

Evaluation 2 Problem 1

1.0/1.0 point (graded)

In the small country of Fredonia, the Senate consists of 15 senators: eight of whom are Republicans and seven of whom are Democrats. By law, therefore, the five-person Ways and Means Committee must consist of three Republicans and two Democrats.

How many ways are there of choosing the members of the committee?
Choose the best answer.

☐ $\binom{8}{2} \times \binom{7}{3}$

☐ $\binom{15}{5} - \binom{8}{5} - \binom{7}{5}$

☒ $\binom{8}{3} \times \binom{7}{2}$

☐ $8^3 \times 7^2$



Submit

You have used 1 of 2 attempts

Evaluation 2 Problem 2

1.0/1.0 point (graded)

In the small country of Fredonia, the Senate consists of 15 senators: eight of whom are Republicans and seven of whom are Democrats. By law, therefore, the five-person Ways and Means Committee must consist of three Republicans and two Democrats.

Suppose that, in addition, we have to specify a Republican to serve as Chair of the committee and a Democrat to serve as Ranking Member. How many

ways are there of choosing the members of the committee, the Chair, and the Ranking Member? *Choose the best answer.*

☒ $\binom{8}{3} \times 3 \times \binom{7}{2} \times 2$

☐ $\binom{8}{3} \times \binom{7}{2} \times \binom{5}{2}$

☐ $\binom{15}{5} - \binom{8}{3} - \binom{7}{2}$

☐ $\binom{8}{3} \times \binom{7}{2} \times 5 \times 4$



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You have used 1 of 2 attempts

Evaluation 2 Problem 3

1.0/1.0 point (graded)

In the small country of Fredonia, the Senate consists of 15 senators: eight of whom are Republicans and seven of whom are Democrats.

Suppose the rules are relaxed, and it's required only that the committee NOT consist entirely of Republicans or entirely of Democrats. How many ways of choosing the five members of the committee are there now? (Do not include a Chair and Ranking Member.) NOTE: There are **two possible correct answer options** for this problem. Either will be scored as correct.

☐ $15 \times 14 \times 13 \times 12 \times 7$

☐ $\binom{15}{8} \times \binom{15}{7}$

☒ $\binom{15}{5} - \binom{8}{5} - \binom{7}{2}$

☐ $\binom{15}{5} - \binom{8}{5} - \binom{7}{5}$



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Evaluation 2 Problem 4

1.0/1.0 point (graded)

Let's say you want to order a pizza from the Harvard House of Pizza, which offers seven meat toppings and six fruit or vegetable toppings.

How many pizzas can you order with three different meat toppings and two different fruit or vegetable toppings? *Choose the best answer.*

☐ $7^3 \times 6^2$

☐ $\binom{13}{5} - \binom{7}{5} - \binom{6}{5}$

☒ $\binom{7}{3} \times \binom{6}{2}$

☐ $7^3 \times 6^3$



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You have used 1 of 2 attempts

Evaluation 2 Problem 5

1.0/1.0 point (graded)

Let's say you want to order a pizza from the Harvard House of Pizza, which offers seven meat toppings and six fruit or vegetable toppings.

Suppose that you want five different toppings on your pizza; you don't insist

that there be three meat toppings and two fruit or vegetable toppings, but only that no more than three of the toppings be meat. Now how many pizzas are possible? *Choose the best answer.*

☐ $\binom{7}{3} \times \binom{6}{2}$

☒ $\binom{13}{5} - \binom{7}{5} - 6 \times \binom{7}{4}$

☐ $\binom{7}{5} + \binom{6}{5}$

☐ $7^4 \times 6^2$



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Evaluation 2 Problem 6

1.0/1.0 point (graded)

Suppose that a group of 10 students are to be assigned to four dorm rooms: a single, a double, a triple and a quad. How many ways are there are making the assignments? *Choose the best answer.*

☐ $\binom{10}{4}$

☐ $\binom{10}{4} + \binom{10}{3} + \binom{10}{2} + \binom{10}{1}$

☐ $10! \times 9! \times 8! \times 7!$

☒ $\binom{10}{1} \times \binom{9}{2} \times \binom{7}{3}$



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You have used 1 of 2 attempts

Evaluation 2 Problem 7

1.0/1.0 point (graded)

How many anagrams are there of the word "BOOKKEEPER"? *Choose the best answer.*

☐ $10! \times 9! \times 8! \times 7!$

☐ $\frac{6!}{2! \times 2! \times 3!}$

☒ $\frac{10!}{2! \times 2! \times 3!}$

☐ $\binom{10}{4} + \binom{10}{2} + \binom{10}{1}$



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You have used 1 of 2 attempts

Evaluation 2 Problem 8

1.0/1.0 point (graded)

Suppose you want to distribute 15 ham sandwiches to eight people, with no restriction on how many each person gets. How many ways are there of choosing how many sandwiches each person gets? *Choose the best answer.*

☐ $\frac{15!}{8!}$

☒ $\binom{22}{7}$

☐ $\binom{22}{8}$

☐ $\binom{23}{8}$



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