***Melbourne Cup Maths Investigation***

The Melbourne Cup is a horse race run over 3200 metres. A full field of 24 horses is eligible to run in the race.

1. Assuming the horses have roughly equal ability, how many horses do you need to choose to have a 50% chance of selecting the winner of the race?

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A common interest in the race is trying to choose the trifecta – often the payout can be very large. You need to select the first three horses past the post in the correct order.

2. How many different trifectas are possible in a race with 24 horses?

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A box trifecta consists of choosing the first three horses, but they can finish in any order – not quite as difficult as selecting the trifecta.

3. How many different box trifectas are possible in the race?

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4. How many horses do you need to choose to have a 50% chance of selecting the box trifecta? Be careful!

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Choosing the winner of the race can be reduced to a problem in simple statistics.

[](http://www.google.com.au/url?sa=i&rct=j&q=horse%20racing%20images&source=images&cd=&cad=rja&docid=AVLhWkfABFSinM&tbnid=Tun43KyHB4IcMM:&ved=0CAUQjRw&url=http://www.ontracktobeatbreastcancer.com/Page2.html&ei=MM1yUpSPC4mmkgXNu4CYDw&bvm=bv.55819444,d.dGI&psig=AFQjCNE-ZnncA9OsOcnImW0saWcKIxHi8A&ust=1383341704193414)5. By looking at the past history of the race, find:

* the most likely type of horse (mare, stallion, gelding)
* the most likely age of horse
* the most likely starting position (barrier)
* the most likely amount of weight carried

6. Once you have this information, see how many of this year’s horses meet most the criteria above. The winner just might be one of those horses.

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