts the user to enter the index of the array, then displays the corresponding element value. If the specified index is out of bounds, display the message **Out of Bounds**.

12.4 (*`IllegalArgumentException`*) Modify the `Loan` class in Listing 10.2 to throw `IllegalArgumentException` if the loan amount, interest rate, or number of years is less than or equal to zero.