

11-7-17 1st Trig

- ① My passcode is 4 characters being either lower or upper case letters and digits. How many possibilities exist?

26
26
10

$$\frac{62}{14,776,336} \frac{62}{14,776,336} \frac{62}{14,776,336} \frac{62}{14,776,336} = 62^4$$

- ② From my 16 girlfriends, I will pick 4 to go to the final round of my T.V. show. How many possibilities exist?

$$\frac{16!}{(16-4)!4!} = {}_{16}C_4 = 1820$$

- ③ Sals has 10 toppings. They have a 2 topping pizza on sale for \$9.99. How many 2 topping, 1 topping, or no topping pizzas can I order.

$$\frac{{}_{10}C_2}{{}_{10}C_2} + \frac{{}_{10}C_1}{{}_{10}C_1} + \frac{{}_{10}C_0}{{}_{10}C_0} = 45 + 10 + 1 = 56$$

- ④ There are 12 kids on a basketball team. How many different starting 5 players can be made?
order doesn't matter

$${}_{12}C_5 = 792$$

- ⑤ How many different ways can a 5 question True/False quiz be answered?

$$\frac{2}{1} \frac{2}{2} \frac{2}{3} \frac{2}{4} \frac{2}{5} = 32$$

- ⑥ What are the odds I will flip a coin 3 times in a row and get tails all 3 times?

$$\frac{2}{1} \cdot \frac{2}{2} \cdot \frac{2}{3} = \frac{1}{8}$$

HHH
HHT
HTH
HTT
TTT
TTH
THT
TTH

- ⑦ Tonight, I will play two-tue at Poker night. Each player is given 2 cards. How many hands can be dealt?

$$52nC2 = 1326$$

- ⑧ I created 8 new logic problems last night. I will put 2 on the next notebook. How many different possibilities exist?

$$8nC2 = 28$$

- ⑨ A zip code is 5 digits. How many exist if the first digit can't be zero and the 3rd can't be 1, 2, or 3?

$$\frac{9}{\substack{\text{No} \\ \text{zero}}} \cdot \frac{10}{\substack{\text{No} \\ 1,2,3}} \cdot \frac{7}{\substack{\text{No} \\ 1,2,3}} \cdot \frac{10}{\substack{\text{No} \\ 1,2,3}} \cdot \frac{10}{\substack{\text{No} \\ 1,2,3}}$$

$$63,000$$

- ⑩ A quiz is 3 T/F and then 3 m.c. (A, B, C, D, E). How many answer keys can be made?

$$\frac{2}{\text{T/F}} \frac{2}{\text{T/F}} \frac{2}{\text{T/F}} \frac{5}{\text{m.c.}} \frac{5}{\text{m.c.}} \frac{5}{\text{m.c.}}$$

$$1000$$

11-7-17 3rd Try

① My passcode can be lower or uppercase letters, digits, or any of these symbols: \$, ?, !

26
26
10
3

If my passcode is 5 characters, how many codes exist?

$$\frac{65}{1} \frac{65}{2} \frac{65}{3} \frac{65}{4} \frac{65}{5} = 65^5$$

1,160,290,625

② From my 11 cousins, I can only invite 4 to my wedding. How many options are there?

$$11nC4 = 330$$

③ How many possible ways can you answer a 5 question quiz that has 2 T/F questions and then 3 M.C. with options

A, B, C, D, E?

$$\frac{2}{1} \cdot \frac{2}{2} \cdot \frac{5}{3} \cdot \frac{5}{4} \cdot \frac{5}{5} = 500$$

T/F T/F MC MC MC

- ④ Of the 15 girls, 10 will move on to the next round. How many options are there?

$$15 nCr 10 = 3003$$

- ⑤ From the 12 players, Coach will pick a starting 5. How many ways can he do that?

$$12 nCr 5 = 792$$

- ⑥ Sals offers a 2 topping pizza for \$9.99. They offer 14 toppings. Someone can order 2, 1, or no toppings. How many options exist?

$$\begin{array}{ccc} \underline{2 \text{ toppings}} & \underline{1 \text{ topping}} & \underline{0 \text{ toppings}} \\ 14 nCr 2 & & \\ 91 & + & 14 + 1 \\ & & 106 \end{array}$$

- ⑦ A zip code is 5 digits. Let's say that the first digit can't be a zero and the second can't be odd. How many zip codes would exist?

$$\frac{9}{\substack{\text{No} \\ \text{Zero}}} \quad \frac{5}{\text{Even}} \quad \frac{10}{\text{D}} \quad \frac{10}{\text{D}} \quad \frac{10}{\text{D}}$$

$$45,000$$

- ⑧ What are the chances I flip a coin 3 times and it lands on heads all 3 times?

$$\frac{2}{\text{H/T}} \cdot \frac{2}{\text{H/T}} \cdot \frac{2}{\text{H/T}} = 8$$

HHH

HHT

HTH

HTT

THT

TTH

THT

TTT

$$\frac{1}{8}$$

11-7-17 4th Trig

- ① My ^{5 character} passcode can be an upper case or lowercase letter, digit, or symbol (\$, ?, !), but I can't repeat any of them. How many possibilities exist?

$$\begin{array}{r} 26 \\ 26 \\ 10 \\ 3 \\ \hline 65 \end{array}$$

$$\underline{65 \cdot 64 \cdot 63 \cdot 62 \cdot 61}$$

$$99,186,560$$

- ② From my 12 kids, I will take 3 w/ me on vacation. How many options exist?

$$12nC3 = 220$$

- ③ My quiz is 2 T/F questions followed by 4 M.C. (A, B, C, D, E). How many ways can it be answered?

$$\frac{2}{1} \cdot \frac{2}{2} \cdot \frac{5}{3} \cdot \frac{5}{4} \cdot \frac{5}{5} \cdot \frac{5}{6}$$

$$2500$$

- ④ From the 12 players, Coach will pick a starting 5. How many options does he have?

$$12nC5 = 792$$

- ⑤ I flip a coin 3 times. How many different ways can coin land those 3 times?

$$\frac{2}{H/T} \cdot \frac{2}{H/T} \cdot \frac{2}{H/T} = 8$$

HHH
HHT
HHT
HTH
TTH
TTH
THT
TTH


- ⑥ I will start Poker Night playing Two Toe. Each is given two cards. How many hands exist?

$$52nC2 = 1,326$$

- ⑦ Let's make the Zip code have the following restrictions:
 First digit is odd
 Second digit is prime
 Third digit can't be 0, 1, or 9.

$$\frac{5}{1^{\text{st}}} \cdot \frac{4}{2^{\text{nd}}} \cdot \frac{7}{3^{\text{rd}}} \cdot \frac{10}{4^{\text{th}}} \cdot \frac{10}{5^{\text{th}}}$$

14,000



- ⑧ From 10 kids in my class, how many different seating charts can I do with the 10 desks I have?

$$\frac{10}{1} \frac{9}{2} \frac{8}{3} \rightarrow 10!$$

3,628,800

- ⑨ For \$9.99 you can order a pizza w/ up to 3 toppings. How many options exist if they offer 10 toppings?

$$\frac{3 \text{ toppings}}{10C3} + \frac{2 \text{ toppings}}{10C2} + \frac{1 \text{ toppings}}{10} + \frac{0 \text{ toppings}}{1}$$

120 + 45 + 10 + 1

176