

Extra Practice

Chapter 11

Lesson 11-1

Evaluate each expression. Show your work.

1. $6!$

2. $\frac{7!}{4!}$

3. ${}_8P_5$

4. ${}_4C_1$

5. ${}_6C_2$

6. ${}_6P_2$

7. ${}_7C_3$

8. ${}_7P_3$

9. $\frac{{}_7C_5}{{}_5C_2}$

For each situation, 1.) determine whether to use a permutation or a combination.

2.) Then solve the problem. May use a calculator, but show your set-up.

13. How many different orders can you choose to read six of the nine books on your summer reading list?
14. How many ways are there to choose five shirts out of seven to take to camp?
15. How many ways can you choose two out of four kinds of flowers for a bouquet?
16. You must answer exactly 12 out of 15 questions on a test. How many different ways can you select the questions to answer?
17. A lab assigns a three-digit identification to each subject in an experiment. No two subjects have the same identification. No digit can be repeated in an identification. What is the greatest number of subjects that can be used in the experiment?

18. To mark its eighth anniversary, Pizzeria Otto has a special coupon that offers the same price on a pizza with any combination of the 8 original toppings. Each pizza must have at least one topping. How many different kinds of pizza can be ordered with the coupon?

Lesson 11-2

19. A class rolled a number cube 40 times and recorded an even number 23 times. What is the experimental probability of rolling an even number? odd number?

A card is chosen from a standard 52-card deck. Find each theoretical probability.

20. $P(\text{club})$

21. $P(4 \text{ of hearts})$

22. $P(\text{ace})$

23. On a multiple-choice test, each item has 5 choices, but only one choice is correct. How can you simulate guessing each answer on a 20-question test?

24. To score a point in a certain party game, a thrown bean bag must land in a circle with a 2-foot diameter. If the playing field is a 10-foot by 12-foot rectangle, what is the probability that a bean bag that lands randomly in the playing field will score a point? **Hint: sketch and label a diagram.**

Extra Practice (continued)

Chapter 11

Lesson 11-3

Classify each pair of events as *dependent* or *independent*.

25. A number cube is rolled; the number cube is rolled again.

26. A marble is chosen out of a bag; another remaining marble is chosen out of the bag.

Q and R are independent events. Find $P(Q \text{ and } R)$.

27. $P(Q) = \frac{1}{4}, P(R) = \frac{1}{8}$

28. $P(Q) = \frac{2}{7}, P(R) = \frac{7}{9}$

29. $P(Q) = 0.4, P(R) = 0.15$

Two fair number cubes are tossed. State whether the events are mutually exclusive. Explain your reasoning.

30. The sum is 10; the numbers are equal.

31. The sum is greater than 9; one of the numbers is 2.

S and T are mutually exclusive events. Find $P(S \text{ or } T)$.

32. $P(S) = \frac{1}{6}, P(T) = \frac{2}{3}$

33. $P(S) = \frac{7}{15}, P(T) = \frac{1}{5}$

34. $P(S) = 18\%, P(T) = 44\%$

A fair number cube is tossed. Find each probability.

35. $P(6 \text{ or even})$

36. $P(\text{even or more than 1})$

37. $P(\text{even or prime})$

Lesson 11-4

Use the table to find each probability.

Characteristics of Comp Counselors

Grade Level	Male	Female
Junior	18	21
Senior	25	16

38. $P(\text{counselor a junior})$

39. $P(\text{counselor female})$

40. $P(\text{counselor a senior and male})$

41. $P(\text{counselor a junior} \mid \text{counselor female})$

42. $P(\text{counselor male} \mid \text{counselor a senior})$

43. The probability that Luis wins the election for class president is $\frac{3}{5}$. The probability that Mac wins the election for class treasurer is $\frac{2}{3}$.

The probability that both will win the office they are running for is $\frac{1}{2}$. What is the probability that Luis wins given that Mac wins?

44. You toss two number cubes. The sum of the numbers is greater than 5. What is the probability that you tossed the same number on each cube?