Dane Mortensen
CSC 315

1.

a. 0.0
   exponent = 0000 0000
   fraction = 0000 0000 0000 0000 0000 0000

b. 6.5
   exponent = 1000 0001
   fraction = 0101 0000 0000 0000 0000 0000

c. 4.0
   exponent = 1000 0001
   fraction = 0000 0000 0000 0000 0000 0000

d. -4.0
   exponent = 1000 0001
   fraction = 1000 0000 0000 0000 0000 0000

2.

single precision = ~(+/-)3.4e38 =
(+/-)1 x 2^{127} x $1.11111111111111111111111_{two}$

double precision = ~(+/-)1.8e308 =
(+/-)1 x 2^{1024} x 1.9999999999999997779553950749686919152 73[…]

3. (answers in form (exponent, fraction))

a.
   0.375: (0111 1101, 0100 0000 0000 0000 0000 0000)
   28.00: (1000 0011, 0110 0000 0000 0000 0000 0000)

b. d

4. (answers in form (exponent, fraction))

a. (0111 1000, 0000 0000 0000 0000 0000 0000)
b. (0111 1100, 1111 1111 1100 0000 0000 0000)

5. After including the "hidden 1", there are 24 bits of fraction in a single precision floating points and 53 bits in double precision.

6. 0xBE00 = -1.5 =
(0000 0000 0000 0000, 1110 0000 0000 0000)