4. A senate committee has 7 Democrats and 4 Republicans. How many ways are there to form a subcommittee consisting of 4 Democrats and 2 Republicans?

\[
\binom{7}{4} \cdot \binom{4}{2} = \frac{7!}{4!3!} \cdot \frac{4!}{2!2!} = 35 \cdot 6 = 210
\]

5. How many integers between 0 and 1,000,000 contain the digit 2?

- # of integers between 002,000 and 999,999
  - is \(10^6\)
- # of integers between 004,000 and 999,999 that do not contain the digit 2
  - is \(96\)

\[\text{ans} \quad 10^6 - 96 = 1,000,000 - 96 = 999,004\]

\[= 998,908,048\]