PROBABILITY AND GEOMETRY TEST

4º ESO

Exercise 1: (1.25 ptos) Given the following events corresponding to a certain random experiment, $A=\{2,3,5,7\}$, $B=\{1,4,6,8\}$ and $C=\{6\}$, write the outcomes of the events:

a) $A\cup B=\{1,2,3,4,5,6,7,8\}$ b) $A\cap B=\varnothing$ c) $B\cup C=\{1,4,6,8\}$

d) $B\cap C=\{6\}$ e) $\overline{B}=E-B$

Exercise 2: (2 ptos) I get three cards from a Spanish deck of cards, with replacement. Find the probability that:

a) They are all cup cards $1/64=0.0156$

b) I get two gold cards and a club card $3/64=0.0469$

c) I don't get any face cards $343/1000=0.343$

d) I get at least an ace $271/1000=0.271$

Exercise 3: (2 ptos) Given two events A and B so that $P(\overline{A})=0.3$, $P(B)=0.5$ and $P(A\cup B)=0.85$

a) $P(A\cap B)=0.35$

b) $P(B/A)=0.5$

c) Are A and B independent events? Are they mutually exclusive? Why? They are independent, but they are not mutually exclusive

Exercise 4: (2 ptos) I have an urn with 4 magenta balls, 7 blue balls and 1 red ball. I get 2 balls without replacement. Find the probability that:

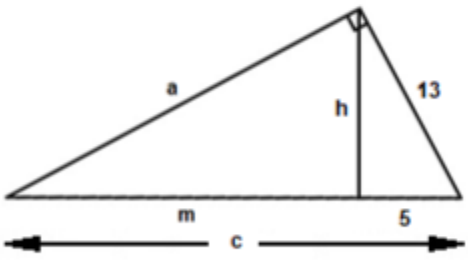
a) Both balls are blue $7/22=0.3182$

b) I get a red ball and a magenta one $2/33=0.0606$

c) Both balls have different colors $13/22=0.5909$

d) I get at least a blue ball $28/33=0.8485$

Exercise 5: (1 pto) Find the values of the sides of the triangle using the right triangle altitude theorems:



$c=33.8$
$m=28.8$
$h=12$
$a=31.2$

Exercise 6: (1.75 ptos) As of 05/21/2021, 60% of the vaccinated people in Spain had received the Pfizer's injection, 9% the Moderna's and the rest AstraZeneca's. 72% of the Pfizer's users, 43% of Moderna's and 0.01% of AstraZeneca's had already received the second dose too. Taken a random person find the probability that:

a) They got the second dose 0.4707

b) They had received AstraZeneca knowing that they still didn't have the second dose 0.5856