

2007-2008: How many distinct color combinations of tennis balls can Alex select?

Alex needs three tennis balls from the tennis court, and he wants to know how many distinct color combinations he can make from the three colors (pink, yellow, white) that are on the court. In the picture we can see that there are at least three of each color, so it's possible to select all pink balls, all yellow balls, all white balls or a combination of the colors. This problem can be solved by making a simple, organized list. We just need to be sure we don't leave out any options or count any options more than once. It is important to remember that "combinations" is a mathematical term that indicates to us the order does not matter; selecting two white balls and then a pink ball is the same as selecting a pink ball and then two white balls. Our options are to have all three balls the same color [WWW, YYY, PPP], two balls of one color and one ball of another color [WWY, WWP, YYW, YYP, PPW, PPY] or each ball a different color [WYP]. This is 10 combinations.