



GUIDED PRACTICE

1. **Vocabulary** When you open a rotating combination lock, order is ? (*important or not important*), so this is a ? (*permutation or combination*).

SEE EXAMPLE 1

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2. Jamie purchased 3 blouses, 3 jackets, and 2 skirts. How many different outfits using a blouse, a jacket, and a skirt are possible?
3. An Internet code consists of one digit followed by one letter. The number zero and the letter *O* are excluded. How many codes are possible?

SEE EXAMPLE 2

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4. Nate is on a 7-day vacation. He plans to spend one day jet skiing and one day golfing. How many ways can Nate schedule the 2 activities?
5. How many ways can you listen to 3 songs from a CD that has 12 selections?
6. Members from 6 different school organizations decorated floats for the homecoming parade. How many different ways can first, second, and third prize be awarded?

SEE EXAMPLE 3

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7. A teacher wants to send 4 students to the library each day. There are 21 students in the class. How many ways can he choose 4 students to go to the library on the first day?
8. Gregory has a coupon for \$1 off the purchase of 3 boxes of Munchie brand cereal. The store has 5 different varieties of Munchie brand cereal. How many ways can Gregory choose 3 boxes of cereal so that each box is a different variety?

PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
9–10	1
11–13	2
14	3

Extra Practice

Skills Practice p. S24

Application Practice p. S42

9. **Hiking** A hiker can take 4 trails to the lake and then 3 trails from the lake to the cabins. How many routes are there from the lake to the cabins?
10. The cheerleading squad is making posters. They have 3 different colors of poster board and 4 different colors of markers. How many different posters can be made by using one poster board and one marker?
11. How many ways can you choose a manager and assistant from a 9-person task force?
12. How many identification codes are possible by using 3 letters if no letter may be repeated?
13. There are 5 airplanes ready to depart. Runway A and runway D are available. How many ways can 2 planes be assigned to runways without using the same runway?
14. **Food** How many choices of 3 hamburger toppings are possible?
15. **What if...?** In the United Kingdom's National Lottery, you must correctly select a group of 6 numbers from 49. Suppose that the contest were changed to selecting 7 numbers. How many more ways would there be to select the numbers?



Evaluate.

16. ${}_6P_6$

17. ${}_5C_5$

18. ${}_9P_1$

19. ${}_6C_1$

20. $\frac{2!}{6!}$

21. $\frac{4!3!}{2!}$

22. $\frac{9!}{7!}$

23. $\frac{8! - 5!}{(8 - 5)!}$