

Problemas resueltos del tema 1.

$$(1) a) 3000 \text{ cg} \cdot \frac{1 \text{ hg}}{10^4 \text{ cg}} = \frac{3000}{10000} = \frac{3}{10} = \boxed{0.3 \text{ hg}}$$

$$b) 486 \text{ g} \cdot \frac{1 \text{ dag}}{10 \text{ g}} = \frac{486}{10} = \boxed{48.6 \text{ dag}}$$

$$c) 50 \text{ k} \cdot \frac{3600 \text{ s}}{1 \text{ h}} \cdot \frac{1000 \text{ ms}}{1 \text{ s}} = \boxed{1.8 \cdot 10^8 \text{ ms}}$$

$$d) 1 \text{ año} \cdot \frac{365 \text{ días}}{1 \text{ año}} \cdot \frac{24 \text{ h}}{1 \text{ día}} \cdot \frac{3600 \text{ s}}{1 \text{ h}} = \boxed{3.15 \cdot 10^7 \text{ s}}$$

$$e) 800 \text{ ml} \cdot \frac{1 \text{ dal}}{10^4 \text{ ml}} = \frac{800}{10000} = \frac{8}{100} = \boxed{0.08 \text{ dal}}$$

$$(2) a) 70 \text{ mm}^2 \cdot \frac{1 \text{ cm}^2}{10^2 \text{ mm}^2} = \frac{70}{100} = \boxed{0.7 \text{ cm}^2}$$

$$b) 34 \text{ m}^3 \cdot \frac{1 \text{ dam}^3}{10^3 \text{ m}^3} = \boxed{0.034 \text{ dam}^3}$$

$$c) 25 \text{ km}^2 \cdot \frac{10^8 \text{ dm}^2}{1 \text{ km}^2} = \boxed{2.5 \cdot 10^9 \text{ dm}^2}$$

$$\textcircled{3} \text{ a) } 72 \frac{\cancel{\text{km}}}{\cancel{\text{h}}} \cdot \frac{1000 \text{ m}}{1 \cancel{\text{km}}} \cdot \frac{1 \cancel{\text{h}}}{3600 \text{ s}} = \boxed{20 \frac{\text{m}}{\text{s}}}$$

$$\text{b) } 40 \frac{\cancel{\text{h}}}{\cancel{\text{s}}} \cdot \frac{1 \text{ km}}{1000 \cancel{\text{m}}} \cdot \frac{3600 \cancel{\text{s}}}{1 \text{ h}} = \boxed{144 \frac{\text{km}}{\text{h}}}$$

$$\textcircled{4} \text{ a) }$$

$$8000 \cancel{\text{cm}^3} \cdot \frac{1 \text{ ml}}{1 \cancel{\text{cm}^3}} \cdot \frac{1 \text{ hl}}{10^5 \text{ ml}} = \boxed{0'08 \text{ hl}}$$

$$\text{b) } 300 \cancel{\text{cl}} \cdot \frac{10 \cancel{\text{ml}}}{1 \cancel{\text{cl}}} \cdot \frac{1 \cancel{\text{dm}^3}}{1 \cancel{\text{ml}}} \cdot \frac{1 \text{ dam}^3}{10^9 \cancel{\text{dm}^3}} = \boxed{3 \cdot 10^{-6} \text{ dam}^3}$$

$$\text{c) } 3'4 \cdot 10^{48} \cancel{\text{ml}} \cdot \frac{1 \cancel{\text{cm}^3}}{1 \cancel{\text{ml}}} \cdot \frac{1 \text{ km}^3}{10^{15} \cancel{\text{cm}^3}} = \boxed{3'4 \cdot 10^{33} \text{ km}^3}$$

$$\textcircled{5} \text{ a) } 23168942 = 2'3168942 \cdot 10^7 \simeq 2'32 \cdot 10^7$$

