Homework 1-1: Calculate a rectangle's area and perimeter

Console

```
Welcome to the Area and Perimeter Calculator

Enter length: 100
Enter width:  200
Area:         20000.0
Perimeter:    600.0

Continue? (y/n): y

Enter length: 8
Enter width:  4
Area:         32.0
Perimeter:    24.0

Continue? (y/n): n
```

Operation

- The application prompts the user to enter values for the length and width of a rectangle.
- The application displays the area and perimeter of the rectangle.
- The application prompts the user to continue.

Specifications

- The formulas for calculating area are perimeter are:

```
area = width * length
perimeter = 2 * width + 2 * length
```

- The application should accept decimal entries like 10.5 and 20.65.
- Assume that the user will enter valid numeric data for the length and width.
- The application should continue only if the user enters "y" or "Y" to continue.

Homework 1-2: Convert number grades to letter grades

Console

```
Welcome to the Letter Grade Converter

Enter numerical grade: 90
Letter grade: A

Continue? (y/n): y

Enter numerical grade: 88
Letter grade: A

Continue? (y/n): y

Enter numerical grade: 80
Letter grade: B

Continue? (y/n): y

Enter numerical grade: 67
Letter grade: C

Continue? (y/n): y

Enter numerical grade: 59
Letter grade: F

Continue? (y/n): n
```

Operation

- The user enters a numerical grade from 0 to 100.
- The application displays the corresponding letter grade.
- The application prompts the user to continue.

Specifications

- The grading criteria is as follows:

```
A    88-100
B    80-87
C    67-79
D    60-67
F    <60
```

- Assume that the user will enter valid integers for the grades.
- The application should continue only if the user enters “y” or “Y” to continue.

Homework 1-3: Convert temperature from Fahrenheit to Celsius

Console

```
Welcome to the Temperature Converter

Enter degrees in Fahrenheit: 212
Degrees in Celsius: 100

Continue? (y/n): y

Enter degrees in Fahrenheit: 32
Degrees in Celsius: 0

Continue? (y/n): y

Enter degrees in Fahrenheit: 77.5
Degrees in Celsius: 25.28

Continue? (y/n): n
```

Operation

- The application prompts the user to enter a temperature in Fahrenheit degrees.
- The application displays the temperature in Celsius degrees.
- The application prompts the user to continue.

Specifications

- The formula for converting temperatures from Fahrenheit to Celsius is:

  ```
  c = (f-32) * 5/9
  ```

- The application should accept decimal entries like 77.5.
- Assume that the user will enter valid data.
- The application should continue only if the user enters “y” or “Y” to continue.

Homework 1-4: Calculate travel time based on distance and speed

Console

```
Welcome to the Travel Time Calculator

Enter miles:           200
Enter miles per hour:  65

Estimated travel time
Hours:   3
Minutes: 4

Continue? (y/n): y

Enter miles:           100
Enter miles per hour:  65

Estimated travel time
Hours:   1
Minutes: 32

Continue? (y/n): n
```

Operation

- The application prompts the user to enter values for miles and miles per hour.
- The application displays the approximate travel time in hours and minutes.
- The application prompts the user to continue.

Specifications

- The application should accept decimal entries like 10.5 and 20.65.
- Assume that the user will enter valid data.
- The application should continue only if the user enters “y” or “Y” to continue.

Hint

- Use integer arithmetic and the division and modulus operators to get hours and minutes.

Homework 1-5: Calculate coins for change

Console

```
Welcome to the Change Calculator

Enter number of cents (0-99): 99

Quarters: 3
Dimes:    2
Nickels:  0
Pennies:  4

Continue? (y/n): y

Enter number of cents (0-99): 55

Quarters: 2
Dimes:    0
Nickels:  1
Pennies:  0

Continue? (y/n): n
```

Operation

- The application prompts the user to enter a number of cents from 0 to 99.
- The application displays the minimum number of quarters, dimes, nickels, and pennies that represent the coins that make up the specified number of cents.
- The application prompts the user to continue.

Specifications

- Assume that the user will enter a valid integer value for the number of cents.
- The application should continue only if the user enters “y” or “Y” to continue.