Extra Help On the Web

Look for worked-out examples at the Prentice Hall Web site.
www.phschool.com

15-1 Exercises

A

Solve.

1. How many 4-letter code symbols can be formed with the letters *P, D, Q, X* without repetition?
2. How many 5-digit numbers can be formed using all the digits 0, 1, 2, 3, 4 without repetition?
3. In how many ways can 6 bicycles be parked in a row?
4. In how many ways can 7 different cards be laid out on a table in a row?
5. A woman is going out for the evening. She will put on one of 6 dresses, one pair out of 8 pairs of shoes, and go to one of 7 restaurants. In how many ways can this be done?
6. A man is going out for the evening. He will put on one of 7 suits, one pair out of 4 pairs of shoes, and go to one of 10 restaurants. In how many ways can this be done?

Mental Math Evaluate.

7. ${}_6P_6$ 8. ${}_5P_5$ 9. ${}_4P_4$ 10. ${}_2P_2$

Evaluate.

11. In how many ways can 7 people line up in a row?
12. In how many ways can 8 motorcycles be parked in a row?
13. How many permutations are there of the letters in the set $\{R, S, T, U, V, W\}$?
14. How many permutations are there of the letters in the set $\{M, N, O, P, Q, R, S\}$?
15. The owner of a business hires 8 secretaries, one for each of 8 department managers. How many different assignments of the secretaries are possible?
16. A fruit stand sells 9 different varieties of apples. How many different ways can the names of the apples be arranged on a sign?

Evaluate.

17. $5!$ 18. $6!$ 19. $1!$ 20. $0!$

Represent each in the form $n(n-1)!$.

21. $9!$ 22. $13!$ 23. $a!$ 24. $m!$
25. Rewrite $27!$ with a factor of $22!$.
26. Rewrite $13!$ with a factor of $5!$.

Compute.

27. ${}_4P_3$ 28. ${}_7P_5$ 29. ${}_{10}P_7$ 30. ${}_{10}P_3$
31. ${}_{20}P_2$ 32. ${}_{30}P_2$ 33. ${}_8P_3$ 34. ${}_7P_4$

35. In how many ways can the letters of the set $\{M, N, O, P, Q\}$ be arranged to form ordered codes of 4 letters? 3 letters?
36. In how many ways can the letters of the set $\{P, D, Q, W, T, Z\}$ be arranged to form ordered codes of 3 letters? 5 letters?
37. In how many ways can 4 people be assigned to 6 one-person offices?
38. In how many ways can 3 people be assigned to 5 one-person offices?
39. A special classroom has 8 sets of headphones for students who have difficulty hearing. How many possible combinations of students and headphones are there if 6 students in a class need to use headphones?
40. A special classroom has 10 sets of headphones for students who have difficulty hearing. How many possible combinations of students and headphones are there if 7 students in a class need to use headphones?