12-5-19 4th Trig

① From the 24 kids who tried out for the team, Coach kept 12. How many options did he have?

24 nCr 12

2,704,156

② My passcode must be 6 characters long. You can use lower or upper case letters, digits, or any of 9 special symbols. You can't repeat any character. How many options exist?

26
26
10
9

$\frac{71}{1^{st}} \cdot \frac{70}{2^{nd}} \cdot \frac{69}{3^{rd}} \cdot \frac{68}{4^{th}} \cdot \frac{67}{5^{th}} \cdot \frac{66}{6^{th}}$

103,117,679,300

③ New lottery has you pick 4 numbers from 1-100. Then you must pick the "special number" from 1 to 20. How many possibilities exist?

First 4: 100 nCr 4

Special: 20

3,921,225 → 1
× 20 → 2
3

78,424,500

④ Radford added the prefix 732 to the phone numbers. How many new phone numbers can now be made?

732-____

10 10 10 10 = 10,000

0000
0001
0002
0003
⋮
9999

⑤ How many phone numbers can exist in our 540 area code knowing we can't start with a zero?

9 10 10 - 10 10 10 10

9,000,000

⑥ How many different ways can a 3 question True/False quiz be answered?

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

TTT FFF
TTF FFT
TFF FTT
TFT FTF

⑦ A quiz is 10 multiple choice questions with options A, B, C, D, E. How many answer keys could exist?

$\frac{5}{1}\ \frac{5}{2}\ \frac{5}{3}\ \ldots = 5^{10}$

9,765,625

⑧ For the Hickam Award, I will pick 2 girls and 2 boys. I have 12 girls and 11 boys from which to pick. How many options exist?

Girls		Boys
12nCr2		11nCr2
66	×	55

3,630

⑨ From the 124 kids in the class, you will pick a President, V.P., Secretary, and Treasurer. How many options exist?

124	123	122	121
Pres	V.P.	Sec.	Tr.

225,150,024

(10) How many 2 topping pizzas can I make if I have 18 toppings to pick from?

$18 \text{ nCr } 2$

153

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

$\frac{2}{1} \cdot \frac{2}{2} \cdot \frac{2}{3} \cdot \frac{2}{4} \cdots 2 = 2^{10} = 1024$