

$$\textcircled{1} P(\text{almeno 1 f}) = 1 - P(\text{nessuno f}) = 1 - \binom{3}{0} \left(\frac{1}{2}\right)^3 \left(\frac{1}{2}\right)^0 = \frac{7}{8}$$

A = almeno 1 M.

B = almeno 1 f.

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$P(B) = \frac{7}{8}$$

$$A \cap B = \left\{ \overset{A_1}{MMF} \right\} \cup \left\{ \overset{A_2}{FFM} \right\}$$

$$P(A \cap B) = P(A_1) + P(A_2)$$

$$P(A_1) = \binom{3}{2} \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right)^1 = \frac{3}{8}$$

$$P(A_2) = \binom{3}{1} \left(\frac{1}{2}\right)^1 \left(\frac{1}{2}\right)^2 = \frac{3}{8}$$

$$P(A|B) = \frac{\frac{6}{8}}{\frac{7}{8}} = \boxed{\frac{6}{7}}$$

$$\textcircled{2} P(3 \text{ grolla}) = \frac{\binom{4}{3}}{\binom{7}{3}} = \boxed{\frac{4}{35}}$$

$$\binom{4}{3} = \frac{4!}{3!1!} = 4$$

$$\binom{7}{3} = \frac{7!}{3!4!} = \frac{7 \cdot 6 \cdot 5}{3!} = 35$$

$$P(1 \text{ B 1 R 1 V}) = \frac{\binom{4}{1} \binom{2}{1} \binom{1}{1}}{\binom{7}{3}} = \boxed{\frac{8}{35}}$$

$$P(\text{almeno 1 g}) = 1 - P(0 \text{ grolla}) = 1 - \frac{\binom{3}{3}}{\binom{7}{3}} = 1 - \frac{1}{35}$$

$$\textcircled{3} P(X=1) = \frac{\binom{4}{1}}{\binom{5}{2}} = \frac{4}{10} = \frac{2}{5} \quad \textcircled{1} \textcircled{2} \textcircled{3} \textcircled{4} \textcircled{5}$$

$$P(X=0) = \frac{\binom{4}{2}}{\binom{5}{2}} = \frac{6}{10} = \boxed{\frac{3}{5}}$$

$$\boxed{\frac{34}{35}}$$

$$E(X) = 0 \cdot P(X=0) + 1 \cdot P(X=1) = \frac{2}{5} \quad E(X^2) = \frac{2}{5}$$

$$\text{VAR}(X) = E(X^2) - [E(X)]^2 = \frac{2}{5} - \left(\frac{2}{5}\right)^2 = \boxed{\frac{6}{25}}$$