Matemática C – Semi-Extensivo – V. 1

Exercícios

01) $\frac{7830}{90} = \frac{87}{1}$

87:1

02) 1:250000
D = 5 . 250000
D = 1250000 cm
D = 12,5 km

03) $\frac{a}{2} = \frac{b}{3}$

$\frac{a+b}{2+3} = \frac{a}{2}$

$\frac{75}{5} = \frac{a}{2}$

a = 30
a + b = 75
b = 75 – 30
b = 45

04) $\frac{a}{6} = \frac{b}{20} = \frac{c}{32}$

$\frac{a+b+c}{6+20+32} = \frac{a}{6}$

$\frac{29}{58} = \frac{a}{6}$

a = 3

$\frac{a+b+c}{6+20+32} = \frac{b}{20}$

$\frac{29}{58} = \frac{b}{20}$

b = 10
a + b + c = 29
c = 29 – 10 – 3
c = 16

05) A: água (volume em litros)
T: volume em litros de tinta
A + T = 40

$\frac{A}{T} = \frac{5}{3}$

$\frac{A}{5} = \frac{T}{3}$

$\frac{A+T}{5+3} = \frac{A}{5}$

$\frac{40}{8} = \frac{A}{5}$

A = 25 L

$\frac{A+T}{5+3} = \frac{A}{5} = \frac{T}{3}$

$\frac{A+T}{5+3} = \frac{T}{3}$

$\frac{40}{8} = \frac{T}{3}$

T = 15 L

06) a – b = 10

$\frac{2a}{b} = 4$

$\frac{a}{b} = \frac{4}{2}$

$\frac{a}{b} = \frac{2}{1}$

$\frac{a-b}{b} = \frac{2-1}{1}$

$\frac{10}{b} = 1$

b = 10
a – b = 10
a = 10 + 10
a = 20

07) $\frac{p+q}{p} = \frac{3}{1}$

$\frac{p+q}{p} = \frac{2+1}{1}$

$\frac{q}{p} = \frac{2}{1}$

q = 2p

$\frac{q-p}{p} = \frac{2-1}{1}$

$\frac{q-p}{p} = 1$

q – p = p
p + q < 20
p + 2p < 20

$p < \frac{20}{3}$

q – p > 5
p > 5
p = 6
Como:
q = 2p

Então:
q = 12

08) $\frac{x}{2} = \frac{y}{4} = \frac{z}{3}$

x + y + z = 72

$\frac{x+y+z}{2+4+3} = \frac{x}{2}$

$\frac{72}{9} = \frac{x}{2}$

x = 16

$\frac{x+y+z}{2+4+3} = \frac{y}{4}$

$\frac{72}{9} = \frac{y}{4}$

y = 32

$\frac{x+y+z}{2+4+3} = \frac{z}{3}$

$\frac{72}{9} = \frac{z}{3}$

z = 24

09) $\frac{a}{5} = \frac{b}{6} = \frac{c}{7} = \frac{d}{8}$

a + b + c + d = 390

$\frac{a+b+c+d}{5+6+7+8} = \frac{a}{5}$

$\frac{390}{26} = \frac{a}{5}$

a = 75 m

$\frac{390}{26} = \frac{b}{6}$

b = 90 m

$\frac{390}{26} = \frac{c}{7}$

c = 105 m

$\frac{390}{26} = \frac{d}{8}$

d = 120 m

10) a + b = 280

$\frac{a}{2} = \frac{b}{5}$

$\frac{a+b}{2+5} = \frac{a}{2}$

$\frac{280}{7} = \frac{a}{2}$

$a = 80$

Como:

$a + b = 280$

$b = 200$

Então:

