

Answer on Question #83301 – Math — Statistics and Probability

Question

Two marbles are drawn in succession from a box containing 10 black, 30 green, 20 purple and 15 yellow marbles, with no replacement being made after each drawing. Find the probability that neither is yellow.

- a. $65/77$
- b. $118/185$
- c. $132/201$
- d. $201/403$

Solution

There are $10+30+20+15=75$ marbles in the box. Before the first drawing there are $75-15=60$ marbles which are not yellow. Then

$$P\{\text{the first marble is not yellow}\} = \frac{60}{75} = \frac{4}{5}.$$

After the first drawing there are 74 marbles in the box and 59 marbles are not yellow. Then

$$P\{\text{the second marble is not yellow}\} = \frac{59}{74}.$$

We have

$$P\{\text{neither marble is yellow}\} = \frac{4}{5} * \frac{59}{74} = \frac{2 * 59}{5 * 37} = \frac{118}{185}.$$

Answer: b. $\frac{118}{185}$.