MA/CSC 427 HOMEWORK 1 Name: _____ Due 9/8/03

1. Represent the numbers $\frac{1}{2}$, $\frac{2}{3}$ and $\frac{3}{5}$ as floating-point numbers in a system that has 32 bits per word, 24 bits for mantissa, and does rounding.

2. Consider the following Fortran program:

```
      H = 1./2.
      X = 2./3. - H
      Y = 3./5. - H
      E = (X+X+X) - H
      F = (Y+Y+Y+Y+Y) - H
      Q = F/E
      WRITE(6,10) Q
      STOP
10    FORMAT(1H, G20.10)
      END
```

   The variable Q can take on several different values depending on the floating-point arithmetic hardware used by the computer. Try to figure out why the computer is returning the value of Q if the above program is executed. **Explain your results by using the floating-point representation of these numbers.**