



PROBABILITY TEST – 4° ESO



Exercise 1: (1.25 points) Given the events $A = \{1, 3, 5, 7\}$, $B = \{1, 2, 3, 4, 5\}$ and $C = \{9\}$ of the sample space $E = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, work out:

- $\bar{A} = \{2, 4, 6, 8, 9\}$
- $A \cup B = \{1, 2, 3, 4, 5, 7\}$
- $A \cap \bar{B} = \{7\}$
- $B \cup C = \{1, 2, 3, 4, 5, 9\}$
- $B \cap C = \emptyset$

Exercise 2: (1.5 points) We draw two cards from a Spanish deck of cards without replacement. Find the probability that:

- We get two kings $1/130 = 0.0077$
- We get two coin cards $3/52 = 0.0577$
- We get two cards of the same suit $3/13 = 0.2308$
- We don't get any horses $21/26 = 0.8077$
- We get at least one spade card $23/52 = 0.4423$

Exercise 3: (1.5 points) 71% of the students of a class are going to the beach this summer, 32% of them are going to the country and 14% of them are going to both places. Taking a random student, find the probability that:

- They go to the beach or to the country 0.89
- They will go to the country knowing that they are going to the beach 0.1972
- They are going neither to the beach nor to the country 0.11
- They are not going to the country 0.68

Exercise 4: (1.5 points) Given two events A and B so that $P(\bar{A}) = 0.4$, $P(B) = 0.7$ and $P(B/A) = 0.75$, find:

- $P(A \cup B) = 0.85$
- $P(A/B) = 0.6429$
- Are A and B independent events? Why? **No, they are not independent because $P(A \cap B) \neq P(A) \cdot P(B)$**

Exercise 5: (1.75 points) I have an urn with 7 red balls, 5 green balls and 2 blue balls. I draw three balls with replacement. Find the probability that:

- I get 3 green balls $125/2744 = 0.0456$
- All three balls have different colors $15/98 = 0.1531$
- I get two red balls and a blue one $3/28 = 0.1071$
- I don't get any green balls $729/2744 = 0.2657$
- I get at least one red ball $7/8 = 0.875$



Exercise 6: (1.25 points) We are planning a triple exchange program for next year, England-Poland-Spain. We will reunite a total of 40 students, 16 of which are English, 10 are Polish and the rest are Spanish. 65% of the English participants, 32% of the Polish and 57% of the Spanish are girls. Taking a random student find the probability that:

- a) I chose a girl 0.5395
- b) They are from Poland given that I chose a boy 0.3692

Exercise 7: (1.25 points) 62% of the Spanish population have watched the Game of Thrones series. 23% of the ones who have watched it and 12% of the ones who haven't watched it, however, have read the books. Taken a random person find the probability that:

- a) They haven't read the books 0.8118
- b) They have watched the show, given that they have read the books 0.7577

GAME OF THRONES