R$80,00 e R$200,00

11) $A^2 + B^2 = 125$

$\frac{A}{1} = \frac{B}{2}$

$\left(\frac{A}{1}\right)^2 = \left(\frac{B}{2}\right)^2$

$\frac{A^2}{1} = \frac{B^2}{4}$

$\frac{A^2 + B^2}{1 + 4} = \frac{A^2}{1} = \frac{B^2}{4}$

$A^2 + B^2 = 5A^2$

$A^2 + B^2 = 125$

$5A^2 = 125$

$A^2 = 25$

$A = \pm 5$

$A^2 + B^2 = 125$

$25 + B^2 = 125$

$B^2 = 100$

$B = \pm 10$

12) $\frac{A}{9} = \frac{B}{12}$

$B = \frac{12A}{9}$

$B = \frac{4A}{3}$

$A^3 + B^3 = 91$

$A^3 + \left(\frac{4A}{3}\right)^3 = 91$

$A^3 + \frac{64A^3}{27} = 91$

$\frac{27A^3 + 64A^3}{27} = \frac{2457}{27}$

$91A^3 = 2457$

$A^3 = \frac{2457}{91}$

$A^3 = 27$

$A = \sqrt[3]{27}$

$A = 3$

$B = \frac{4A}{3}$

$B = \frac{4 \cdot 3}{3}$

$B = 4$

13) $a + b = 108$

$\frac{a}{b} = \frac{x}{7}$

$b = 84$

$a + b = 108$

$a = 108 - 84$

$a = 24$

$\frac{24}{84} = \frac{x}{7}$

$84x = 168$

$x = 2$

14) $\frac{a^2 + b^3}{ab} = \frac{324b^2 - x}{6x}$

$\frac{3^2 + 2^3}{3 \cdot 2} = \frac{324 \cdot 2^2 - x}{6x}$

$\frac{9 + 8}{6} = \frac{1296 - x}{6x}$

$17x = 1296 - x$

$18x = 1296$

$x = \frac{1296}{18}$

$x = 72$

15) $\frac{55}{170} = \frac{x}{85000}$

$170x = 85000 \cdot 55$

$x = \frac{4675000}{170}$

$x = 27500$

16) E

$\frac{a}{b} = \frac{3}{5} \cdot 5$

$\frac{5a}{b} = \frac{15}{5} \cdot \frac{1}{\frac{1}{3}}$

$\frac{5a}{\frac{b}{3}} = \frac{15}{\frac{5}{3}}$

$\frac{5a}{\frac{b}{3}} = 15 \cdot \frac{3}{5}$

$\frac{5a}{\frac{b}{3}} = 9$

17) B

Do volume total do caminhão 1, temos:

Gasolina: $G_1 = 0{,}97V$

Álcool: $A_1 = 0{,}03V$

Do volume total do caminhão 2, obtemos:

Gasolina: $G_2 = 0{,}95V$

Álcool: $A_2 = 0{,}05V$

No reservatório, encontramos:

Gasolina: $0{,}97V + 0{,}95V = 1{,}92V$

Álcool: $0{,}03V + 0{,}05V = 0{,}08V$

Proporção de álcool e gasolina

$P = \frac{0{,}08V}{1{,}92V}$

$P = \frac{8}{192}$

$P = \frac{1}{24}$

18) $\frac{a}{b} = \frac{2}{3}$

$\frac{a + 2}{b + 3} = \frac{2}{3}$

$a + 2 = \frac{2(b + 3)}{3}$

$a + 2 = \frac{2b + 6}{3}$

$\frac{a + 2}{b + 2} = \frac{3}{5}$

$5(a + 2) = 3 \cdot (b + 2)$

$5 \cdot \left(\frac{2b + 6}{3}\right) = 3b + 6$

$\frac{10b + 30}{3} = 3b + 6$

$10b + 30 = 9b + 18$

$10b - 9b = 18 - 30$

$b = -12$

$\frac{a}{b} = \frac{2}{3}$

$\frac{a}{-12} = \frac{2}{3}$

$3a = -24$

$a = -8$

$-8 \cdot (-12) = 96$

19) $\frac{a}{5} = \frac{2b}{6} = \frac{1,5c}{3}$

$a + 3b - 2c = 100$

$\frac{2b}{6} = \frac{3b}{x}$

$2bx = 18b$

$x = 9$

$\frac{2b}{6} = \frac{3b}{9}$

$\frac{1,5c}{3} = \frac{2c}{x}$

$1,5cx = 3 \cdot 2c$

$x = \frac{6c}{1,5c}$

$x = 4$

$\therefore \frac{1,5c}{3} = \frac{2c}{4} = \frac{-2c}{-4}$

Reescrevendo de forma conveniente, temos:

