

6.5 Practice Problems

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the counting principle to obtain the answer.

- 1) The frequency setting for a garage door opener is determined by the positions of ten switches, each of which can be set to a "+" or "-" position. In how many ways can the switches be set? 1) _____
A) 100 B) 59,049 C) 1024 D) 1144
- 2) A restaurant offered salads with 5 types of dressings and 6 different toppings. How many different types of salads could be offered? 2) _____
A) 11 B) 36 C) 25 D) 30
- 3) At a lumber company that sold shelves, a customer could choose from 3 types of wood, 5 different widths and 6 different lengths. How many different types of shelves could be ordered? 3) _____
A) 45 B) 90 C) 48 D) 14
- 4) A salesman packed 3 shirts and 6 ties. With one shirt, he could wear all 6 ties. With another shirt, he could wear 5 ties. With the third shirt, he could wear only 2 ties. How many different combinations did he have? 4) _____
A) 13 B) 12 C) 60 D) 32
- 5) A saleswoman packed 3 jackets and 6 skirts. With one jacket, she could wear all 6 skirts. With another jacket, she could wear 5 skirts. With the third jacket, she could wear only 2 skirts. How many different combinations did she have? 5) _____
A) 60 B) 32 C) 12 D) 13
- 6) A restaurant offered salads with 2 types of lettuce, 8 different toppings, and 4 different dressings. How many different types of salad could be offered? 6) _____
A) 40 B) 14 C) 64 D) 32
- 7) A sports shop sold tennis rackets in 2 different weights, 3 types of string, and 4 grip sizes. How many different rackets could they sell? 7) _____
A) 12 B) 9 C) 24 D) 20
- 8) A shoe store carried one brand of shoe in 4 styles, 5 sizes, and 5 colors. How many types of shoes were available for this one brand? 8) _____
A) 100 B) 14 C) 45 D) 80
- 9) A local department store sold carpets in 3 sizes. Each carpet came in 2 qualities. One size of carpet came in 7 colors. The other sizes came in 2 colors. How many choices of carpet were there? 9) _____
A) 29 choices B) 26 choices C) 22 choices D) 33 choices

Solve the problem.

- 10) There are 3 balls in a hat; one with the number 2 on it, one with the number 4 on it, and one with the number 9 on it. You pick a ball from the hat at random and then you flip a coin. Using a tree diagram, obtain the sample space for the experiment. List the elements that make up the sample space. 10) _____
- A) 2 4 9 H, 2 4 9 T
 B) 2 H T, 4 H T, 9 H T
 C) 2 H, 2 T, 4 H, 4 T, 9 H, 9 T
 D) 2 H, 4 H, 9 H
- 11) There are 3 balls in a hat; one with the number 1 on it, one with the number 2 on it, and one with the number 5 on it. You pick a ball from the hat at random and then you roll a die. Using a tree diagram, obtain the sample space for the experiment. List the elements that make up the sample space. 11) _____
- A) 1 1, 1 2, 1 5, 2 1, 2 2, 2 5, 5 1, 5 2, 5 5
 B) 1 2 5 1, 1 2 5 2, 1 2 5 3, 1 2 5 4, 1 2 5 5, 1 2 5 6
 C) 1 1, 1 2, 1 3, 1 4, 1 5, 1 6, 2 1, 2 2, 2 3, 2 4, 2 5, 2 6, 5 1, 5 2, 5 3, 5 4, 5 5, 5 6, 3 1, 4 1, 6 1, 3 2, 4 2, 6 2, 3 5, 4 5, 6 5
 D) 1 1, 1 2, 1 3, 1 4, 1 5, 1 6, 2 1, 2 2, 2 3, 2 4, 2 5, 2 6, 5 1, 5 2, 5 3, 5 4, 5 5, 5 6
- 12) There are 3 cards in a hat; one is a king, one is a queen, and one is an ace. Two cards are to be selected at random with replacement. Using a tree diagram, obtain the sample space for the experiment. List the elements that make up the sample space. 12) _____
- A) K K, K Q, K A, Q K, Q Q, Q A, A K, A Q, A A
 B) K K Q, K A K, Q Q Q, K Q, A A K
 C) K K, K Q, K A, Q Q, Q A, A Q, A A
 D) K Q, K A, Q K, Q A, A K, A Q
- 13) There are 3 cards in a hat; one is a King, one is a Queen, and one is an Ace. Two cards are to be selected at random without replacement. Using a tree diagram, obtain the sample space for the experiment. List the elements that make up the sample space. 13) _____
- A) KK, K Q, KA, Q K, Q Q, Q A, AK, AQ, A A
 B) KQ, KA, Q K, Q A, A K, A Q
 C) KKQ, KKQ, QAK, AQ A
 D) KQA, QKA, AKQ
- 14) A couple plans to have four children. Using a tree diagram, obtain the sample space. List the elements that make up the sample space. (Use "B" for "boy" and "G" for "girl.") 14) _____
- A) BBBB, BBBG, BBGG, BGGG, GGGG
 B) BBBB, BBB, BB, B
 C) BBBG, BBGB, BBGG, BGBB, BGBG, BGGB, BGGG, GBBB, GBBG, GBGB, GBGG, GGBB, GGBG, GGGB
 D) BBBB, BBBG, BBGB, BBGG, BGBB, BGBG, BGGB, BGGG, GBBB, GBBG, GBGB, GBGG, GGBB, GGBG, GGGB, GGGG
- 15) Use a tree diagram showing all possible results when four fair coins are tossed to list the ways of getting exactly two tails. 15) _____
- A) hhtt, htth, htth, thth, tthh
 B) hhtt, htth, htth, thth, thth, tthh
 C) tthh
 D) hhtt, htth, htth, thth, thth, tthh

