

28/02/14 - 4er B

1) a) $0.15 \cdot 7 + 0.20 \cdot 6 + 0.25 \cdot 3 + 0.40 \cdot 4 = 1.05 + 1.2 + 0.75 + 1.6 = 4.6$

b) $0.15 \cdot 7 + 0.20 \cdot 6 + 0.25 \cdot x + 0.4 \cdot 4 = 6 \Rightarrow$
 $x = \text{nota del nou encaïrec}$

$\Rightarrow 1.05 + 1.2 + 0.25x + 1.6 = 6 \Rightarrow 0.25x = 6 - 3.85$

$\Rightarrow x = \frac{2.15}{0.25} = 8.6$

2) Capital inicial $\xrightarrow[7 \text{ anys}]{\cdot x^7}$ Capital final
 $2400 \text{ €} \rightarrow 2872.39 \text{ €}$

$2400 \cdot x^7 = 2872.39 \Rightarrow x^7 = \frac{2872.39}{2400}$

$\Rightarrow x = \sqrt[7]{\frac{2872.39}{2400}} = 1.026 \Rightarrow 2.6\%$

3) Nota del 4t. alumne = x
Nota del 5è alumne = $1.25x$

$\frac{5 + 4.2 + 5.9 + x + 1.25x}{5} = 5 \Rightarrow 15.1 + 2.25x = 25$

$\Rightarrow 2.25x = 25 - 15.1 \Rightarrow x = \frac{9.9}{2.25} = 4.4$
 $1.25 \cdot x = 5.5$

4) Esdeveniments possibles en tirar dos daus:

a) $1-1, 1-2, \dots, 1-6, 2-1, 2-2, \dots, 2-6, \dots, 6-1, 6-2, \dots, 6-6$

$6 \cdot 6 = 36$ casos possibles.


Esdeveniments favorables: $1-4 \rightarrow 2$ esdeveniments } total
 $2-4 \rightarrow 2$ " } 7
 $3-4 \rightarrow 2$ " }
 $4-4 \rightarrow 1$ " }

Probabilitat = $\frac{7}{36}$

Nombre aproximat de vegades amb màxim 4 = $\frac{7}{36} \cdot 220000 = 4277.8$

b) Euros que guanya: $\frac{7}{36} \cdot 300 \cdot 7 = 408.33 \text{ €}$
" que perd: $\frac{29}{36} \cdot 300 \cdot 2 = 483.33 \text{ €}$
Perd al voltant de $483.33 - 408.33 = 75 \text{ €}$

5) Area = $x \cdot y = 97$
 Perímetre = $2x + 2y = 40,25$



Simplifiquem: $\begin{cases} x \cdot y = 97 \\ x + y = 20,125 \end{cases}$ Substitueu y de la 1a. a la 2a.
 $\Rightarrow x(20,125 - x) = 97$

$\Rightarrow -x^2 + 20,125x = 97 \Rightarrow 8x^2 - 161x - 776 = 0$
 (•8)

$\Rightarrow x = \frac{161 \pm \sqrt{161^2 - 32 \cdot 776}}{16} = \frac{161 \pm 33}{16}$
 12,125
 8

Solució: $\begin{cases} x = 12,125 \text{ m} \\ y = 20,125 - 12,125 = 8 \text{ m} \end{cases}$ o a l'inrevés

6) a) $\frac{1}{2} + \frac{1}{3} - \frac{1}{4} = \frac{6+4-3}{12} : 2 = \frac{7}{12} : 2 = \frac{7}{24}$

b) $\frac{\sqrt{x} \sqrt{x^9}}{\sqrt[3]{x^2}} = \sqrt[6]{\frac{x^3 \cdot x^{27}}{x^4}} = \sqrt[6]{x^{26}} = x^4 \sqrt[6]{x^2} = x^4 \sqrt[3]{x}$

c) $\frac{2\sqrt{27} - \sqrt{3}}{\sqrt{75}} = \frac{6\sqrt{3} - \sqrt{3}}{5\sqrt{3}} = \frac{5\sqrt{3}}{5\sqrt{3}} = 1$

7) a) $\frac{7x}{10} + x = 4 - \frac{x}{30} \Leftrightarrow 21x + 30x = 120 - x \Rightarrow 52x = 120 \Rightarrow x = \frac{120}{52} = \frac{30}{13}$

b) $\begin{cases} x - 4y = 3 \\ 2x - y = 5 \end{cases} \Rightarrow \begin{cases} x - 4y = 3 \\ -8x + 4y = -20 \end{cases} \Rightarrow -7x = -17 \Rightarrow \begin{cases} x = \frac{17}{7} \\ y = 2 \cdot \frac{17}{7} - 5 = -\frac{1}{7} \end{cases}$

c) $2x^2 + 5x - 3 = 0 \Rightarrow x = \frac{-5 \pm \sqrt{25 + 24}}{4} = \frac{-5 \pm 7}{4}$
 $\frac{2}{5} = \frac{1}{2}$
 $\frac{12}{5} = -3$

d) $(4 - 2x)^2 = 3(10 - 2x)$
 $\Rightarrow 16 - 16x + 4x^2 = 30 - 6x \Rightarrow 4x^2 - 10x - 14 = 0$
 $\Rightarrow 2x^2 - 5x - 7 = 0 \Rightarrow x = \frac{5 \pm \sqrt{25 + 56}}{4} = \frac{5 \pm 9}{4}$
 $\frac{7}{2}$
 -1