Remember to indent the bodies of your IF-THEN statements.

1) (2 pts) Enter the following commands into a script file and run it.

```
a = 1.1;
b = 2.2;
c = 3.3;
if(c == a+b)
   disp('c = a+b is true')
else
   disp('c = a+b is false')
end
```

Does it give the correct output? What do you think is the reason for this behavior?

2) (6 pts) Write a script that does the following:

   a) Asks the user to input three lengths a, b, and c

   b) Tests to determine if these lengths are capable of forming a triangle.

   c) If a triangle cannot be formed, an error message should be printed out. If (and only if) a triangle can be formed, your program should compute the area of the triangle using *Heron's formula*

   $$A = \sqrt{s(s-a)(s-b)(s-c)}$$

   where s is the semi-perimeter of the triangle

   $$s = \frac{a+b+c}{2}.$$

   Test your program with the 2 sets of data: $a = 4.1, b = 6.4, c = 10.1$; $a = 7.8, b = 12.0, c = 3.4$.

3) (5 pts) The income tax in Australia is computed according to the following table:

Taxble Income	Tax Owed
$0 - $6,000	$0
$6,001 - $20,000	$0.17 for each $1 over $6,000
$20,001 - $50,000	$2,380 plus $0.30 for each $1 over $20,000
$50,001 - $60,000	$11,380 plus $0.42 for each $1 over $50,000
over $60,000	$15,580 plus $0.47 for each $1 over $60,000

In addition, a 1.5% tax is charged on all income regardless of the taxable amount.

Write a script that will compute the income tax owed given the amount of taxable income. Test your program for income amounts of $5,015, $14,678, $55,784 and $75,000.

3) (6 pts) When a light ray pssses from one medium to another, the light ray gets bent. Snell's Law of Refraction is the relationship that determines how much a light ray will bend. It states

$$\frac{\sin(\theta_1)}{\sin(\theta_2)} = \frac{n_2}{n_1}$$

where θ_1 is the angle of incidence through a medium with a refractive index of n_1 and θ_2 is the angle of refraction through a medium with a refractive index of n_2.

Write a script that will ask the user to input values of θ_1 (in degrees), n_1 and n_2 and computes the value of θ_2 (provided the calculation is feasible). The value of θ_2 should be printed out in degrees. In the event that the calculation is not feasible, an error message should be printed out.

Test your program using the 2 cases

a) $\theta_1 = 45°, n_1 = 0.73, n_2 = 1.44$

b) $\theta_1 = 45°, n_1 = 0.58, n_2 = 0.13$