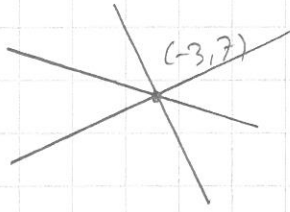


$$5x = 60 \quad | :5 \Rightarrow x = 12$$

$$\Rightarrow 12 + 3y = 36 \Rightarrow 3y = 24 \quad | :3 \Rightarrow y = 8$$

$$7.8 \quad \begin{cases} x + y = 4 & (1) \\ x + 4y = 25 & (2) \\ 3x + ay + 23 = 0 & (3) \end{cases}$$

$$(1) \text{ j\u00e4 } (2): \begin{cases} x + y = 4 & | \cdot (-1) \\ x + 4y = 25 \end{cases} \Rightarrow \begin{cases} 3y = 21 & | :3 \Rightarrow y = 7 \\ \Rightarrow x + 7 = 4 & \Rightarrow x = -3 \end{cases}$$



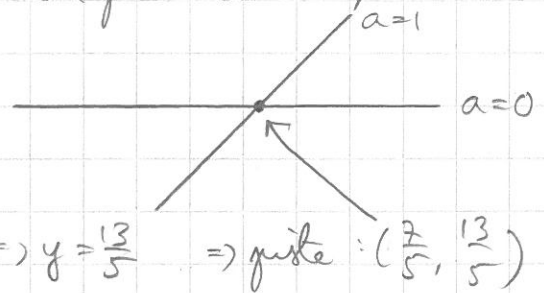
Piste $(-3, 7)$ on suoralle (3):

$$3 \cdot (-3) + a \cdot 7 + 23 = 0 \Rightarrow 7a = -14 \Rightarrow a = -2$$

jolloin leikkauspiste: $(-3, 7)$

$$7.21 \quad 5ax - 5y + 13 - 7a = 0 \quad \text{suorapari (parametri } a)$$

$$a=0: \begin{cases} -5y + 13 = 0 & | \cdot (-1) \\ 5x - 5y + 13 - 7a = 0 \end{cases}$$



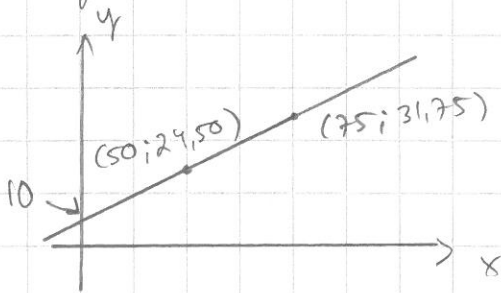
$$a=1: \begin{cases} 5x - 5y + 13 - 7a = 0 \\ 5x - 7 = 0 \Rightarrow x = \frac{7}{5} \end{cases}$$

$$\text{Piste } \left(\frac{7}{5}, \frac{13}{5}\right): 5a \cdot \frac{7}{5} - 5 \cdot \frac{13}{5} + 13 - 7a = 0$$

$$\Rightarrow 7a - 13 + 13 - 7a = 0 \Rightarrow 0 = 0 \%$$

\Rightarrow kaikki parit ovat kulkevat pisteen $\left(\frac{7}{5}, \frac{13}{5}\right)$ kautta

7.17 paino (massa): x (kg), hinta: y (€)



$$a) k = \frac{\Delta y}{\Delta x} = \frac{31,75 - 24,50}{75 - 50} = \frac{7,25}{25} = 0,29 \left(\frac{\text{€}}{\text{kg}}\right)$$

$$\text{suora: } y - 24,50 = 0,29(x - 50)$$

$$\Rightarrow y - 24,50 = 0,29x - 14,5$$

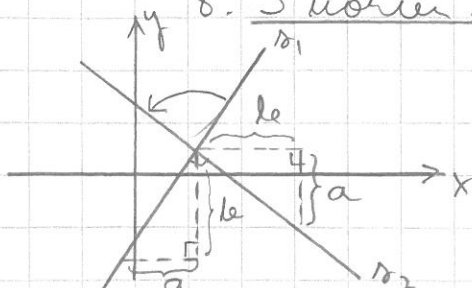
$$\Rightarrow y = 0,29x + 10$$

$$b) y = 100: 100 = 0,29x + 10 \Rightarrow 90 = 0,29x \quad | :0,29$$

$$\Rightarrow x = \frac{90}{0,29} = 310,345 \approx 310 \text{ (kg)}$$

c) suora $y = 0,29x + 10$ ei kulje origon kautta
 $\Rightarrow x$ j\u00e4 y eivät ole suoran v\u00e4k\u00e4nsuoraksi

8. Suorien yhdensuuntaisuus ja k\u00f6rt\u00e4suoruus



$$\begin{cases} k_1 = \frac{\Delta y}{\Delta x} = \frac{b}{a} \\ k_2 = \frac{\Delta y}{\Delta x} = -\frac{a}{b} \end{cases}$$

($k_2 < 0$, koska suora, a asettaa alayksin)