NAME(s): _____ ID(s):_____

The Two Out of Five Code

Recall: In a code containing codewords that can have up to n of their symbols corrupted:

- If all pairs of codewords have at least a hamming distance of $n + 1$, errors can be detected.
- If one pair of codewords has a hamming distance of less than $n + 1$, errors cannot be detected.
- If all pairs of codewords have at least a hamming distance of $2n + 1$, errors can be corrected.
- If one pair of codewords has a hamming distance of less than $2n + 1$, errors cannot be corrected.

1. The “two-out-of-five" code consists of all possible binary words (words made from the symbols 0 and 1) of length 5 containing exactly two 1's.

   a) List all of the codewords.
   b) What is the minimum Hamming distance between codewords?
   c) How many errors can the code detect?
   d) How many errors can the code correct?