$\frac{a}{5} = \frac{2b}{6} = \frac{1,5c}{3}$

$\frac{a}{5} = \frac{3b}{9} = \frac{-2c}{-4}$

$\frac{a + 3b - 2c}{5 + 9 - 4} = \frac{a}{5} = \frac{3b}{9} = \frac{2c}{4}$

$\frac{100}{10} = \frac{a}{5}$

$a = 50$

$\frac{100}{10} = \frac{3b}{9}$

$3b = 90$

$b = 30$

$\frac{100}{10} = \frac{2c}{4}$

$2c = 40$

$c = 20$

$\therefore k = a + b - c$

$k = 50 + 30 - 20$

$k = 60$

20) $\frac{a}{b} = 1,6$

$\frac{a}{b} = \frac{16}{10}$

$\frac{b}{a} = \frac{10}{16}$

$\frac{b}{a} = \frac{5}{8}$

$\frac{b}{a} = 0,625$

21) $a + b = 250$

$a \cdot 0,3 = b \cdot 0,2$

$a = \frac{0,2b}{0,3}$

$a = \frac{2b}{3}$

$a + b = 250$

$\frac{2b}{3} + b = 250$

$\frac{2b + 3b}{3} = \frac{750}{3}$

$5b = 750$

$b = 150$

$a + b = 250$

$a = 250 - 150$

$a = 100$

22) calças — costureiras

$\frac{32}{x} \times \frac{4}{9}$

$4x = 32 \cdot 9$

$x = \frac{288}{4}$

$x = 72$

23) torneiras — tempo (min)

$\frac{3}{x} \times \frac{90}{54}$

1h30 = 90 min

$54x = 270$

$x = \frac{270}{54}$

$x = 5$

24) peças — operários — dias

$\frac{400}{x} \times \frac{3}{7} \times \frac{6}{9}$

$6 \cdot 3 \cdot x = 400 \cdot 7 \cdot 9$

$18x = 25200$

$x = 1400$

25) dias — distância — tempo por dia

$\frac{2}{x} \times \frac{120}{500} \times \frac{3}{5}$

$x \cdot 120 \cdot 5 = 2 \cdot 500 \cdot 3$

$600x = 3000$

$x = 5$

26) $a + b + c = 90$

$\frac{a}{30} = \frac{b}{40} = \frac{c}{50}$

$\frac{a + b + c}{120} = \frac{a}{30} = \frac{b}{40} = \frac{c}{50}$

$\frac{90}{120} = \frac{a}{30}$

$120a = 2700$

$a = \frac{2700}{120}$

$a = 22,5$

R$22500,00

$\frac{90}{120} = \frac{b}{40}$

$120b = 3600$

$b = \frac{3600}{120}$

$b = 30$

R$30000,00

$a + b + c = 90$

$c = 90 - 30 - 22,5$

$c = 37,5$

R$37500,00

27) $a + b + c = 54$

$a \cdot \frac{1}{2} = b \cdot \frac{2}{3} = c \cdot \frac{1}{10}$

$\frac{a}{2} = \frac{2b}{3} = \frac{c}{10}$

$\frac{2b}{3} = \frac{b}{x}$

$2bx = 3b$

$x = \frac{3b}{2b}$

$x = 1,5$

Reescrevendo, temos:

