Grade 12 GS

Probability ex 25

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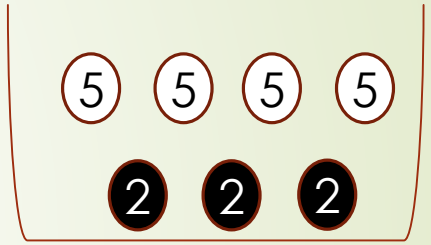
Exercise 25:

An urn contains: four white balls each carrying the number 5 and three black balls each carrying the number 2. A game starts by drawing randomly one ball from this urn. If the drawn ball is white then the game ends, but if it is black then a second ball is drawn from the urn without replacing the previously drawn ball, and so on. The game continues like this till a white ball appears and the game ends.

1) Calculate the probability that the game ends right after the second draw.



Solution:

- $P(bw) = \frac{3}{7} \times \frac{4}{6} = \frac{2}{7}$

2) Calculate the probability that the sum of numbers carried by the drawn balls is more than 7.

Solution:

$$P(bbw \ \ or \ bbbw) = \frac{3}{7} \times \frac{2}{6} \times \frac{4}{5} + \frac{3}{7} \times \frac{2}{6} \times \frac{1}{5} \times \frac{4}{4}$$

$$= \frac{1}{7}$$

$w: 5$

$bw: 2 + 5 = 7$

$bbw: 2 + 2 + 5 = 9$

$bbbw: 2 + 2 + 2 + 5 = 11$