

**LESSON
11.3****Practice B***For use with the lesson "Find Probabilities Using Combinations"***Evaluate the expression.**

1. ${}_8C_4$

2. ${}_5C_5$

3. ${}_{12}C_0$

4. ${}_7C_1$

5. ${}_{15}C_{11}$

6. ${}_{10}C_3$

7. ${}_6C_5$

8. ${}_4C_2$

9. ${}_{16}C_8$

Complete the statement using $>$, $<$, or $=$.

10. ${}_{10}C_6 \underline{\hspace{1cm}} {}_8C_5$

11. ${}_{22}C_3 \underline{\hspace{1cm}} {}_{18}C_4$

12. ${}_9C_6 \underline{\hspace{1cm}} {}_9C_3$

13. ${}_8C_2 \underline{\hspace{1cm}} {}_{15}C_{14}$

14. ${}_7C_7 \underline{\hspace{1cm}} {}_{14}C_{14}$

15. ${}_5C_3 \underline{\hspace{1cm}} {}_8C_3$

In Exercises 16–18, tell whether the question can be answered using combinations or permutations. Explain your choice, then answer the question.

16. Five students from the 90 students in your class not running for class president will be selected to count the ballots for the vote for class president. In how many ways can the 5 students be selected?
17. Twenty students are running for 3 different positions on student council. In how many ways can the 3 positions be filled?
18. To complete a quiz, you must answer 3 questions from a list of 6 questions. In how many ways can you complete the quiz?
19. **Sweaters** The buyer for a retail store must decide which sweaters to stock for the upcoming fall season. A sweater from one manufacturer comes in 5 different colors and 3 different textures. The buyer decides that the store will stock the sweater in 3 different colors and 2 different textures. How many different sweaters are possible?
20. **Greeting Cards** A greeting card company packages 4 different cards together that are randomly selected from 10 different cards with a different animal on each card. What is the probability that one of the cards in a package is the card that has a dog on it?
21. **Open-Mike Night** A coffee shop offers an open-mike night for poetry. Tonight, 15 people would like to read, but there is only enough time to have 7 people read.
- Seven of the 15 people that would like to read are randomly chosen. How many combinations of 7 readers from the group of people that would like to read are possible?
 - You and your friend are part of the group that would like to read. What is the probability that you and your friend are chosen? What is the probability that you are chosen first and your friend is chosen second? Which event is more likely to occur?