$\frac{a}{2} = \frac{b}{1,5} = \frac{c}{10}$

$\frac{a+b+c}{13,5} = \frac{a}{2} = \frac{b}{1,5} = \frac{c}{10}$

$\frac{54}{13,5} = \frac{a}{2}$

$4 = \frac{a}{2}$

$a = 8$

$4 = \frac{b}{1,5}$

$b = 6$

$4 = \frac{c}{10}$

$c = 40$

28) $A + S + F = 47300$

$50A = 40S = 16F$

$A = \frac{16F}{50}$

$A = \frac{8F}{25}$

$S = \frac{16F}{40}$

$S = \frac{2F}{5}$

$A + S + F = 47300$

$\frac{8F}{25} + \frac{2F}{5} + F = 47300$

$\frac{8F + 10F + 25F}{25} = \frac{1182500}{25}$

$43F = 1182500$

$F = \frac{1182500}{43}$

$F = 27500$

$A = \frac{8 \cdot 27500}{25}$

$A = 8800$

$S = \frac{2 \cdot 27500}{5}$

$S = 11000$

29) $A_Q = Q_R$

$b + h = 39$

$\frac{b}{h} = \frac{4}{9}$

$\frac{b+h}{h} = \frac{13}{9}$

$\frac{39}{h} = \frac{13}{9}$

$13h = 351$

$h = 27$

$b + h = 39$

$b = 39 \cdot 27$

$b = 12$

Área do retângulo

$A_R = b \cdot h$

$A_R = 27 \cdot 12$

$A_R = 324 = A_Q$

$A_Q = \ell^2 = 324$

$\ell = 18$

$A_Q = 625$

$\ell^2 = 625$

$\ell = 25$

Deve diminuir 7 cm.

30) dias — tratores

32	80
x	20

$20 \cdot x = 32 \cdot 80$

$x = \frac{2560}{20}$

$x = 128$

Serão necessários 128 tratores.

31) nota — pontos

5,1	6,0
x	10

$6x = 5{,}1 \cdot 10$

$x = \frac{51}{6}$

$x = 8{,}5$

32) tempo — velocidade

60	v
x	$v + \frac{1}{5}v$

tempo — velocidade

60	v
x	$\frac{6v}{5}$

$60v = \frac{x \cdot 6v}{5}$

$x = \frac{300v}{6v}$

$x = 50$ min

33) consumo — tempo — RPM

200	5	1500
x	3	1800

$5 \cdot 1500 \cdot x = 200 \cdot 3 \cdot 1800$

$7500x = 1080000$

$x = \frac{1080000}{7500}$

$x = 144$

34) dias — toques — tempo (h)

10	60	6
x	50	4

$50 \cdot 4 \cdot x = 10 \cdot 60 \cdot 6$

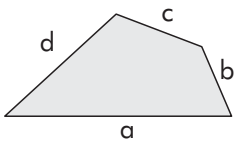
$200x = 3600$

$x = \frac{3600}{200}$

$x = 18$

35) $a + b + c + d = 72$

$2a = 3b = 5c = 6d$



$a = \frac{3b}{2}$

$c = \frac{3b}{5}$

$d = \frac{3b}{6}$

$d = \frac{b}{2}$

$a + b + c + d = 72$

$\frac{3b}{2} + b + \frac{3b}{5} + \frac{b}{2} = 72$

$\frac{15b + 10b + 6b + 5b}{10} = \frac{720}{10}$

$36b = 720$

$b = \frac{720}{36}$

$b = 20$

$d = \frac{3 \cdot 20}{6}$

$d = 10$

36) D

rolos — largura

24	0,40
x	0,48

$0{,}48x = 24 \cdot 0{,}40$

$x = \frac{9{,}6}{0{,}48}$

$x = 20$

37) C

tempo — comprimento — altura — largura

10	30	5	L
x	$\frac{4}{3} \cdot 30$	3	$\frac{L}{2}$

$30 \cdot 5 \cdot \cancel{L} \cdot x = 10 \cdot \frac{4}{\cancel{3}} \cdot \overset{10}{\cancel{30}} \cdot 3 \cdot \frac{\cancel{L}}{2}$

$150x = \frac{1200}{2}$

$150x = 600$

$x = \frac{600}{150}$

$x = 4$

38) A

$a + b + c = 128$

$\frac{a}{3} = \frac{b}{5} = \frac{c}{8}$

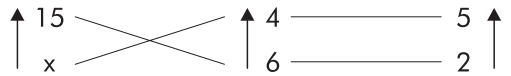
$\frac{a+b+c}{16} = \frac{a}{3} = \frac{b}{5} = \frac{c}{8}$

$\frac{128}{16} = \frac{a}{3}$

$16a = 128 \cdot 3$

$a = 24$

39) problemas dias tempo (h)