$$\text{b) } 0'00458712 = 4'58712 \cdot 10^{-3} \simeq 4'59 \cdot 10^{-3}$$

$$\begin{aligned} \text{c) } 544854 \cdot 10^{-20} &= 5'44854 \cdot 10^5 \cdot 10^{-20} = \\ &= 5'44854 \cdot 10^{-15} \simeq 5'45 \cdot 10^{-15} \end{aligned}$$

$$\begin{aligned} \text{d) } 0'000578421 \cdot 10^{-86} &= 5'78421 \cdot 10^{-4} \cdot 10^{-86} = \\ &= 5'78421 \cdot 10^{-90} \simeq 5'78 \cdot 10^{-90} \end{aligned}$$

$$\textcircled{6} \quad \bar{x} = \frac{x_1 + x_2 + \dots + x_n}{n} =$$

$$= \frac{3'27 + 3'28 + 3'29 + 3'25 + 3'26 + 3'25 + 3'24 + 3'27 + 3'28}{9} =$$

$$= 3'2656 \approx 3'27$$

$$\varepsilon_a = |\bar{x} - x_i| ; \quad \varepsilon_r = \frac{\varepsilon_a \cdot 100}{\bar{x}}$$

$$\varepsilon_a = 0, 0'01, 0'02, 0'02, 0'01, 0'02, 0'03, 0, 0'01$$

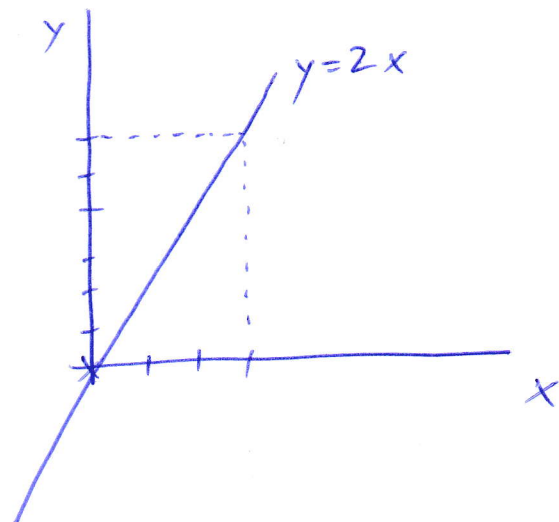
$$\varepsilon_{r1} = 0, \quad \varepsilon_{r2} = \frac{0'01 \cdot 100}{3'27} = \boxed{0'306\%} = \varepsilon_{r5} = \varepsilon_{r9}$$

$$\varepsilon_{r3} = \varepsilon_{r4} = \varepsilon_{r6} = \frac{0'02 \cdot 100}{3'27} = \boxed{0'612\%}$$

$$\varepsilon_{r7} = \frac{0'03 \cdot 100}{3'27} = \boxed{0'917\%}$$

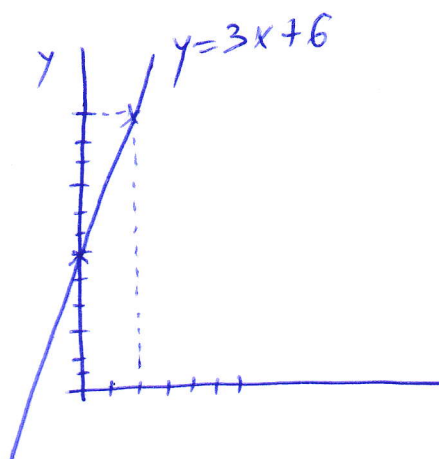
$\textcircled{7} \text{ a)}$

x	y
0	0
3	2 \cdot 3 = 6



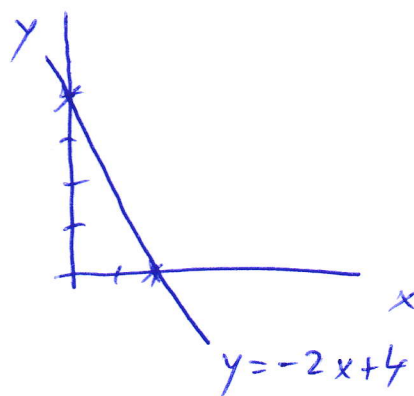
$$b) y = 3x + 6$$

x	y
0	$3 \cdot 0 + 6 = 6 \rightarrow (0, 6)$
2	$3 \cdot 2 + 6 = 12 \rightarrow (2, 12)$



