LESSON 11-6

Practice A

Combinations

Solve each problem in Column A. Draw a line to the correct answer in Column B.

Column A	Column B
1. If you have watermelon, cantaloupe and honeydew, how many combinations of two fruits are there?	**A.** 20
2. How many three-letter combinations are possible using the letters D, E, F, G, and H?	**B.** 15
3. How many different two-person debating teams can be chosen from six students?	**C.** 21
4. On Mondays at Pizza Pan, you can choose two toppings at no extra cost for your pizza. The toppings are mushrooms, sausage, peppers, and extra cheese. How many different pizzas could you order?	**D.** 10
5. How many different three-person relay teams are possible with four people?	**E.** 3
6. The students in Mr. Trumbull's English class need to read 2 books from a list of 7 books. How many different combinations of books are possible?	**F.** 6
7. Erin has 6 colors of ribbon: red, white, gold, green, blue, and purple. She makes bows of out 3 different colors of ribbon. How many different combinations of colors can she choose?	**G.** 4

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LESSON 11-6

Practice B

Combinations

1. A chef has some broccoli, cauliflower, carrots, and squash to make a vegetarian dish. List the possible combinations if he uses only 3 vegetables in the dish.

broccoli, cauliflower, carrots; broccoli, cauliflower, squash; broccoli, carrots, squash; cauliflower, carrots, squash

2. Lauren, Manuel, Nick, Opal, and Pat are forming groups of two to work on a drama production. List the different combinations of students that are possible using the first initial of each name.

LM, LN, LO, LP, MN, MO, MP, NO, NP, OP

3. Keiko has seven colors of lanyard. She uses three different colors to make a key chain. How many different combinations can she choose?

35 combinations

4. On Sundays at Ice Cream Heaven, you can choose two free toppings for your sundae. The toppings are nuts, hot fudge, caramel, and sprinkles. How many different combinations of toppings can you order?

6 combinations

5. How many different three-person relay teams can be chosen from six students?

20 teams

6. The students in Mrs. Mandel's class need to choose two class representatives from six nominated students. How many different combinations of class representatives are possible?

15 combinations

7. There are four varieties of muffins available at the Coffee Shop. How many different ways can you choose three different muffins?

4 ways

8. How many two-person carpools are possible with seven people?

21 carpools

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LESSON 11-6

Practice C

Combinations

1. If you have tomatoes, red peppers, onions, green peppers, and mushrooms, how many combinations of three vegetables are there? — 10 combinations

2. How many three-letter combinations are possible from P, Q, R, S, T, and U? — 20 combinations

3. Kim has seven colors of hair ribbons: red, white, pink, green, blue, black, and purple. She uses two different colors to make a bow. How many different combinations of colors can she choose? — 21 combinations

4. Les, Dennis, Greg, and Philip are pairing up to play doubles tennis. In how many different ways can they pair up? — 6 ways

5. You can choose two side dishes for your chicken dinner. The choices are mashed potatoes, roasted potatoes, squash, carrots, string beans, stuffing, broccoli, or corn. How many different side dish combinations could you order? — 28 combinations

6. How many different five-person relay teams can be chosen from seven students? — 21 relay teams

7. The students in Mr. Cohen's science class need to complete three experiments at home from a list of seven topics. How many different combinations of experiments are possible? — 35 combinations

8. Lena, Drew, Michaela, Trey, Nancy, and Jonah are pairing up to play one-on-one basketball. In how many different ways can they pair up? — 15 ways

Find the number of combinations.

9. 8 things taken 4 at a time: 70

10. 6 things taken 4 at a time: 15

11. 8 things taken 5 at a time: 56

12. 7 things taken 6 at a time: 7

13. 7 things taken 4 at a time: 35

14. 8 things taken 6 at a time: 28

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LESSON 11-6

Reteach

Combinations

A **combination** is a selection of objects in which the order is not important. You can make a list to find the number of combinations.

The school district is going to plant two types of trees around the playground. The landscaper has five kinds of trees to choose from.

Let the letters A, B, C, D, and E represent the different kinds of trees. You can make an organized list of all possible combinations.

Tree **A** with each other tree: **A**B **A**C **A**D **A**E
Tree **B** with each other tree: **B**A **B**C **B**D **B**E
Tree **C** with each other tree: **C**A **C**B **C**D **C**E
Tree **D** with each other tree: **D**A **D**B **D**C **D**E
Tree **E** with each other tree: **E**A **E**B **E**C **E**D

1. How many groups of 2 trees are in the list? 20

2. AB is the same combination as BA. BD is the same combination as DB.

AC is the same combination as CA. BE is the same combination as EB.

AD is the same combination as DA. CD is the same combination as DC.

AE is the same combination as EA. CE is the same combination as EC.

BC is the same combination as CB. DE is the same combination as ED.

3. Cross out each of the duplications in the list above. How many are left? 10

4. Make an organized list of all possible two-letter combinations using the letters U, V, W, X, Y, and Z. Cross out each duplication.

UV, UW, UX, UY, UZ — VU, VW, VX, VY, VZ

WU, WV, WX, WY, WZ — XU, XV, XW, XY, XZ

YU, YV, YW, YX, YZ — ZU, ZV, ZW, ZX, ZY

There are 15 combinations of 6 letters taken 2 at a time.

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