Wiki - Practice exercises for variables and assignments

Solve each of the practice exercises below. Each problem includes two CodeSkulptor links: one for a template that you should use as a starting point for your solution and our solution to the exercise.

1. Given a template that pre-defines a variable miles, write an assignment statement that defines a variable feet whose value is the number of feet in miles miles.

   Miles to feet template
   Miles to feet solution

2. Given a template that pre-defines three variables hours, minutes and seconds, write an assignment statement that updates the variable seconds to have a value corresponding to the total number of seconds for hours hours, minutes minutes and seconds seconds.

   Hours to second template
   Hours to second solution

3. Given a template that pre-defines the variables width and height that are the lengths of the sides of a rectangle, write an assignment statement that defines a variable perimeter whose value is the perimeter of the rectangle in inches.

   Perimeter of rectangle template
   Perimeter of rectangle solution

4. Given a template that pre-defines the variables width and height that are the lengths of the sides of a rectangle, write an assignment statement that defines a variable area whose value is the area of the rectangle in square inches.

   Area of rectangle template
   Area of rectangle solution

5. Given a template that pre-defines the constant PI and the variable radius corresponding to the radius of a circle in inches, write an assignment statement that defines a variable circumference whose value is the circumference of a circle with radius rradius in inches.

   Circumference of circle template
   Circumference of circle solution

6. Given a template that pre-defines the constant PI and the variable radius corresponding to the radius of a circle in inches, write an assignment statement that defines a variable area whose value is the area of a circle with radius radius in square inches.

   Area of circle template
   Area of circle solution

7. Given the pre-defined variables present_value, annual_rate and years, write an assignment statement that define a variable future_value whose value is present_value dollars invested at annual_rate percent interest, compounded annually for years years.

   Future value template
   Future value solution

8. Give the pre-defined variables first_name and last_name, write an assignment statement that

defines the variable name_tag whose value is the string "My name is % %." where the percents should be replaced by first_name and last_name.

Name tag template
Name tag solution

9. Given the pre-defined variables name (a string) and age (a number), write an assignment statement that defines a variable statement whose value is the string "% is % years old." where the percents should be replaced by name and the string form of age.

   Name and age template
   Name and age solution

10. Given the variables x0, y0, x1, and y1, write an assignment statement that defines a variable distance whose values is the distance between the points (x0,y0) and (x1,y1).

    Point distance template
    Point distance solution

11. **Challenge:** Heron's formula states the area of a triangle is $s(s-a)(s-b)(s-c)$ where a, b and c are the lengths of the sides of the triangle and $s=12(a+b+c)$ is the semi-perimeter of the triangle. Given the variables x0, y0, x1,y1, x2, and y2, write a Python program that computes a variable area whose value is the area of the triangle with vertices (x0,y0), (x1,y1) and (x2,y2). (Hint: our solution uses five assignment statements.)

    Triangle area template
    Triangle area solution