$4 \cdot 5 \cdot x = 15 \cdot 6 \cdot 2$

$20x = 180$

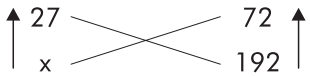
$x = \frac{180}{20}$

$x = 9$

40) 8 dias $\Rightarrow$ 8 . 24 h

8 dias $\Rightarrow$ 192 h

atraso (s) tempo de uso (h)



$72 \cdot x = 192 \cdot 27$

$x = \frac{5184}{72}$

$x = 72$ s

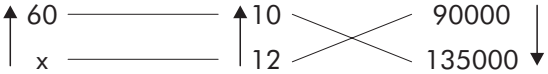
41) tripulantes dias

$15 \cdot x = 12 \cdot 31$

$x = 24{,}8$

Aproximadamente 24 dias.

42) dias máquinas peças



$12 \cdot x = 90000 = 60 \cdot 10 \cdot 135000$

$1080000 \cdot x = 81000000$

$x = \frac{81000000}{1080000}$

$x = 75$

43) dias pessoas refeições

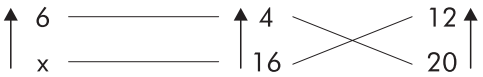
$3 \cdot 80 \cdot x = 45 \cdot 120 \cdot 2$

$240x = 10800$

$x = \frac{10800}{240}$

$x = 45$

44) casas tempo operários



$4 \cdot 12 \cdot x = 6 \cdot 16 \cdot 20$

$48x = 1920$

$x = \frac{1920}{48}$

$x = 40$

45) a) $\sqrt{64\%} = \sqrt{\frac{64}{100}} = \frac{8}{10} = 0{,}8 = 80\%$

b) $\left(\frac{20}{100}\right)^2 = \frac{4\cancel{00}}{100\cancel{00}} = 4\%$

46) 200 — 100%

74 — x

Atenção

x (multiplicação em **x**)

$200x = 75 \cdot 100$

$x = \frac{7400}{200}$

$x = 37\%$

47) 750 — 100%

x — 15%

Atenção

x (multiplicação em **x**)

$100x = 15 \cdot 750$

$100x = 11250$

$x = \frac{11250}{100}$

$x = 112{,}50$

Salário atual

$750 + 112{,}50$

R$862,50

48) Fumam: 17 de cada 20

20 — 17

x — 4590

$17 \cdot x = 20 \cdot 4590$

$x = \frac{91800}{17}$

x = 5400 (total de fumantes antes da redução)

5400 — 32%

x — 100%

$32x = 5400 \cdot 100$

$x = \frac{540000}{32}$

x = 16875

49) 100% — 403,65

x — 259,00

$403{,}65x = 259{,}00 \cdot 100$

$x = \frac{259{,}00}{403{,}65}$

x = 64%

36% a menos

50) $A_1 = \ell^2$

Aumento: $\ell + 0{,}2\ell = 1{,}2\ell$

$A_2 = (1{,}2\ell)^2$

$A_2 = 1{,}44\ell^2$

Sua área aumenta 44%.

51) P: preço inicial

Aumento: P + 0,3P = 1,3P

Liquidação: 1,3P – 0,4 . (1,3P) =

= 1,3P – 0,52P = 0,78P

Perde 22%.

52) 500000 — 100%

560000 — x

$500000 \cdot x = 560000 \cdot 100$

$x = \frac{560\cancel{0000}}{5\cancel{0000}}$

x = 12%

53) 15325 — 100%

14099 — x

$15325 \cdot x = 14099 \cdot 100$

$x = \frac{1409900}{15325}$

x = 92%

O índice de obstenção foi de 8%.

54) 120 — 100%

x — 12%

$100 \cdot x = 12 \cdot 120$

$x = \frac{1440}{100}$

x = 14,49 (total de sal)

14,4 — 15%

x — 100%

$15 \cdot x = 100 \cdot 14{,}4$

$x = \frac{1440}{15}$

x = 96 L (total de água)

Evaporaram-se 24 L de água.

