## Eng 004 : An Introduction to Programming and Algorithms Handout #2

1. Write a matlab script that;

a.) Calculates the "volume" and "surface area" of a cylinder. (Radius and height will be defined in the matlab script.) (The output will be displayed on the screen using the disp command)

b.) Calculates the "volume" and "surface area" of a rectangular prism. (The script will ask the user to enter the dimensions of the prism using the input command) (The output will be displayed on the screen using the fprintf command).

c.) Calculates the "surface area" of a sphere. (Surface area =  $4\pi r^2$ ) (The script will ask the user to enter the radius using the input command) (The output will be saved to an ascii file named "results.txt" using the save command).

d.) Calculates the "volume" of a sphere (Volume =  $4\pi r^3/3$ ) with a known "surface area". (The script will read the surface area from an ascii file named "results.txt" using the load command) (The output will be displayed on the screen using the fprintf command).

- 2. Write a matlab function that;
  - a.) Converts Celcius to Fahrenheit. The filename of the function will be convtemp.m (convtemp(C) = F). You will provide a help comment at the beginning of the script describing how this function works.

To convert Celsius temperatures into Fahrenheit:

- Begin by multiplying the Celsius temperature by 9.
- Divide the answer by 5.
- Now add 32.

Verification example : 20 degrees Celcius is equivalent to 68 degrees Fahrenheit

b.) Calculates the midspan deflection "D (mm)" of a simply supported beam built of a material with a Young's Modulus of "E  $(N/m^2)$ " that has a moment of inertia of I (m<sup>4</sup>) and a span of "L (m)" under a uniformly distributed load "Q (N/m)". The filename of the function will be simplef.m (simplef(Q,L,E,I)). You will provide a help comment at the beginning of the script describing how this function works.