- 23) There are 3 cards in a hat; one is a king, one is a queen, and one is an ace. Two cards are to be selected at random with replacement. Using a tree diagram , obtain the sample space for the experiment. Then, find the probability that you choose the same card twice. 23) _____
 A) $\frac{1}{3}$ B) $\frac{2}{9}$ C) $\frac{4}{9}$ D) $\frac{1}{2}$
- 24) There are 3 cards in a hat; one is a king, one is a queen, and one is an ace. Two cards are to be selected at random with replacement. Using a tree diagram , obtain the sample space for the experiment. Then, find the probability that a king and a queen are selected. 24) _____
 A) $\frac{4}{9}$ B) $\frac{2}{9}$ C) $\frac{2}{3}$ D) $\frac{1}{3}$
- 25) There are 3 cards in a hat; one is a king, one is a queen, and one is an ace. Two cards are to be selected at random without replacement. Using a tree diagram , obtain the sample space for the experiment. Then, find the probability that you choose the same card twice. 25) _____
 A) $\frac{4}{9}$ B) $\frac{1}{9}$ C) 0 D) $\frac{1}{3}$
- 26) There are 3 cards in a hat; one is a king, one is a queen, and one is an ace. Two cards are to be selected at random without replacement. Using a tree diagram , obtain the sample space for the experiment. Then, find the probability that a king and a queen are selected. 26) _____
 A) 0 B) $\frac{4}{9}$ C) $\frac{1}{9}$ D) $\frac{1}{3}$
- 27) A couple plans to have four children. Using a tree diagram , obtain the sample space. Then, find the probability that the family has three boys first and then one girl. 27) _____
 A) $\frac{3}{16}$ B) $\frac{1}{8}$ C) $\frac{1}{6}$ D) $\frac{1}{16}$
- 28) A couple plans to have four children. Using a tree diagram , obtain the sample space. Then, find the probability that the family has at least one boy. 28) _____
 A) 1 B) $\frac{15}{16}$ C) $\frac{3}{4}$ D) $\frac{13}{16}$
- 29) A couple plans to have four children. Using a tree diagram , obtain the sample space. Then, find the probability that the family has no boys. 29) _____
 A) $\frac{1}{16}$ B) $\frac{15}{16}$ C) $\frac{1}{20}$ D) $\frac{1}{8}$