Name _____ Date _____

LESSON 11.3

Challenge Practice

For use with the lesson "Find Probabilities Using Combinations"

In Exercises 1–7, simplify the expression.

1. ${}_nC_1$
2. ${}_nC_n$
3. ${}_nC_2$
4. ${}_nC_{n-1}$
5. ${}_nC_{n-2}$
6. ${}_nC_0$
7. ${}_nC_3$

In Exercises 8–10, compute the given expression using the following fact.

$2^n = {}_nC_0 + {}_nC_1 + {}_nC_2 + \cdots + {}_nC_{n-1} + {}_nC_n$

8. ${}_{10}C_1 + {}_{10}C_2 + \cdots {}_{10}C_{10}$
9. ${}_{15}C_2 + {}_{15}C_3 + \cdots {}_{15}C_{15}$
10. ${}_nC_1 + {}_nC_2 + \cdots {}_nC_n$

11. If ${}_{10}C_r = 252$, then what is r?
12. If ${}_nC_r = 495$ and ${}_nP_r = 11{,}880$, then what are n and r?
13. Show that ${}_nC_r = {}_nC_{n-r}$.
14. Show that ${}_nC_{r-1} + {}_nC_r = {}_{n+1}C_r$.