a) The total Hilbert space dimension of n_1 spin 1's and $n_{3/2}$ spin 3/2's is

$$N_s = 3^{n_1} 4^{n_{3/2}} = 2^{n_1 \log 3 + 2 n_{3/2}}$$

Where the log is base 2.

The total Hilbert space dimension of n qubits is

$$N_q = 2^n$$

We need $N_q \geq N_s$ in order for the qubits to simulate the spins

$$N_q \geq N_s \quad \therefore \quad n \geq n_1 \log 3 + 2 n_{3/2}$$

$$\therefore \quad n = \lceil n_1 \log 3 + 2 n_{3/2} \rceil$$

Here $\lceil x \rceil$ denotes the ceiling function (round up to nearest integer).

b) Consider each spin separately. Clearly a single spin-1 requires 2 qubits, as does a single spin-3/2. So for a bunch of them

$$n = 2 n_1 + 2 n_{3/2}$$

c) In both cases

$$n = O(n_1) + O(n_{3/2})$$

So they are equally efficient. The first case has better coefficients, though (but I don't ask for that).

d) 12 basis states for $n_1 = n_{3/2} = 1$. We need 4 qubits at least (16 basis states). We arbitrarily assign a different qubit basis state to each spin basis state. For example

$$\begin{array}{ccc}
|-1\rangle \otimes |-3/2\rangle & & |0000\rangle \\
|-1\rangle \otimes |-1/2\rangle & & |0001\rangle \\
|-1\rangle \otimes |1/2\rangle & & |0010\rangle \\
|-1\rangle \otimes |3/2\rangle & & |0011\rangle \\
|0\rangle \otimes |-3/2\rangle & & |0100\rangle \\
|0\rangle \otimes |-1/2\rangle & \longrightarrow & |0101\rangle \\
|0\rangle \otimes |1/2\rangle & & |0110\rangle \\
|0\rangle \otimes |3/2\rangle & & |0111\rangle \\
|+1\rangle \otimes |-3/2\rangle & & |1000\rangle \\
|+1\rangle \otimes |-1/2\rangle & & |1001\rangle \\
|+1\rangle \otimes |1/2\rangle & & |1010\rangle \\
|+1\rangle \otimes |3/2\rangle & & |1011\rangle
\end{array}$$