

Lesson Summary

The use of tree diagrams is not limited to cases of just two stages. For more complicated experiments, tree diagrams are used to organize outcomes and to assign probabilities. The tree diagram is a visual representation of outcomes that involve more than one event.

Problem Set

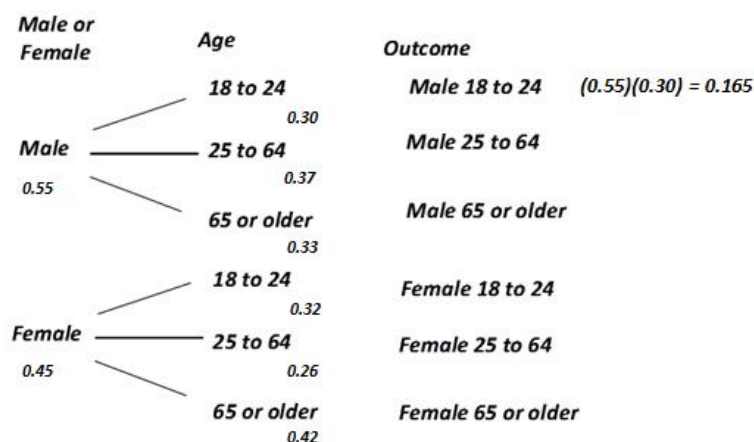
- According to the Washington, D.C. Lottery's website for its Cherry Blossom Double instant scratch game, the chance of winning a prize on a given ticket is about 17%. Imagine that a person stops at a convenience store on the way home from work every Monday, Tuesday, and Wednesday to buy a scratcher ticket and plays the game.

(Source: <http://dclottery.com/games/scratchers/1223/cherry-blossom-doubler.aspx>, accessed May 27, 2013)

- Develop a tree diagram showing the eight possible outcomes of playing over these three days. Call stage one "Monday," and use the symbols W for a winning ticket and L for a non-winning ticket.
 - What is the probability that the player will not win on Monday but will win on Tuesday and Wednesday?
 - What is the probability that the player will win at least once during the 3-day period?
- A survey company is interested in conducting a statewide poll prior to an upcoming election. They are only interested in talking to registered voters.

Imagine that 55% of the registered voters in the state are male and 45% are female. Also, consider that the distribution of ages may be different for each group. In this state, 30% of male registered voters are age 18–24, 37% are age 25–64, and 33% are 65 or older. 32% of female registered voters are age 18–24, 26% are age 25–64, and 42% are 65 or older.

The following tree diagram describes the distribution of registered voters. The probability of selecting a male registered voter age 18–24 is 0.165.



- What is the chance that the polling company will select a registered female voter age 65 or older?
- What is the chance that the polling company will select any registered voter age 18–24?