

Resoluções das atividades de Matemática

Capítulo 1 Segmentos proporcionais

Razão – Pág. 2

01 a) $\frac{4}{9}$

b) $\frac{7}{\sqrt{5}} = \frac{7}{\sqrt{5}} \cdot \frac{(\sqrt{5})}{(\sqrt{5})} = \frac{7\sqrt{5}}{5}$

c) $\frac{2 \text{ cm}}{1 \text{ km}} = \frac{2 \text{ cm}}{100\,000 \text{ cm}} = \frac{1}{50\,000}$

d) $\frac{0,8}{1,2} = \frac{8}{12} = \frac{2}{3}$

02 a) $\frac{4}{8} = \frac{10}{20} \Rightarrow 8 \cdot 10 = 4 \cdot 20$
 $80 = 80$

São proporcionais.

b) $\frac{12}{15} = \frac{18}{21} \Rightarrow 12 \cdot 21 = 15 \cdot 18$
 $252 \neq 270$

Não são proporcionais.

03 Razão = $\frac{\text{Comprimento}}{\text{Largura}} = \frac{26,5 \text{ cm}}{17 \text{ cm}} = \frac{x}{51 \text{ m}}$

$$17x = 1351,5$$

$$x = 79,5 \text{ m}$$

Razão de segmentos – Pág. 3

01 a) Razão = $\frac{\overline{LR}}{\overline{AR}} = \frac{12}{4} = 3$

b) Razão = $\frac{\overline{AR}}{\overline{LR}} = \frac{4}{12} = \frac{1}{3}$

c) Razão = $\frac{\overline{LU}}{\overline{AR}} = \frac{4}{4} = 1$

d) A razão entre segmentos congruentes é igual a 1.

02 a) $\frac{2 \text{ m}}{45 \text{ cm}} = \frac{200 \text{ cm}}{45 \text{ cm}} = \frac{40}{9}$

b) $\frac{5\sqrt{6} \text{ m}}{50 \text{ dm}} = \frac{50\sqrt{6} \text{ dm}}{50 \text{ dm}} = \sqrt{6}$

c) $\frac{2,7 \text{ dm}}{18 \text{ cm}} = \frac{27 \text{ cm}}{18 \text{ cm}} = \frac{3}{2}$

d) $\frac{1 \text{ km}}{200\,000 \text{ m}} = \frac{1\,000 \text{ m}}{200\,000 \text{ m}} = \frac{1}{200}$

03 a) $\frac{2}{4} = \frac{1}{2}$

b) $\frac{3}{6} = \frac{1}{2}$

c) São proporcionais $\frac{\overline{AB}}{\overline{BC}} = \frac{\overline{AD}}{\overline{DE}}$.

d) Divide na mesma razão $\frac{1}{2}$.

Mergulhando fundo – Pág. 4

$$1 - \frac{t}{4} = 2 \cdot \left(1 - \frac{t}{3}\right)$$

$$\frac{12 - 3t}{12} = \frac{4(6 - 2t)}{12}$$

$$12 - 3t = 24 - 8t$$

$$5t = 12$$

$$t = 2,4$$

$$16h - 2,4h = 13h36\text{min}$$

Proporção – Pág. 4

01 a) $5y - 5 = 8y + 4$

$$5y - 8y = 4 + 5$$

$$-3y = 9$$

$$y = -3$$

b) $y^2 - 4y + y - 4 = -3y$

$$y^2 - 3y + 3y - 4 = 0$$

$$y^2 = 4$$

$$y = +2 \text{ ou } y = -2$$

Propriedades das proporções – Pág. 5

01 a) $\frac{x+y}{y} = \frac{2+3}{3}$ $x+y = 20$

$$\frac{20}{y} = \frac{5}{3}$$

$$5y = 60$$

$$y = 12$$

$$\begin{aligned} \text{b) } \frac{x-y}{x} &= \frac{5-3}{5} & x-y &= 40 \\ & & -y &= 40-100 \\ \frac{40}{x} &= \frac{2}{5} & -y &= -60 \\ 2x &= 200 & y &= 60 \\ x &= 100 \end{aligned}$$

Segmentos proporcionais – Pág. 5

$$\begin{aligned} \text{01) } \frac{\overline{AB}}{\overline{CD}} &= \frac{\overline{EF}}{\overline{GH}} \Rightarrow \frac{2x}{x+5} = \frac{4}{12} \\ 24x &= 4x+20 \\ 20x &= 20 \Rightarrow x = 1 \end{aligned}$$

$$\begin{aligned} \text{02) a) } \frac{2}{5} &= \frac{x}{3x-2} & \overline{BC} &= x = 4 \\ 5x &= 6x-4 & \overline{CD} &= 3x-2 \\ -x &= -4 & \overline{CD} &= 3 \cdot 4 - 2 = 10 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} \text{b) } \frac{\overline{BM}}{\overline{MA}} &= \frac{\overline{BC}}{\overline{CD}} & \text{Onde: } \overline{AB} &= \overline{AM} + \overline{MB} = 10,5 \text{ cm} \\ \frac{\overline{BM} + \overline{MA}}{\overline{MA}} &= \frac{4+10}{10} \\ \frac{10,5}{\overline{MA}} &= \frac{14}{10} \\ 14\overline{MA} &= 105 \\ \overline{MA} &= 7,5 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{03) } \frac{\overline{AB}}{\overline{CD}} &= \frac{\overline{EF}}{\overline{GH}} \\ \frac{\overline{AB} + \overline{CD}}{\overline{CD}} &= \frac{18+30}{30} \\ \frac{32}{\overline{CD}} &= \frac{48}{30} \\ 48\overline{CD} &= 960 \\ \text{Se } \overline{CD} &= 20 \text{ mm} \\ \text{Logo, } \overline{AB} &= 32 - 20 \\ \overline{AB} &= 12 \text{ mm} \end{aligned}$$

$$\begin{aligned} \text{04) } \frac{\overline{AM} + \overline{MB}}{\overline{AM}} &= \frac{1+3}{1} \\ \frac{10m}{\overline{AM}} &= \frac{4}{1} \\ 4\overline{AM} &= 10 \\ \overline{AM} &= 2,5m \end{aligned}$$