The `math` Module

The Python standard library's math module contains numerous functions that can be used in mathematical calculations.

These functions accept one or more values as arguments, perform a mathematical operation using the arguments, and return the result.

The functions return a float value, except the `ceil` and `floor` functions, which return `int` values.

Example:

```
import math

     result = math.sqrt(16)
```

The `sqrt` function accepts an argument and returns the square root of the argument. This statement calls the `sqrt` function, passing 16 as an argument.

The `math.pi` and `math.e` Values

The math module also defines two variables, pi and e, which are assigned mathematical values for *pi* and *e*. You can use these variables in equations that require their values. For example, the following statement, which calculates the area of a circle, uses pi. (Notice that we use dot notation to refer to the variable.)

```
import math


     area = math.pi * radius**2
```

Table 5-2 Many of the functions in the `math` module

math Module Function	Description
`acos(x)`	Returns the arc cosine of `x`, in radians.
`asin(x)`	Returns the arc sine of `x`, in radians.
`atan(x)`	Returns the arc tangent of `x`, in radians.
`ceil(x)`	Returns the smallest integer that is greater than or equal to `x`.
`cos(x)`	Returns the cosine of `x` in radians.
`degrees(x)`	Assuming `x` is an angle in radians, the function returns the angle converted to degrees.
`exp(x)`	Returns e^x
`floor(x)`	Returns the largest integer that is less than or equal to `x`.
`hypot(x, y)`	Returns the length of a hypotenuse that extends from (0, 0) to (`x`, `y`).
`log(x)`	Returns the natural logarithm of `x`.
`log10(x)`	Returns the base-10 logarithm of `x`.
`radians(x)`	Assuming `x` is an angle in degrees, the function returns the angle converted to radians.
`sin(x)`	Returns the sine of `x` in radians.
`sqrt(x)`	Returns the square root of `x`.
`tan(x)`	Returns the tangent of `x` in radians.