

11-2-17 1st Trig

Put Tom, Rick, and Bob in order. How many ways can I do it?

T R B

T B R

B T R

B R T

R B T

R T B

6 possibilities

- ① How many ways can I put 6 people in order?

$$\frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{1^{\text{st}} \quad 2^{\text{nd}}} = 720$$

- ② Of the 120 kids, we must pick a President, V.P., and Secretary. How many possibilities exist?

$$\frac{120 \cdot 119 \cdot 118}{\text{Pres.} \quad \text{V.P.} \quad \text{Sec.}} = 1,685,040$$

- ③ My passcode is a letter followed by 3 digits (e.g. A325, B116, etc.) How many possibilities exist?

$$\frac{26 \cdot 10 \cdot 10 \cdot 10}{\text{Letter} \quad \text{Digit} \quad \text{Digit} \quad \text{Digit}}$$

$$26000$$

- ④ Passcode is 2 letters which can be uppercase or lowercase and then 2 digits. How many possibilities?

$$\frac{52 \cdot 52 \cdot 10 \cdot 10}{L \quad L \quad D \quad D} = 27,0400$$

- ⑤ State of VA used to be 3 letters followed by 3 digits for its license plates. How many possibilities existed?

$$\frac{26 \cdot 26 \cdot 26 \cdot 10 \cdot 10 \cdot 10}{L \quad L \quad L \quad D \quad D \quad D}$$

$$17,576,000$$

⑥ Now we can do 7 of anything. How many different plates can be made.

$$\frac{36}{\text{L or D}} \frac{36}{\text{L or D}} \frac{36}{\text{L or D}} \frac{36}{\text{L or D}} \frac{36}{\text{L or D}} \frac{36}{\text{L or D}} \frac{36}{\text{L or D}} = 36^7$$

$$7.83641641 \text{ (E 10)} \times 10^{10}$$

$$78,364,164,100$$

⑦ How many different combinations do the lockers in our school have?



$$\underline{50} \cdot \underline{49} \cdot \underline{49} = 120,050$$

11-2-17 3rd Tr. y

Take Bill, Chad, and Tom and put them in as many possible orders as you can.

B, C, T

B, T, C

T, B, C

T, C, B

C, B, T

C, T, B

6

① How many ways can I put 6 people in order?

$$\frac{6}{1^{\text{st}}} \cdot \frac{5}{2^{\text{nd}}} \cdot \frac{4}{3^{\text{rd}}} \cdot \frac{3}{4^{\text{th}}} \cdot \frac{2}{5^{\text{th}}} \cdot \frac{1}{6^{\text{th}}} = 720$$

② From 90 kids in your class, we must pick a President, V.P., and a Secretary. How many ways can we do this picking?

$$\frac{90}{\text{Pres}} \cdot \frac{89}{\text{V.P.}} \cdot \frac{88}{\text{Sec.}} = 704880$$

- ③ My passcode is 2 letters and then 1 digit (eg. AA2, BC9, etc.)
How many possibilities exist?

$$\frac{26 \cdot 26 \cdot 10}{L \quad L \quad D} = 6,760$$

- ④ How many possibilities exist if passcode is 5 characters long and can be uppercase, lowercase, digit, or any of the following symbols: \$, ?, !, or *.

$$\frac{66 \cdot 66 \cdot 66 \cdot 66 \cdot 66}{L \quad L \quad L \quad L \quad L}$$

$$1,252,332,576$$

$$\begin{array}{r} 26 \\ 26 \\ 10 \\ \hline 4 \\ 66 \end{array}$$

- ⑤ On your locker, how many possibilities exist?



$$\frac{50}{1^{\text{st}}} \cdot \frac{49}{2^{\text{nd}}} \cdot \frac{49}{3^{\text{rd}}} = 120,050$$

- ⑥ In the 80's license plates were 3 letters followed by 3 digits. How many could be made this way?

$$\frac{26}{L} \frac{26}{L} \frac{26}{L} \quad \frac{10}{D} \frac{10}{D} \frac{10}{D}$$

$$17,576,000$$

- ⑦ 7 spaces letter or number

$$\frac{36}{1^{\text{st}}} \frac{36}{2^{\text{nd}}} \cdot 36 \cdot 36 \cdot 36 \cdot 36 \cdot 36 = 36^7$$

$$7.83641641 \text{ E } 10$$

$$78,364,164,100$$

11-2-17 4th Trig

How many ways could my three kids Ann, Bob, and Chad been born?

A, B, C

A, C, B

B, A, C

B, C, A

C, A, B

C, B, A

6

- ① From 9 players, how many different batting lineups could I have?

$$\frac{9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{1^{st} \quad 2^{nd} \quad 3}$$

$$9! = 362,880$$

- ② From 115, we must pick a President, V.P., and Secretary. How many ways exist?

$$\frac{115}{\text{Pres}} \cdot \frac{114}{\text{V.P.}} \cdot \frac{113}{\text{Sec.}} = 14,814,30$$

③ My passcode is 2 letters followed by 2 digits. How many possibilities exist?

$$\frac{26}{L} \frac{26}{L} \frac{10}{D} \frac{10}{D} = 67,600$$

④ Passcode is 3 letters (uppercase or lowercase) and then 4 digits. How many possibilities?

$$\frac{52}{L} \frac{52}{L} \frac{52}{L} \frac{10}{D} \frac{10}{D} \frac{10}{D} \frac{10}{D}$$

$$1,406,080,000$$

⑤ Passcode is 8 spaces with letters, digits, or a character (\$, *, ?, !, or &).

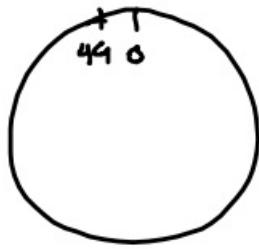
$$\begin{array}{r} 26 \\ 26 \\ 10 \\ 5 \\ \hline 67 \end{array}$$

$$\frac{67}{1^{\text{st}}} \cdot \frac{67}{2^{\text{nd}}} \cdot \frac{67}{3} \cdot \frac{67}{4} \cdot \frac{67}{5} \cdot \frac{67}{6} \cdot \frac{67}{7} \cdot \frac{67}{8}$$

$$67^8 = 4.060676776 \text{E} 14$$

$$406,067,677,600,000 \times 10^{14}$$

- ⑥ How many possibilities exist on your locker?



$$\underline{50} \cdot \underline{49} \cdot \underline{49} = 120,050$$

- ⑦ In the 80's license plates were 3 letters followed by 3 digits. How many plates could be made?

$$\frac{26}{L} \frac{26}{L} \frac{26}{L} \frac{10}{D} \frac{10}{D} \frac{10}{D}$$

$$17,576,000$$

- ⑧ You can make your plate 5 characters (letters or digits)

$$\frac{26}{10} \\ \underline{36}$$

$$\underline{36} \cdot \underline{36} \cdot \underline{36} \cdot \underline{36} \cdot \underline{36} = 36^5$$

$$60,466,176$$