Puzzle 9 | (Find the fastest 3 horses)

There are 25 horses among which you need to find out the fastest 3 horses. You can conduct race among at most 5 to find out their relative speed. At no point you can find out the actual speed of the horse in a race. Find out how many races are required to get the top 3 horses.

The minimum no of races to be held is 7.

Make group of 5 horses and run 5 races. Suppose five groups are a,b,c,d,e and next alphabet is its individual rank in tis group(of 5 horses).for eg. d3 means horse in group d and has rank 3rd in his group. [5 RACES DONE]

a1 b1 c1 d1 e1

a2 b2 c2 d2 e2

a3 b3 c3 d3 e3

a4 b4 c4 d4 e4

a5 b5 c5 d5 e5

Solution:

Now make a race of (a1,b1,c1,d1,e1).[RACE 6 DONE] suppose result is a1>b1>c1>d1>e1

which implies a1 must be FIRST.

b1 and c1 MAY BE(but not must be) 2nd and 3rd.

FOR II position, horse will be either b1 or a2

(we have to find top 3 horse therefore we choose horses b1,b2,a2,a3,c1 do racing among them [RACE 7 DONE].

The only possibilities are :

c1 may be third

b1 may be second or third

b2 may be third

a2 may be second or third

a3 may be third

The final result will give ANSWER. suppose result is a2>a3>b1>c1>b2

then answer is a1,a2,a3,b1,c1.

HENCE ANSWER is 7 RACES

Please note that the 7 races work for the case also when all top 3 horses are same group or any top two horses are in same group. The group which has top 3 horses would always have winner in 6th race. In 7th race, we consider 2nd and 3rd horses of the group whose horse is overall winner. We also consider 2nd horse of the group whose horse came 2nd in 6th race.