$$c) y = -2x + 4$$

x	y
0	$-2 \cdot 0 + 4 = 4 \rightarrow (0, 4)$
2	$-2 \cdot 2 + 4 = 0 \rightarrow (2, 0)$



$$⑧ a) y = \frac{5}{3-x} \Rightarrow 3-x = \frac{5}{y} \Rightarrow -x = \frac{5}{y} - 3 \Rightarrow$$

$$\Rightarrow \boxed{x = 3 - \frac{5}{y}}$$

$$b) y = \frac{8}{x^2-3} \Rightarrow x^2-3 = \frac{8}{y} \Rightarrow x^2 = \frac{8}{y} + 3 \Rightarrow$$

$$\Rightarrow \boxed{x = \sqrt{\frac{8}{y} + 3}}$$

$$\textcircled{9} \text{ a) } 0'0000084536 = 8'4536 \cdot 10^{-6} \simeq 8'45 \cdot 10^{-6}$$

$$\text{b) } 765'5243 = 7'655243 \cdot 10^2 \simeq 7'66 \cdot 10^2$$

$$\text{c) } 847'38 \cdot 10^{-21} = 8'4738 \cdot 10^{-19} \simeq 8'47 \cdot 10^{-19}$$

$\textcircled{10}$

$$\bar{x} = \frac{x_1 + x_2 + \dots + x_n}{n} =$$

$$= \frac{6'24 + 6'25 + 6'27 + 6'32 + 6'24 + 6'28 + 6'31}{7} =$$

$$= 6'2729 \simeq 6'27$$

$$\varepsilon_{a2} = |\bar{x} - x_2| = |6'27 - 6'25| = \boxed{0'02}$$

$$\varepsilon_{r2} = \frac{\varepsilon_{a2} \cdot 100}{\bar{x}} = \frac{0'02 \cdot 100}{6'27} = \boxed{0'319 \%}$$

$$\varepsilon_a = 0'03, 0'02, 0, 0'05, 0'03, 0'01, 0'04$$

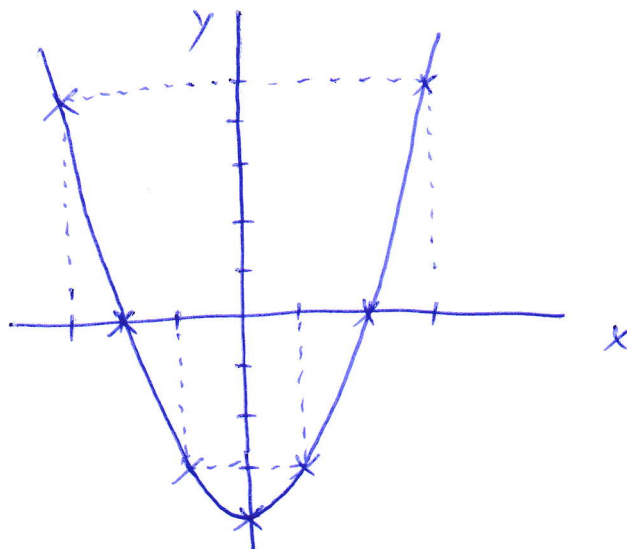
$$\delta = \frac{\varepsilon_{a1} + \varepsilon_{a2} + \dots}{n} = \frac{0'03 + 0'02 + 0 + 0'05 + 0'03 + 0'01 + 0'04}{7} =$$

$$= 0'025714 \simeq 0'03$$

$$\bar{x} \pm \delta = \boxed{6'27 \pm 0'03}$$

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x	y
-3	$(-3)^2 - 4 = 5$
-2	$(-2)^2 - 4 = 0$
-1	$(-1)^2 - 4 = -3$
0	$0^2 - 4 = -4$
1	$1^2 - 4 = -3$
2	$2^2 - 4 = 0$
3	$3^2 - 4 = 5$



