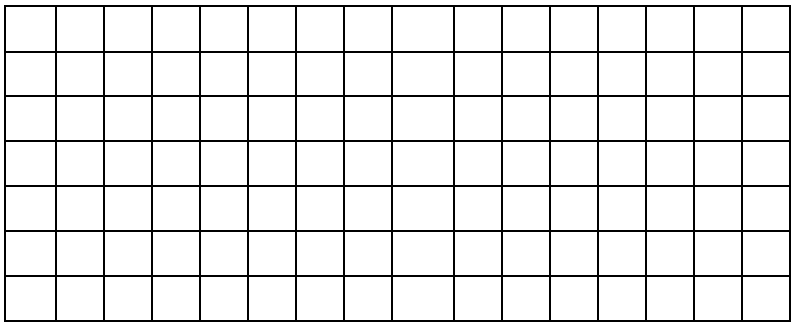
Fixed-point Multiplication: (5pts each) NOTE: the second operand is the multiplier, do not switch!!!

a) Using the **Booth** Algorithm, find the product of the following operands (show the recoded multiplier and each step of the multiplication); the zero in parentheses is the reference bit for recoding:

1 0 1 0 1 1 1

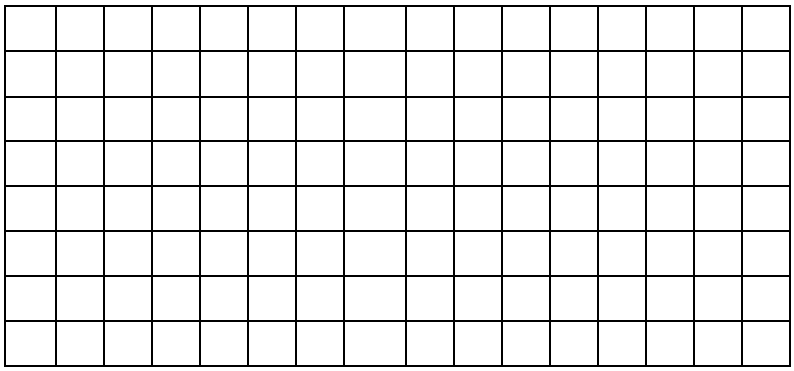
X) 1 0 1 1 1 1 0 (0)



b) Using the **Bit-Pair** Algorithm, find the product of the following operands (show the recoded multiplier and each step of the multiplication); the zero in parentheses is the reference bit:

0 1 0 1 1 1 1

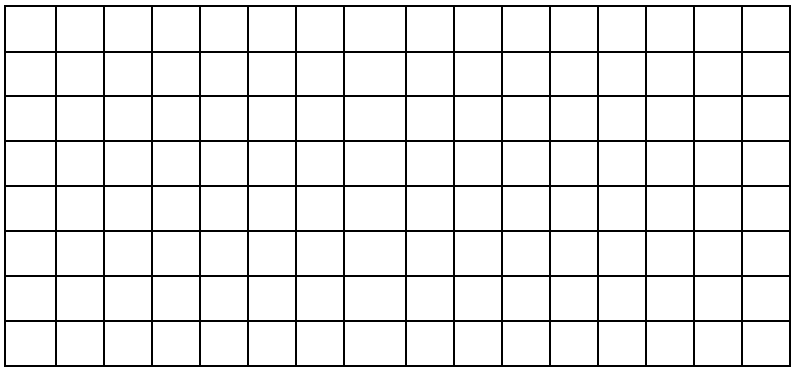
X) 1 0 1 0 1 1 1 (0)



a) Select the best Algorithm (Booth or Bit-Pair), find the product of the following operands (show the recoded multiplier and each step of the multiplication); the zero in parentheses is the reference bit:

1 1 0 0 1 0 1

X) 1 0 1 0 1 0 1 (0)

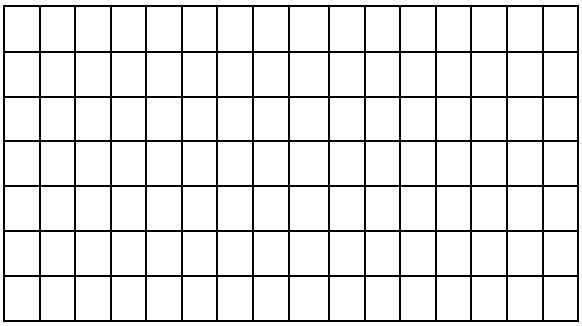


Floating Point: Each of these computations (addition and multiplication) uses the following format:

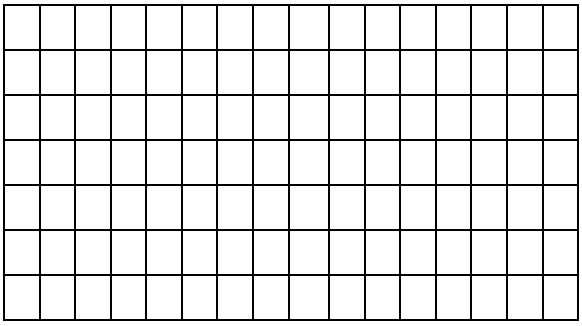
- The MSB is a sign bit
- The next 5 MSBs are the biased exponent
- The remaining 6 bits are the normalized fraction; **no hidden bit**
- The rounding scheme is RN(x)

I) Addition: (5pts each)

a)
```
    1 01001 100011
+   1 00110 101100
```

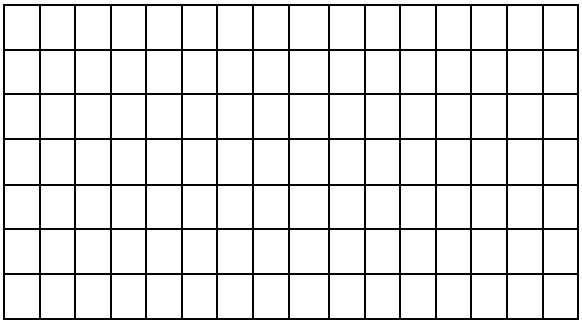


b)
```
    1 01000 110011
+   0 00101 100100
```

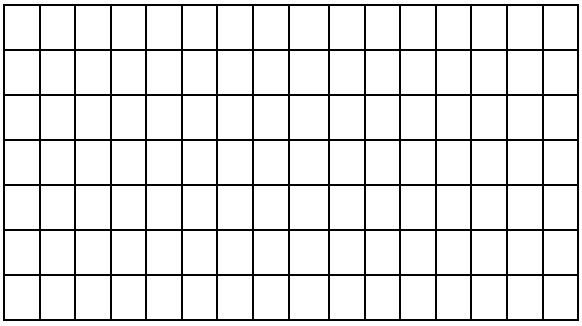


II) Multiply: (5pts each)

a)
```
    0 10001 101011
*   1 01110 101011
```



b)
```
    1 10001 101010
*   1 01100 100001
```



Problems from the book:

11.11 (5pts) Represent a relative pressure signal with a range from: -10 PSI to 10 PSI with an accuracy of 1% across the range and uses the minimum number of bits.

12.6 (10pts) Design a radix-8 Booth recoder. Write a table similar to Table 12.2.