12-3-13
3rd Trig

① How many different ways can you answer a 5 question multiple choice test that has options A, B, C, D?

$$\frac{4}{1^{st}} \cdot \frac{4}{2^{n}} \cdot \frac{4}{3^{rd}} \cdot \frac{4}{4^{th}} \cdot \frac{4}{5^{th}} = 4^5$$

$$= 1024$$

② My passcode is 3 digits and then one letter. How many passcodes exist?

$$\frac{10}{D} \cdot \frac{10}{D} \cdot \frac{10}{D} \cdot \frac{26}{L} = 26000$$

③ From the 20 kids, I must pick a President, V.P., and Secretary. How many options exist?

$$\frac{20}{P} \cdot \frac{19}{V.P.} \cdot \frac{18}{Sec} = 6840$$

④ From the 20 kids, I must pick 3 to help me buy gifts for my wonderful children. How many ways can I pick 3?

$$20 \, nCr \, 3 = 1140$$

⑤ From the 10 comics, I will let you buy 2. How many possibilities exist?

$$10 \, nCr \, 2 = 45$$

⑥ How many 3 card hands can be dealt from a deck of cards?

$$52 \, nCr \, 3 = 22,100$$

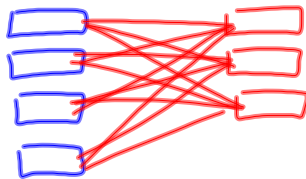⑦ From the 15 toppings, how many 2 topping or less pizzas can I order?

2 topping: $15 \text{ ncr } 2 = 105$
1 topping: $= 15$
0 topping: $= 1$
$\overline{121}$

⑧ A zip code is 5 digits. Assume the first digit can't be a 0 or 1. How many codes exist?

$\underline{8} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} = 80,000$

⑨ From the 8 girls I must pick 3. From the 5 boys, I must pick 2. How many girl-boy groups can I form?

$\underline{\text{Girls}}$ $\underline{\text{Boys}}$
$8 \text{ ncr } 3$ $5 \text{ ncr } 2$

56 • 10

560

I need a new team of 4 people to help with my campaign. If 14 people apply, how many groups of 4 can I form?

$14 \text{ ncr } 4 = 1001$

12-3-13
4th Trig

① My password is 2 digits
followed by a letter and
then 2 more digits.
How many passwords exist?

$$\underset{D}{10} \cdot \underset{D}{10} \cdot \underset{L}{26} \cdot \underset{D}{10} \cdot \underset{D}{10} = 260,000$$

② From the 80 kids, I
must pick a President,
V.P, and a Secretary.
How many possibilities exist?

$$\underset{P}{80} \cdot \underset{V.P.}{79} \cdot \underset{Sec.}{78} = 492,960$$

③ From the 80 kids, I must
pick 3 to be in my
comic book club. How many
ways are available?

$$80 \, nCr \, 3 = 82,160$$

④ From the 12 toppings,
you can order a 2 topping
or less pizza for $6.99.
How many possibilities
are there?

2 toppings: $12 \, nCr \, 2 = 66$
1 topping : $= 12$
0 topping : $= 1$
$$\overline{\qquad\qquad 79}$$

⑤ How many different ways
can you answer a 5 questi
multiple choice quiz with
options A, B, C, D ?

$$\underset{Q1}{4} \; \underset{Q2}{4} \; \underset{Q3}{4} \; \underset{Q4}{4} \; \underset{Q5}{4} = 4^5$$

$$= 1024$$

⑥ From the 30 paint
colors, I must come
home with 2 colors.
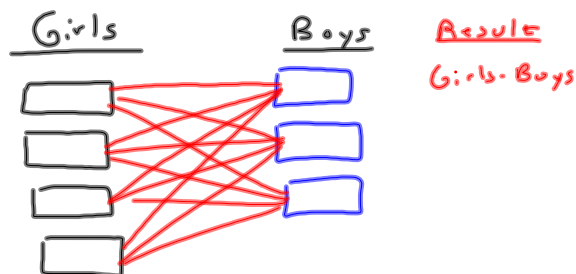How many options exist.

$$30 \, nCr \, 2 = 435$$

⑦ How many 3 card hands
can be dealt from a
52 card deck?

$$52 \, nCr \, 3 = 22,100$$

⑧ A zip code is 5 digits. If
the 1st, 2nd, and 5th digit can't
be a zero, how many zipcodes
exist?

$$\frac{9}{1^{st}} \quad \frac{9}{2^{nd}} \quad \frac{10}{3^{rd}} \quad \frac{10}{4^{th}} \quad \frac{9}{5^{th}} = 72,900$$

<u>Girls</u>   <u>Boys</u>   <u>Result</u>

Girls · Boys

⑦ From the class, I must make
a coed softball team.
From the 8 girls, I need 2.
From the 7 boys, I need 3.
How many different teams
can I put together?

<u>Girls</u>   <u>Boys</u>
$8 \, nCr \, 2$ $7 \, nCr \, 3$

28   ·   35

980

⑩ How many licenses exist if you pick 7 letters or digits or blank spaces? No license plate can be all blank spaces.

$$\frac{37}{1} \quad \frac{37}{2} \quad \frac{37}{3} \quad \frac{37}{4} \quad \frac{37}{5} \quad \frac{37}{6} \quad \frac{37}{7}$$

$$37^7 - 1$$