

Name _____

Date _____ Pd. _____

Notes: Fundamental Counting Principle

Tree Diagrams One method used for counting the number of possible outcomes of an event is to draw a **tree diagram**. The last column of the tree diagram shows all of the possible outcomes. The list of all possible outcomes is called the **sample space**, and a specific outcome is called an **event**.

Example 1 Suppose you can set up a stereo system with a choice of video, DVD, or laser disk players, a choice of cassette or graphic equalizer audio components, and a choice of single or dual speakers. Draw a tree diagram to show the sample space.

Example 2 A food stand offers ice cream cones in vanilla or chocolate flavors. It also offers fudge or caramel toppings, and it uses sugar or cake cones. Use a tree diagram to determine the number of possible ice cream cones.

Fundamental Counting Principle

Example Carly and Jake went to an arcade with 9 different games.

- In how many different orders can they play the games if they play each one only once?
- If they have only enough tokens to play 6 different games, how many ways can they do this?

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Exit Card: Fundamental Counting Principle

The table below shows the number of menu choices available in a restaurant.

	Dinners	Desserts	Drinks
Choices	8	4	6

A meal consists of one dinner, one dessert, and one drink. How many different meals can a person order?

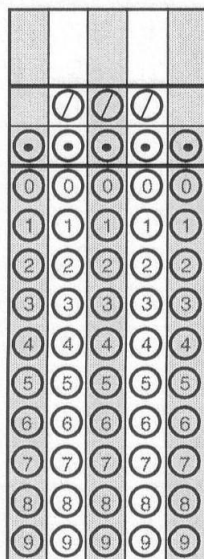
- A. 18 B. 54 C. 192 D. 576

A cafeteria worker surveyed 250 students to estimate the number of servings of each type of food to prepare for tomorrow.

The survey results are shown in the table below.

	Chicken	Roast Beef	Tacos	Pizza
Number	40	10	30	170

Based on the results in the table above, what is the probability that a student chosen at random will NOT order pizza?



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Homework: Pages 757 – 758 (11, 13, 15 – 18, 25, 26)

11. $4!$	13. $11!$
15. Three dice, one red, one white, and one blue, are rolled. How many outcomes are possible?	
16. How many outfits are possible if you choose one each of 5 shirts, 3 pairs of pants, 3 pairs of shoes, and 4 jackets?	
17. Suppose four different airplanes fly from Seattle to Denver. Those same four airlines and two other fly from Denver to St. Louis. If there are no direct flights from Seattle to St. Louis, in how many ways can a traveler book a flight from Seattle to St. Louis?	
18. A new three-digit area code is needed in a certain area to accommodate new telephone numbers. If the first digit must be odd, the second digit must be 0 or 1, and the third digit can be anything, how many area codes are possible?	
25. Evaluate $9!$ A 362,880 B 40,320 C 36 D 8	
26. A car manufacturer offers a sports car in 4 different models with 6 different option packages. Each model is available in 12 different colors. How many different possibilities are available for this car? A 96 B 144 C 288 D 384	