55) $\left(1+\frac{1}{3}\right)^2 \div \frac{2}{9} - 3 \cdot \left(2-\frac{2}{9}\right)$

$\left(\frac{3+1}{3}\right)^2 \div \frac{2}{9} - 3 \cdot \left(\frac{18-2}{9}\right)$

$\frac{16}{9} \cdot \frac{9}{2} - 3 \cdot \frac{16}{9}$

$8 - \frac{16}{3}$

$\frac{24-16}{3}$

$\frac{8}{3}$

$0{,}3\% \Rightarrow \frac{\frac{3}{10}}{100} = \frac{3}{10} \cdot \frac{1}{100} = \frac{3}{1000}$

$\frac{\cancel{3}}{1000} \cdot \frac{8}{\cancel{3}} = \frac{8}{1000} = \frac{1}{125}$

56) $N = \frac{2}{3}B$

$B + N = 14\%$

$B + \frac{2}{3}B = 14$

$\frac{3B + 2B}{3} = \frac{42}{3}$

$5B = 42$

$B = 8{,}4\%$

57) 25

01. **Correta.**

$$\begin{array}{ccc} 20\% & \times & 600 \\ 100\% & & x \end{array}$$

$20 \cdot x = 600 \cdot 100$

$$x = \frac{6000\cancel{\emptyset}}{2\cancel{\emptyset}}$$

$x = 3000$ alunos

02. **Incorreta.**

$$\begin{array}{ccc} 100\% & \times & 3000 \\ 35\% & & x \end{array}$$

$100 \cdot x = 35 \cdot 3000$

$$x = \frac{105000}{100}$$

$x = 1050$

04. **Incorreta.**

$$\begin{array}{ccc} 100 & \times & 3000 \\ 45 & & x \end{array}$$

$100 \cdot x = 45 \cdot 3000$

$$x = \frac{135000}{100}$$

$x = 1350$

$$\begin{array}{ccc} 1350 & \times & 100\% \\ 270 & & x \end{array}$$

$1350 \cdot x = 270 \cdot 100$

$$x = \frac{27000}{1350}$$

$x = 20\%$

08. **Correta.**

$$\begin{array}{ccc} 600 & \times & 100\% \\ 1050 & & x \end{array}$$

$600 \cdot x = 1050 \cdot 100$

$$x = \frac{105000}{600}$$

$x = 175\%$

16. **Correta.**

$$\frac{2}{5} \cdot 1050 = \frac{2100}{5} = 420$$

58) **n**: nº de dependentes

$(2000 - 90 \cdot n - 200) \cdot 0{,}15 - 135 = 108$

$(1800 - 90n) \cdot 0{,}15 = 108 + 135$

$270 - 13{,}5n = 243$

$-13{,}5n = 243 - 270$

$-13{,}5n = -27$

$$n = \frac{27}{13{,}5}$$

$n = 2$

59) D

Fernando R$100,00 como investimento inicial

$$R\$100 \xrightarrow{1º\ mês} R\$105 \xrightarrow{2º\ mês} R\$115{,}50 \xrightarrow{3º\ mês} 109{,}725$$

$0{,}05 \cdot 100 = 50$; $0{,}1 \cdot 105 = 10{,}50$; $0{,}5 \cdot 115{,}50 = 5{,}775$

Total: $100 \longrightarrow 109{,}725$

$$\begin{array}{ccc} 100 & \times & 100\% \\ 9{,}725 & & x \end{array}$$

$100x = 972{,}5$

$x = 9{,}725\%$

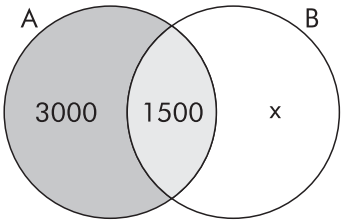
60) $0{,}2 \cdot 10000 = 2000$: Não bebem.

$\Downarrow$

8000 bebem.

$0{,}45 \cdot 10000 = 4500$: Bebem A.

$0{,}15 \cdot 10000 = 1500$: Bebem os dois.



$3000 + 1500 + x = 8000$

$x = 8000 - 4500$

$x = 3500$ (Bebem B.)