12) a) $y = \frac{5}{3 - \sqrt{x}} \Rightarrow 3 - \sqrt{x} = \frac{5}{y} \Rightarrow -\sqrt{x} = \frac{5}{y} - 3 \Rightarrow$

$\Rightarrow \sqrt{x} = 3 - \frac{5}{y} \Rightarrow \boxed{x = \left(3 - \frac{5}{y}\right)^2}$

b) $y = \frac{8 + 2x}{x - 3} \Rightarrow x \cdot y - 3y = 8 + 2x \Rightarrow$

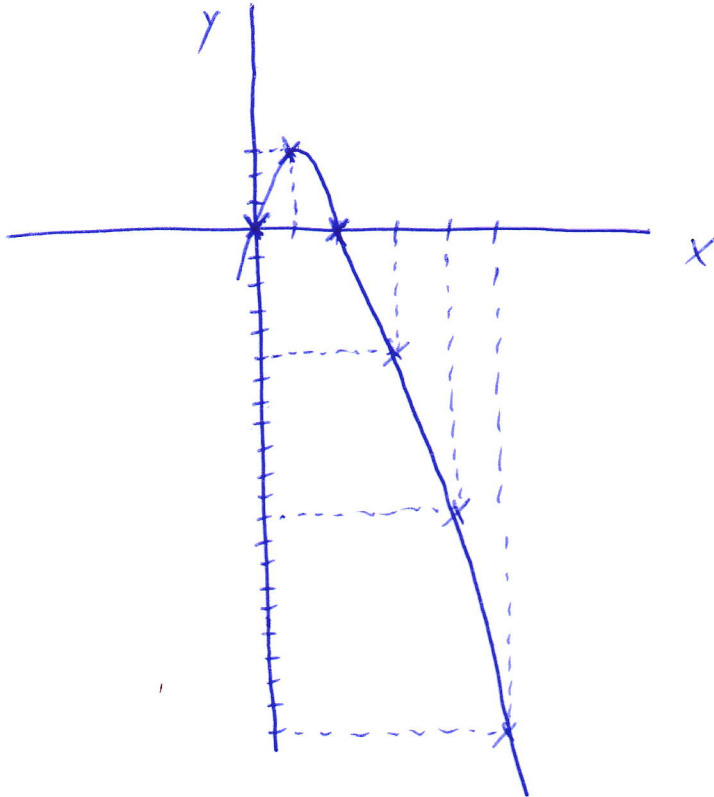
$\Rightarrow x \cdot y - 2x = 8 + 3y \Rightarrow x \cdot (y - 2) = 8 + 3y \Rightarrow$

$\Rightarrow \boxed{x = \frac{8 + 3y}{y - 2}}$

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x	0	1	2	3	4	5
y	0	0.5	1	3	6	14

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15) a) $\frac{2'476}{4} \cdot \frac{96'1847}{6} \cdot \frac{6'86}{3} = 1633'7 \approx \boxed{\frac{1630}{3}}$

b) $\frac{89'45}{4} \cdot \frac{65'42}{3} = 1806'1 \approx \boxed{\frac{1810}{3}}$

c) $\frac{43'6}{3} + \frac{4'8}{2} = 48'4 \approx \boxed{\frac{48}{2}}$

Resolución de las cuestiones

(2) a) F. b) Q. c) F. d) Q. e) F. f) F.

g) F + Q. h) Q.

(4) velocidad $\rightarrow \frac{m}{s}$

masa $\rightarrow kg$

área $\rightarrow m^2$

tiempo $\rightarrow s$

masa $\rightarrow kg$

densidad $\rightarrow \frac{kg}{m^3}$

presión $\rightarrow Pa$

fuerza $\rightarrow N$

potencia $\rightarrow W$