Q1: a

How many numbers are there

$6 \times 6 \times 6 = 216$ numbers

Q1: b

How many numbers are there if the digits are instinct

$6 \times 5 \times 4 = 120$ numbers

How many numbers are there between 300 to 700 is only odd digit alow?

$4 \times 6 \times 3 = 72$ numbers

Q2 : a

5 men & 5 women

$(6-1)! \times 5! = 5! \times 5! = 14400$ ways

Q2 : b

The couple insted to sit next to each other

$(9-1)! \times (2)! = 8! \times 2! = 80640$ ways

Q2 : C

Man and women sit alternat sit

$(5-1)! \times 5! = 4! \times 5! = 2880$ ways

Q2 : d

How many ways can photographer arrang in a row if Anith and her husband sit next to each other

$(11)! \times (2)! = 79833600$ ways

Q3: a

If no ties

$5! = 120$ ways

Q3: b

Two sprinters tie

$4! \times (5C2) = 24 \times 10 = 240$ ways

Q3: c

Two group of two sprint ties

$3! \times (5C2) \times (3C2) = 6 \times 10 \times 3 = 180$ ways

Qu: a

dozen of croissants

(17C5) = 6188 ways

Qu: b

two dozen of croissants at least two of each kind

(17C5) = 6188 ways

Qu: C

two dozen of croissants at least 5 chocolate and at least 3 almond croissants

(21 C5) = 20349 ways

Discreate:

Q5:

a) each round we have Three options, team A Wins the round team B wins the round or Tie.

2 wins amoung 4 games $C(4,2) = \frac{4!}{2!(4-2)!} = 6$

1 Win amoung 3 games $C(3,1) = \frac{3!}{1!(3-1)!} = 3$

- we need to Know the other games:

~~2 Win~~ 2 wins and 1 ties/wins: $C(4,2).C(3,1).2$
$= 36$

1 Wins & 3 ties/Wins: $C(3,1).C(4,3).2^3 = 96$

- we have to obtain number of Scenarios.

number of ~~se~~ Scenarios $= 2.(36+96)$
$= 2.132$
$= 264$

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Q# 5

b. If 10 penalty kicks are played there are $2 \cdot 2 \cdot \ldots \cdot 2 = 2^{10} = 1024$

- We know that 264 of the 1024 result in the first round of 10 ~~th~~ penalty by part a#.
- first round : 76
- Second round : 264 by part a

By the product rule:

number of scenarios $= 760 \cdot 264 = 200{,}640$

Q# 5. c: we that is not settled after the first round of 10 penalty kicks.

~~- If the game~~

first round : 760 ~~for~~ scenarios

second round : 760

Sudden death: $2+2+2+2+2 = 10$ scenarios

by the product rule:

Number of scenarios $= 760 \cdot 760 \cdot 10 = 5{,}776{,}000$

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Q6 A: we have to use ~~Pigeonprincible~~ pigeonprincible.

- The pigeonholes are the answer sheets and we need to use the generalized pi-geonhole priniple to determine the number of pigeons needed for at Least one pigeonhole to contain Three pigeon~~holes~~. Because we have 4^{10} possible answeer sheet, $2 \cdot 4^{10}+1$ is the Least possible nuber of studen to make sure that the three answer sheet is the same.

7: A

history: 75% passed the 100-75 = 25% Failed

math: 65 passed so 100-65 = 35% Failed

50% passed so 50% failed.

total failed studend = 25% + 35% - 50%

= 10%

so total passed student = 90%

so 10% of the student is 35

so 90% of the student is 315

so the total is = 35 + 315 = 350 students

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Q 8: The answer is $\frac{171}{900}$

The numbers that ~~dosenot~~ does not have one anywhere $9^3 = 729$

There is $9 \times 10^2 = 900$ minume 0 ~~minimume~~ ~~minumume~~

- There is $900 - 729 = 171$ with at Least a one $\frac{171}{900}$

9) a. $\frac{^{10}C_6}{4!\cdot 2!} = 5 \times 21 = 105$

number of ways = 105

b. From the question, we can only 5 cars.
we are going to Park all cars in the alternative lots.

a.

10) Probability receives the message $= (0.4 \times 0.6) + (0.1 \times 0.8) + (0.5 \times 1) = 0.82$

b. This can be obtained by Bayes theorem

Required probability $= (0.4 \times 0.6) \div (0.4 \times 0.6) + (0.1 \times 0.8) + (0.5)(1) = \frac{0.24}{0.82} = 0.29$

11) Probability the accident involved a light truck $= \frac{25}{45} \times 100 = 55.5\%$

12) The number of possible ways, without restrictions is $4^8 = 65536$.

$4 \times 3^8 = 26244$ disallowed ways

$4 \times 1^8 = 4$ ways to put all letters into one box twice

The number of allowed assignments is $65536 - 26244 + 4$
$= 39296$ ways