

## Chapter 10 Probabilities Review Combination and Pascal Triangle with Binomial Expansion

Lesson 130 | Algebra II | Pascal's triangle and binomial expansion • Counting, permutations and combinations

<https://www.youtube.com/watch?v=kFZilirZrTo>

Original practice aligned to the saved video title.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Show your reasoning.

**01**

Find the coefficient of  $x^2$  in  $(1 + 12x)^7$ . Explain using combinations.

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**02**

From 14 distinct students choose a team of 4 students. How many teams? How many ordered assignments to the same number of distinct roles?

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**03**

Find the coefficient of  $x^2$  in  $(1 + 10x)^4$ . Explain using combinations.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_ Show your reasoning.

04

From 18 distinct students choose a team of 2 students. How many teams? How many ordered assignments to the same number of distinct roles?

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05

Find the coefficient of  $x^2$  in  $(1 + 5x)^5$ . Explain using combinations.

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06

From 13 distinct students choose a team of 5 students. How many teams? How many ordered assignments to the same number of distinct roles?

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**01**

Find the coefficient of  $x^2$  in  $(1 + 12x)^7$ . Explain using combinations.

Choose which 2 of the 7 factors contribute  $12x$ . Coefficient  $C(7,2) \cdot 12^2 = 3024$ .

**02**

From 14 distinct students choose a team of 4 students. How many teams? How many ordered assignments to the same number of distinct roles?

For  $m=4$ , teams  $C(14,m)=1001$ . Ordered assignments  $P(14,m)=24024$ ; order matters only for roles.

**03**

Find the coefficient of  $x^2$  in  $(1 + 10x)^4$ . Explain using combinations.

Choose which 2 of the 4 factors contribute  $10x$ . Coefficient  $C(4,2) \cdot 10^2 = 600$ .

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04

From 18 distinct students choose a team of 2 students. How many teams? How many ordered assignments to the same number of distinct roles?

For  $m=2$ , teams  $C(18,m)=153$ . Ordered assignments  $P(18,m)=306$ ; order matters only for roles.

05

Find the coefficient of  $x^2$  in  $(1 + 5x)^5$ . Explain using combinations.

Choose which 2 of the 5 factors contribute  $5x$ . Coefficient  $C(5,2) \cdot 5^2 = 250$ .

06

From 13 distinct students choose a team of 5 students. How many teams? How many ordered assignments to the same number of distinct roles?

For  $m=5$ , teams  $C(13,m)=1287$ . Ordered assignments  $P(13,m)=154440$ ; order matters only for roles.