

Practice Exercises for Functions

Solve each of the practice exercises below. Each problem describes a Python function you must write, including its parameters and what it should return.

1. Write a Python function **miles_to_feet** that takes a parameter **miles** and returns the number of feet in **miles** miles.
2. Write a Python function **total_seconds** that takes three parameters **hours**, **minutes**, and **seconds** and returns the total number of seconds for **hours** hours, **minutes** minutes, and **seconds** seconds.
3. Write a Python function **rectangle_perimeter** that takes two parameters **width** and **height** corresponding to the lengths of the sides of a rectangle and returns the perimeter of the rectangle in inches.
4. Write a Python function **rectangle_area** that takes two parameters **width** and **height** corresponding to the lengths of the sides of a rectangle and returns the area of the rectangle in square inches.
5. Write a Python function **circle_circumference** that takes a single parameter **radius** corresponding to the radius of a circle in inches and returns the circumference of a circle with radius **radius** in inches. Do not use $\pi = 3.14$; instead, use the **math** module to supply a higher-precision approximation to π .
6. Write a Python function **circle_area** that takes a single parameter **radius** corresponding to the radius of a circle in inches and returns the area of a circle with radius **radius** in square inches. Do not use $\pi = 3.14$; instead, use the **math** module to supply a higher-precision approximation to π .
7. Write a Python function **future_value** that takes three parameters **present_value**, **annual_rate**, and **years**, and returns the future value of **present_value** dollars invested at **annual_rate** percent interest, compounded annually for **years** years.
8. Write a Python function **name_tag** that takes as input the parameters **first_name** and **last_name** (strings) and returns a string of the form
"My name is % %."
where the percent signs are replaced by the strings **first_name** and **last_name**. Follow the exact formatting described.
9. Write a Python function **name_and_age** that takes as input the parameters **name** (a string) and **age** (a number) and returns a string of the form
">% is % years old."

where the percent signs are replaced by the string forms of **name** and **age**. Follow the exact formatting described.

10. Write a Python function **point_distance** that takes as parameters **x0**, **y0**, **x1**, and **y1**, and returns the distance between the points (x_0, y_0) and (x_1, y_1) .
11. **Challenge:** Write a Python function **triangle_area** that takes the parameters **x0**, **y0**, **x1**, **y1**, **x2**, and **y2**, and returns the area of the triangle with vertices (x_0, y_0) , (x_1, y_1) , and (x_2, y_2) . Use the function **point_distance** as a helper function and apply Heron's formula.
12. **Challenge:** Write a Python function **print_digits** that takes an integer **number** in the range $[0, 100]$, meaning at least 0 but less than 100. The function prints the message "The tens digit is %, and the ones digit is %." where the percent signs should be replaced with the appropriate values. Use the arithmetic operators for integer division ($//$) and remainder ($\%$) to find the two digits. This function should print the message rather than return it as a string.