2 - RICHTER

For each of the following Richter scale measurements, your program will perform the appropriate calculations and display the equivalent amount of energy in joules and in tons of exploded TNT:

- 1.0
- 5.0
- 9.1 (Indonesia earthquake, 2004)
- 9.2 (Alaska earthquake, 1964)
- 9.5 (Chile earthquake, 1960; largest ever measured)

Your program will then prompt the user to enter a Richter scale measurement, accept a floating point value representing that measurement, perform the appropriate calculations, and display the equivalent amount of energy in joules and in tons of exploded TNT for that user-selected value.

The Richter scale is a way to quantify the magnitude of an earthquake using a base-10 logarithmic scale. The magnitude is defined as the logarithm of the ratio of the amplitude of waves measured by a seismograph to an arbitrarily small amplitude.

The energy in joules released for a particular Richter scale measurement is given by:

$$Energy = 10^{(1.5*richter)+4.8}$$

where *Energy* is measured in *joules* and *richter* is the Richter scale measurement (typically on a scale from 1-10 as a floating point number).

One ton of exploded TNT yields 4.184×10^9 joules. Thus, you can relate the energy released in joules to tons of exploded TNT.

Sample output:

```
### ECO CS 18 ##
### Project 2 ##

Richter         Joules                          TNT
1                1995262.3149688789      0.00047687913837688307
5                1995262314968.8828      476.87913837688404
9.1              2.818382931264449e+18   673609687.2046962
9.2              3.981071705534953e+18   951498973.5982201
9.5              1.1220184543019653e+19          2681688466.3048882

Please enter a Richter scale value: 3.4
Richter value: 3.4
Equivalence in joules: 7943282347.242789
Equivalence in tons of TNT: 1.8984900447521007
```