

Rework problem 26 from section 2.2 of your text, involving the casting of a play in a community theater. Assume that there are 6 unfilled roles: 3 male and 3 female. There are 4 men and 7 women, including Ann, auditioning for a part in the play.

1. How many different casts are there?

$${}_4P_3 \times {}_7P_3 = 24 \times 210 = 5040$$

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Answer is 5040.

2. How many of these casts include Ann?

number of people who Ann is not part of is

$${}_4P_3 \times {}_6P_3 = 24 \times 120 = 2880$$

number of people including Ann is

$$= 5040 - 2880 = 2160$$

Answer is 2160.