61) C_1 = preço de custo do rádio 1

C_2 = preço de custo do rádio 2

$1{,}2\ C_1 = 0{,}8\ C_2$

Supondo $\rightarrow C_1 = 10 \Rightarrow 1{,}2\ C_1 = \overset{\downarrow \text{Pre o de venda}}{12}$

$1{,}2 \cdot 10 = 0{,}8\ C_2$

$$C_2 = \frac{12}{0{,}8}$$

Custo $\rightarrow C_2 = 15 \Rightarrow 0{,}8\ C_2 = \overset{\downarrow \text{Pre o de venda}}{12}$

$\Rightarrow L = V - C$

$L = 12 + 12 - (10 + 15)$

$L = \underset{\downarrow}{-1}$

Prejuízo

$A_n = a_1 \cdot (n - 1) \cdot q$

$3440 = 2000$

$1440 = 29 \cdot q \cdot 2000$

$$\Rightarrow \begin{array}{ccc} 25 & \times & 100\% \\ 1 & & x \end{array}$$

$25x = 100\%$

$$x = \frac{100}{25}$$

$x = \underset{\downarrow}{4\%}$

Prejuízo sobre o custo total

62) $L = V - C$
$750 = 1{,}10P_1 + 0{,}95P_2 - 27000$

$$\begin{cases} 1{,}10P_1 + 0{,}95P_2 = 27750 \\ P_1 + P_2 = 27000 \Rightarrow P_1 = 27000 - P_2 \end{cases}$$

$1{,}1(27000 - P_2) + 0{,}95P_2 = 27750$
$29700 - 1{,}1P_2 + 0{,}95P_2 = 27750$
$-0{,}15P_2 = -1950$

$$P_2 = \frac{1950}{0{,}15}$$

$P_2 = 13000$
$P_1 = 27000 - 13000$
$P_2 = 14000$

63) $j = m - c$
$j = 8960 - 5600$
$j = 3360$
$m = c(1 + in)$
$m = 5600(1 + 0{,}12 \cdot 5)$
$m = 5600 \cdot 1{,}6$
$m = 8960$

64) a) $m = c(1 + in)$
$m = 400(1 + 0{,}1 \cdot 3)$
$m = 400 \cdot 1{,}3$
$m = 520$
$j = m - c$
$j = 520 - 400$
$j = 120$

b) $m = c(1 + i)^n$
$m = 400(1 + 0{,}1)^3$
$m = 400 \cdot 1{,}331$
$m = 532{,}40$
$j = m - c$
$j = 532{,}40 - 400$
$j = 132{,}40$

65) 12% a.a. $\Rightarrow \frac{12\%}{12} = 1\%$ a.m.
$m = c(1 + in)$
$m = 240(1 + 0{,}01 \cdot 3)$
$m = 240 \cdot 1{,}03$
$m = 247{,}20$
$j = m - c$
$j = 247{,}2 - 240$
$j = 7{,}20$

66) $2790 = 2400(1 + i \cdot 490)$
$2790 = 2400 + 1176000i$
$1176000i = 2790 - 2400$
$i = 0{,}0003 \cdot 31$
$i = 0{,}0331\%$ a.a.
$i = 0{,}0331 \cdot 360$ a.a.
$i = 11{,}93\%$ a.a

67) $m = c(1 + i)^n$
$m = 2500(1 + 0{,}02)^9$
$m = 2500 \cdot 1{,}195$
$m = 2987{,}73$

68) $m = c(1 + in)$

$$m = 3280\left(1 + \frac{0{,}18}{360} \cdot 93\right)$$

$$m = 3280 \cdot \frac{376{,}74}{360}$$

$m = 3432{,}52$
$j = m - c$
$j = 3432{,}52 - 3280$
$j = 152{,}52$

69) Valor financiado: $1100 - 400 = 700{,}00$
Valor a ser pago em 6 meses $= 1400 - 400 = 1000$
$m = c(1 + in)$
$1000 = 700(1 + i \cdot 6)$
$1000 = 700 + 4200i$
$4200i = 1000 - 700$

$$i = \frac{300}{4200}$$

$i = 0{,}0714$
$i = 7{,}14\%$

70) $j = c \cdot in$

$$272 = c \cdot \frac{0{,}12}{30} \cdot 10$$

$$c = \frac{30 \cdot 272}{1{,}2}$$

$c = 6800$

71) entrada: $\frac{9000}{3} = 3000$

financia por um ano ↓ R$6000,00 (restante)

