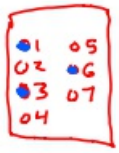
12-4-19 1st Trig

① My lotto will have you pick 4 numbers from 1 to 40 and then a special # from 1 to 20. How many possibilities exist?

1-40

40 nCr 4

91,390 × 20



1,827,800

② From your class of 20, I will pick a President, V.P., Secretary, and Treasurer. How many options exist?

$\underset{\text{Pres.}}{20} \cdot \underset{\text{V.P.}}{19} \cdot \underset{\text{Sec.}}{18} \cdot \underset{\text{Tr.}}{17}$

116,280

③ How many ways can you answer a 3 question True/False quiz?

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

TTT FFF
TTF FFT
TFT FTF
TFF FTT

④ A quiz has first 2 questions as multiple choice (A,B,C,D,E) Next 2 questions are True/False. How many ways can you answer quiz?

$\underset{\text{M.C.}}{5} \quad \underset{\text{M.C.}}{5} \quad \underset{\text{T/F}}{2} \quad \underset{\text{T/F}}{2} = 100$

(5) How many ways can you answer a 10 question True/False quiz?

$2 \cdot 2 \cdot 2 \cdot 2 \cdots = 2^{10}$

1024

(6) Radford needs more phone numbers, so they now get prefix of 732-____. How many new phone numbers did they create.

$10 \cdot 10 \cdot 10 \cdot 10 = 10{,}000$

0000
0001
0002
⋮
9999

(7) Using just our area code of 540, how many numbers could we make knowing we can't start with a zero.

(540) $9 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$

9,000,000

(8) My passcode is 5 characters long. No two can be the same. You can use upper or lower case letters, any digit, and any of 8 special symbols. How many passcodes exist?

26
26
10
8
70

$70 \cdot 69 \cdot 68 \cdot 67 \cdot 66$

1,452,361,680

(9) At Double's, you can pick from 20 toppings. How many 5 topping pizzas exist?

20 nCr 5

15,504

(10) A quiz is matching with options A, B, C, D, E, F. Each letter can only be used once. How many different answer keys could be made?

6 5 4 3 2 1 = 720

(11) For the Hickam Award, 2 girls from 20 will be picked and 2 boys from the 10 will be chosen. How many options exist?

Girls	Boys
20 nCr 2	10 nCr 2
190	45

8550

(12) I will keep 12 kids from the 25 who tried out. How many options exist?

25 nCr 12

5,200,300

12-4-19 3rd Trig

(1) My passcode is 6 characters long. I can use upper or lower case letters, digits, or any of 8 special symbols. You can't repeat any character. How many options exist?

26
26
10
8
70

70 / 1st 69 / 2nd 68 / 3rd 67 / 4th 66 / 5th 65 / 6th

9.44035092E10

94,403,509,200

(2) 25 kids came out for tryouts. I only keep 11. How many different teams could be formed?

25 nCr 11

4,457,400

(3) Lottery has you pick 5 numbers from 1 to 40. Then you must pick one number from 1 to 25. How many possibilities exist?

40 nCr 5

658,008 x 25

16,450,200

(4) How many different ways can you answer a 3 question True/False quiz?

$$\underset{1^{st}}{2} \cdot \underset{2^{nd}}{2} \cdot \underset{3^{rd}}{2} = 8$$

TTT FFF
TTF FFT
TFF FTF
TFT FTT

(5) How many different ways can you answer a M.C. quiz with options A, B, C, D, E that has 6 questions?

$$\underset{1^{st}}{5}\ \underset{2^{nd}}{5}\ \underset{3^{rd}}{5}\ \underset{4^{th}}{5}\ \underset{5^{th}}{5}\ \underset{6^{th}}{5}$$

$5^6 = 15{,}625$

(6) From your class of 120 kids, we will pick a President, V.P., Secretary, and a Treasurer. How many options are there?

$$\underset{Pres}{120}\ \underset{V.P.}{119}\ \underset{Sec.}{118}\ \underset{Tr.}{117}$$

$197{,}149{,}680$

(7) How many different ways can a 10 question True/false quiz be answered?

$\underset{1^{st}}{2} \cdot \underset{2^{nd}}{2} \cdot \ldots \cdot 2 = 2^{10} = 1024$

(8) For the Hickam Award, I must pick 2 boys and 2 girls. There are 12 girls and 10 boys from which to pick. How many possibilities exist?

Boys		Girls
10nCr2		12nCr2
45	X	66

2,970

(9) Radford just added the new prefix 732 so they can have more phone numbers. How many did this add?

540-732-____

10 10 10 10 = 10,000

0000
0001
0002
0003
9999

10,000

(10) How many phone numbers exist in our 540 area code assuming the first number can't be a zero?

(540) 9 10 10 - 10 10 10 10

9,000,000

(11) From my 60 shoes, I will pick 3 pairs to go to Japan. How many possibilities exist?

60 nCr 3

34,220