Module 20 Solving Problems Using Probability,
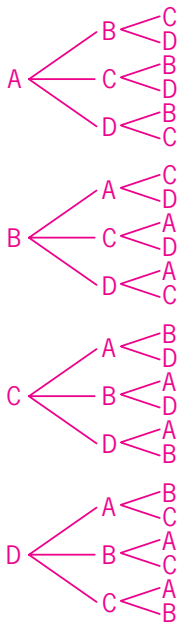Statistics, and Discrete Math
Lesson 1 Finding Permutations and Combinations

additional practice

Create a tree diagram to illustrate each.

1. Four things A-B-C-D taken three at a time

2. Six things A-B-C-D-E-F taken two at a time

Simplify each permutation.

3. $_7P_4$

840

4. $_5P_1$

5

5. $_9P_3$

504

6. $_4P_4$

24

Solve each problem using permutations.

7. In how many ways can six commercials be arranged for airing?

$_6P_6 = 6! = 720$

8. Leo will create a mural consisting of five vertical stripes of different colors. If Leo has eight different colors from which to choose, and the order of the stripes matters, in how many ways can he complete his mural?

$_8P_5 = 6,720$

Simplify each permutation and combination.

9. $_6C_3$

20

10. $_5C_1$

5

11. $_3C_2$

3

12. $_4C_4$

1

Solve each problem using combinations.

13. Fred wants to buy 10 different magazines at Carl's Comic Hut, but he only has enough money to buy two magazines. In how many ways can Fred choose magazines to buy?

$_{10}C_2 = 45$

14. Liza can pick any four days out of the week to exercise at her gym. In how many ways can she choose the four days that she exercises?

$_7C_4 = 35$

Solve each problem. Indicate whether you used a permutation or combination.

15. Kim owns nine games for her home gaming system. She will pick four games to share with a friend who is sick. How many groups of four games can she select from her games?

$_9C_4 = 126$

16. A total of four contestants remain in the Strongman Competition. In how many ways can the top three places be chosen from the remaining contestants?

$_4P_3 = 24$

17. How many five-man basketball teams can be formed from 10 players?

$_{10}C_5 = 252$

18. Kyra has six tank tops, but she only wants to take two of them on vacation. How many different pairs can she take?

$_6C_2 = 15$

19. Clay will travel to Lisbon, Madrid, Paris, Milan, and Athens during a European vacation. In how many orders can he visit these five cities?

$_5P_5 = 5! = 120$

20. How many different pizzas can be created if Omar will choose five toppings from a list of seven?

$_7C_5 = 21$