Quiz 7 (with solutions) - Math 374, Frank Thorne (thorne@math.sc.edu)

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(1) Let
$$T = \{1, 3, \pi\}, \quad S = \{\{1\}, 3, 9, 10\}, \quad U = \{\{1, 3, \pi\}, 1\}.$$
Determine whether each of the following statements is true. For those that are not, why not?

- $1 \in S$. **False**, $\{1\}$ is an element, which is not the same as 1.
- $\{1\} \in S$. **True.**
- $1 \subseteq U$. **False**, 1 is not a set.
- $T \subseteq U$. **False**, for example 3 is an element of T which is not in U.
- $T \in U$. **True.**

(2) How many three-digit numbers less than 600 can be made using the digits 8, 6, 4, and 2?

There are 2 possibilities for the first digit (2 and 4), 4 for the second and third, so the answer is $2 \times 4 \times 4 = 32$.