

1. Write a simple script that will calculate the volume of a hollow sphere.

$$V = \frac{4\pi}{3} (r_o^3 - r_i^3)$$

2. The **input** function can be used to enter a vector, such as:

```
>> vec = input('Enter a vector: ')
Enter a vector: 4 : 7
vec =
     4     5     6     7
```

Experiment with this and find out how the user can enter a matrix.

3. Write a script called `echostring` that will prompt the user for a string and will echo print the string in quotes:

```
>> echostring
Enter your string: hi there
Your string was: 'hi there'
```

4. If the lengths of two sides of a triangle and the angle between them are known, the length of the third side can be calculated. Given the lengths of two sides (b and c) of a triangle, and the angle between them a in degrees, the third side a is calculated as follows:

$$a^2 = b^2 + c^2 - 2 b c \cos(\)$$

Write a script `thirdside` that will prompt the user and read in values for b , c , and a (in degrees), and then calculate and print the value of a with three decimal places. The format of the output from the script should look exactly like this:

```
>> thirdside
Enter the first side: 2.2
Enter the second side: 4.4
Enter the angle between them: 50
The third side is 3.429
```

5. Write a `fives` function that will receive two arguments for the number of rows and columns, and will return a matrix with that size of all fives.

```
>> mymat = fives(2,3)
Mymat =
     5     5     5
     5     5     5
```

6. Write a function `isdivby6` that will receive an integer input argument, and will return **logical 1** for **true** if the input argument is divisible by 6 or **logical false** if it is not.