

- 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?

$$\binom{7}{4} \cdot \binom{4}{2} = \frac{7 \cdot 6 \cdot 5}{3!} \cdot \frac{4 \cdot 3}{2!} = 35 \cdot 6 = \boxed{210}$$

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

of integers between 000,000 and 999,999 is 10^6

of integers between 000,000 and 999,999 that do not contain the digit 2 is 96

ans $10^6 - 96 = 1,000,000 - 96 = \boxed{999,904}$