Name _____ Class _____ Date _____

Practice

Form G

Conditional Probability Formulas

At a recent swim meet, half of the swim club members experienced an improvement in their race times over a previous swim meet. The probability of a swim club member experiencing an improvement in their race time and training the week before the meet was 30%.

1. What is the probability that a swimmer trained the week before the meet given that his or her race time improved? **0.6 or 60%**

2. The probability that a swimmer did not experience an improvement in his or her race times and trained the week before the meet was 10%. What is $P(\text{trained} \mid \text{did not improve})$? **0.2 or 20%**

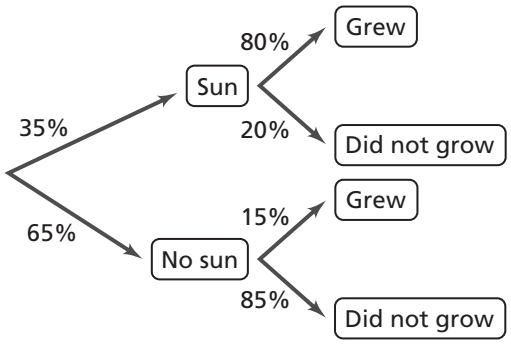
3. Half of a class took Form A of a test, and half took Form B. Of the students who took Form B, 39% passed. What is the conditional probability that a randomly chosen student took Form B and passed? **0.195 or 19.5%**

4. Three-fourths of a research team worked in a lab while one-fourth of the team worked near a pond. Of the researchers who worked near the pond, 14% collected insects. What is the probability that a randomly chosen researcher worked near the pond and collected insects? **0.035 or 3.5%**

5. In the senior class, 24% of the students play softball, 32% of the students play field hockey, and 14% play both. What are the probabilities that a softball player also plays field hockey, and a field hockey player also plays softball? **0.5833 and 0.4375**

Use the diagram at the right for Exercises 6 and 7.

The tree diagram shows the percentages of plants that received sunlight and whether or not they grew.



6. What is the combined probability that a plant grew? **0.3775**

7. What is the combined probability that a plant did not grow? **0.6225**

Name _____ Class _____ Date _____

Practice (continued) *Form G*

Conditional Probability Formulas

Of the people who went to an amusement park last week, 85% rode a rollercoaster, 45% attended a musical review show, and 18% did both.

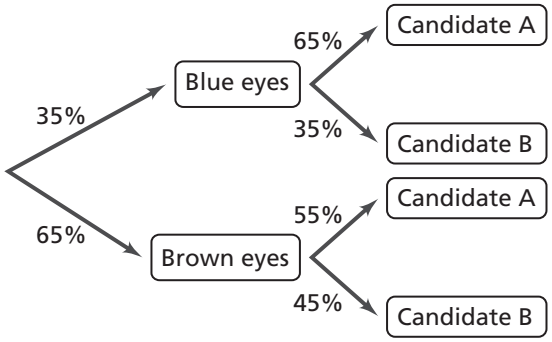
8. What is the conditional probability that a person who rode a rollercoaster also attended a musical review show? **0.212**

9. Writing Explain the meaning of P(rode a rollercoaster | attended musical review). Then calculate the probability. ***P*(rode a rollercoaster | attended musical review) is the number of people who rode a rollercoaster given that they attended a musical review show; 0.4**

10. Writing Half of your 200 classmates went to the zoo. Of the students who went to the zoo, 25% saw the dolphin show. Explain how to calculate the number of students that attended the dolphin show. **The percent of those who went to the zoo and saw the dolphin show is 50% times 25%, or 12.5%. To find the number of students who saw the dolphin show, multiply the total number of students by this percentage. 200 • 0.125 = 25 students**

The diagram at the right shows the percent of blue-eyed voters and brown-eyed voters that voted for 2 candidates. Use the table for Exercises 11 and 12.

11. What is the combined probability that Candidate A won? **0.585**



12. Error Analysis Your friend says the combined probability of Candidate B winning is 80%. What error did she make? What is the correct combined probability? **She added the probabilities beneath each candidate instead of finding the combined probabilities of each branch and adding them; 0.415**

13. Of a group of friends, 28% take dance lessons, 32% take singing lessons, and 8% take both. What is the probability that a dancer takes singing lessons? What is the probability that a singer takes dance lessons? **0.286 and 0.25**