juros após um ano: $j = 6000 \cdot 0{,}17 \cdot 1$
$j = 720$

financia até o 2º ano ↓ R$3000,00

juros após o segundo ano: $j = 3000 \cdot 0{,}12 \cdot 1$
$j = 360$

Juro total: $720 + 360$
R$1080,00

72) $m = c(1 + in)$
$3440 = 2000(1 + i \cdot 30)$
$3440 = 2000 + 60000i$
$60000i = 3440 - 2000$

$$i = \frac{1440}{60000}$$

$i = 0{,}024$
$i = 2{,}4\%$

73) $m = c(1 + in)$
$25280 = c(1 + 0{,}06 \cdot 36)$
$25280 = c \cdot 3{,}16$

$c = \frac{25280}{3,16}$

$c = 8000$

$\frac{2}{5}t = 8000$

$t = \frac{5 \cdot 8000}{2}$

$t = 20000$

74) $i = 5\%$
$i = 0,05$
$m = c(1 + i)^n$
$m = 10000(1 + 0,05)^6$
$m = 10000(1,05)^6$
$m = 10000 \cdot 1,34$
$m = 13400,00$

75) B
$m = c(1 + i)^n$
$m = 15000(1 + 0,2)^3$
$m = 15000 \cdot 1,728$
$m = 25920,00$

76) B
$m = c(1 + i)^n$
$115200 = 80000(1 + i)^2$

$(1 + i)^2 = \frac{115200}{80000}$

$1 + i = \sqrt{1,44}$
$i = 1,2 - 1$
$i = 0,2$
$i = 20\%$

77) $M = C(1 + i)^n$
$35644,02 = 25000(1 + 0,03)^n$

$(1,03)^n = \frac{35644,02}{25000}$
$(1,03)^n = 1,4257$
$n = \log_{1,03} 1,4257$

$n = \frac{\log 1,4257}{\log 1,03}$

$n = 12$

78) 1º opção
$m = c(1 + i)^n$
$100000 = c(1 + 0,02)^{12}$

$\frac{100000}{1,2682} = c$

$c = 78849,32$
1ª opção hoje: $50000 + 78849,32 = 128849,32$
Logo a opção à vista é a melhor.

79) $m = c(1 + i)^n$
$56000 = 50000(1 + i)^1$

$1 + i = \frac{56000}{50000}$

$i = 1,12 - 1$
$i = 0,12$
$i = 12\%$

80) $m = 2000 \cdot (1 + 0,3)$
$m = 2000 \cdot 13$
$m = 2600$
$m = 2600 \cdot (1 + 0,35)$
$m = 2600 \cdot 1,35$
$m = 3510$

81) $29160 = (x + 50000) \cdot 0,045 \cdot n$

$\begin{cases} 29160 = 0,045nx + 2250n \\ 14364 = x \cdot 0,038n \Rightarrow x = \frac{14364}{0,038n} \end{cases}$

$29160 = 0,045n \cdot \frac{14364}{0,038n} + 2250n$

$29160 = 17010 + 2250n$
$2250n = 29160 - 17010$

$n = \frac{12150}{2250}$

$n = 5,4 \Rightarrow$ 5 meses e 12 dias
$14364 = x \cdot 0,038 \cdot 5,4$

$x = \frac{14364}{0,2052}$

$x = 70000$

$$\begin{array}{r} 70000 \\ +\ 50000 \\ \hline 120000 \end{array}$$

82) $j_1 = \frac{3}{8} c \cdot 0,02 \cdot 12$

$j_1 = \frac{3}{8} \cdot 0,24 \cdot c$

$j_1 = \frac{0,72}{8} c$

$j_1 = 0,09c$

$j_2 = \frac{5}{8} c \cdot 0,09 \cdot 4$

$j_2 = \frac{5}{8} \cdot 0,36 \cdot c$

$j_2 = \frac{1,8}{8} c$

$j_2 = 0,225c$
$j_1 + j_2 = 151200$
$0,09c + 0,0225C = 151200$
$0,315c = 151200$

$c = \frac{151200}{0,315}$

$c = 48000,00$