Esercizio Statistica: 07/03/2019

$\Omega = \{18, 21, 8, 4, 11, 17, 20, 6, 25, 12, 24, 14, 2, 19, 1, 13\}$

$P(\Omega) \ni A = \{\phi, \{25, 17, 19\}, \{18, 21, 8, 4, 11, 20, 6, 12, 24, 2, 1, 13\},$
$\{18, 21, 8, 4, 11, 17, 20, 6, 25, 12, 24, 14, 2, 19, 1, 13\} = \Omega\}$

$A = \{24, 2, 8, 6, 1, 20, 11, 17, 14, 4, 21, 18\} \subset \Omega$

1) A è un algebra su Ω? FALSE

A contiene Ω

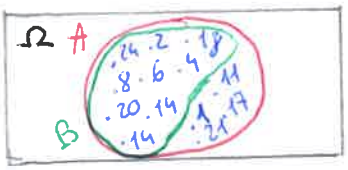
A non contiene il complementare di $\{25, 17, 19\}$

A non è un Algebra.

2) Si determini la probabilità che, pescando a caso da A, si estragga un numero pari.

$B = \{\text{"estrazione numero pari"}\} = \{24, 2, 8, 6, 20, 14, 4, 18\}$

$Pr(B) = \frac{\#B}{\#A} = \frac{8}{12} = \frac{2}{3} \simeq \underline{0,667}$



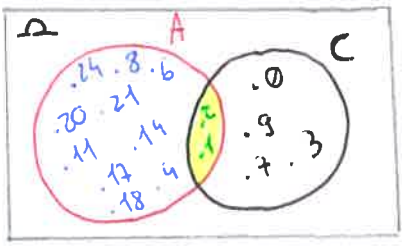
3) Si determini la probabilità che, pescando a caso da A, si estragga un numero che sta in $\{2, 0, 1, 9, 7, 3\}$

$C = \{2, 0, 1, 9, 7, 3\}$

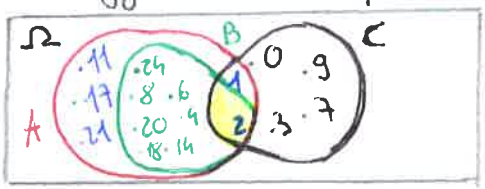
$A \cap C = \{24, 2, 8, 6, 1, 20, 11, 17, 14, 4, 21, 18\} \cap \{2, 0, 1, 9, 7, 3\}$

$= \{2, 1\}$

$Pr(A \cap C) = \frac{\#\text{casi favorevoli}}{\#A} = \frac{2}{12} = \frac{1}{6} \simeq \underline{0,166}$



4) Si determini la probabilità che, pescando a caso da A, si estragga un numero pari che appartenga anche a $\{2, 0, 1, 9, 7, 3\}$



$B = \{\text{"numeri pari"}\} = \{24, 2, 8, 6, 20, 14, 4, 18\}$

$C = \{2, 0, 1, 9, 7, 3\}$

$A \cap C = \{24, 2, 8, 6, 1, 20, 11, 17, 14, 4, 21, 18\} \cap \{2, 0, 1, 9, 7, 3\} = \{2, 1\}$

$B \cap (A \cap C) = \{24, 2, 8, 6, 20, 14, 4, 18\} \cap \{2, 1\} = \{2\}$

$Pr(B \cap (A \cap C)) = Pr(B \cap C) = \frac{\#\text{casi favorevoli}}{\#A} = \frac{1}{12} \simeq \underline{0,083}$

Si determini la probabilità che, pescando a caso un elemento da A, si estragga un numero pari o un numero che sta in $\{2,0,1,9,7,3\}$

$B = \{\text{"numero pari"}\} = \{24, 2, 8, 6, 20, 14, 4, 18\}$

$C = \{2,0,1,9,7,3\}$

$A \cap C = \{24, 2, 8, 6, 1, 20, 11, 17, 14, 4, 21, 18\} \cap \{2,0,1,9,7,3\}$

$= \{2, 1\}$

$B \cup (A \cap C) = \{24, 2, 8, 6, 20, 14, 4, 18\} \cup \{2, 1\}$

$= \{24, 2, 8, 6, 20, 14, 4, 18, 1\}$

$Pr(B \cup (A \cap C)) = \frac{\#\text{casi favorevoli}}{\#A} = \frac{9}{12} = \frac{3}{4} \simeq 0{,}75$