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## QUICK QUESTION 2 (2/2 points)

In the previous video, we saw a small example with 3 men and 3 women. We defined a "match" as an assignment of each man to exactly one woman, and each woman to exactly one man. The optimal match in the previous video was to assign man 1 to woman 3, man 2 to woman 1, and man 3 to woman 2.

How many different feasible matches are there in the example with 3 men and 3 women? (HINT: Another feasible match is to assign man 1 to woman 1, man 2 to woman 3, and man 3 to woman 2.)

**Answer:** 6

How many different feasible matches are there with 5 men and 5 women? (HINT: First assign man 1 to one of the women. How many choices are there? Then assign man 2 to a woman - how many choices are there now? Repeat this until every man is matched to every woman.)

- ☐ 10
- ☐ 20
- ☐ 50
- ☐ 100
- ☒ 120
- ☐ 150

### EXPLANATION

In the first case, there are 6 possible matches. The first man can be assigned to any of the 3 women (3 choices). Then the second man can be assigned to any of the remaining 2 women (2 choices). The third man is automatically assigned to the remaining woman. So there are a total of  $3 \times 2 = 6$  choices.

In the second case, there are 120 possible matches. The first man can be assigned to any of the 5 women (5 choices), then the second man can be assigned to any of the remaining women (4 choices), etc. This gives a total of  $5 \times 4 \times 3 \times 2 = 120$  different matches.

You can easily see how the number of possible matches gets very large on online dating sites!

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You have used 1 of 3 submissions





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