

11-3-17 1st Tr. 3

Only 10 minutes, but let's rock it out.

- ① How many phone numbers are possible in 540 area code if first digit can't be a zero?

$$(540) \quad \begin{array}{ccccccc} \underline{9} & \underline{10} & \underline{10} & - & \underline{10} & \underline{10} & \underline{10} & \underline{10} \\ & \text{0} \neq 0 & & & & & & \end{array}$$

9,000,000

- ② How many numbers can we have if we follow above rule and add area code being anything as long as first digit in area code isn't zero.

$$\left(\underline{9} \underline{10} \underline{10} \right) \underline{9} \underline{10} \underline{10} - \underline{10} \underline{10} \underline{10} \underline{10}$$

8,100,000,000

11-3-17 3rd Trig

14 minutes to rock it

- ① Forgetting area code, how many phone numbers exist assuming it can't start with a zero.

$$\frac{9 \cdot 10 \cdot 10}{\text{---}} - \frac{10 \cdot 10 \cdot 10 \cdot 10}{\text{---}}$$

9,000,000

- ② Same as above, but now let's think about area code. Some rules with area code not starting w/ zero.

$$\left(\frac{9}{\uparrow \text{No zero}} \frac{10}{\text{---}} \frac{10}{\text{---}} \right) - \frac{9}{\uparrow \text{No zero}} \frac{10}{\text{---}} \frac{10}{\text{---}} - \frac{10}{\text{---}} \frac{10}{\text{---}} \frac{10}{\text{---}} \frac{10}{\text{---}}$$

8,100,000,000

11-3-17 4th Trig

- ① How many phone numbers exist in our 540 area code assuming first digit can't be a zero?

$$\begin{array}{ccccccc} \underline{9} & \underline{10} & \underline{10} & - & \underline{10} & \underline{10} & \underline{10} & \underline{10} \\ \uparrow & & & & & & & \\ \text{No} & & & & & & & \\ \text{zero} & & & & & & & \\ & & & & & & & 9,000,000 \end{array}$$

- ② Same rule as above but let's add area code. No zero starting the area code.

$$\begin{array}{ccccccc} \left(\underline{9} & \underline{10} & \underline{10} \right) & \underline{9} & \underline{10} & \underline{10} & - & \underline{10} & \underline{10} & \underline{10} & \underline{10} \\ \uparrow & & & \uparrow & & & & \uparrow & & & \\ \text{No} & & & \text{No} & & & & \text{No} & & & \\ \text{zero} & & & \text{zero} & & & & \text{zero} & & & \end{array}$$

$$8,100,000,000$$

- ③ What are odds person guesses my credit card number?

$$\begin{array}{ccccccc} \underline{10} & \underline{10} & \underline{5} & \underline{5} & - & \underline{6} & \underline{4} & \underline{5} & \underline{3} & - & \underline{3} & \underline{3} & \underline{4} & \underline{5} & - & \underline{\quad} & \underline{\quad} & \underline{\quad} & \underline{\quad} \\ & & & & & & & & & & & & & & & & & & & \end{array}$$
$$10^{16} = 10,000,000,000,000,000$$

