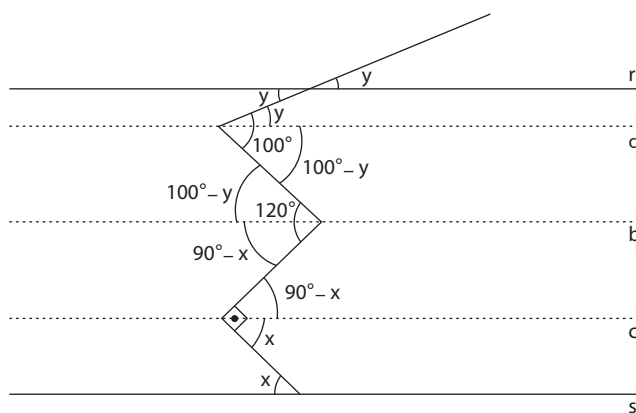


# Exercícios de casa resolvidos

## Extensivo — Caderno 1 – Matemática III

### Aula 1

10.

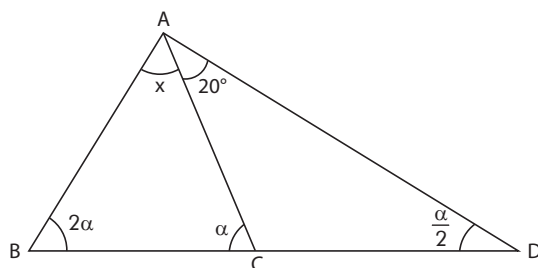


$r // a // b // c // s$   
 $100^\circ - y + 90^\circ - x = 120^\circ$   
 $70^\circ = x + y$

Resposta: B

### Aula 2

11.



$\alpha$  é externo do  $\triangle ACD$

$$\alpha = 20^\circ + \frac{\alpha}{2}$$

$$2\alpha = 40^\circ + \alpha$$

$$\alpha = 40^\circ$$

$\triangle ABC$

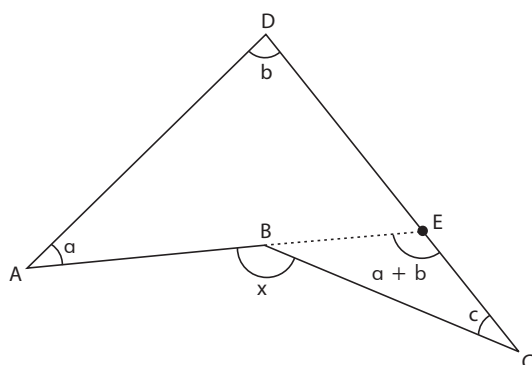
$$2\alpha + \alpha + x = 180^\circ$$

$$80^\circ + 40^\circ + x = 180^\circ$$

$$x = 60^\circ$$

Resposta: D

14.



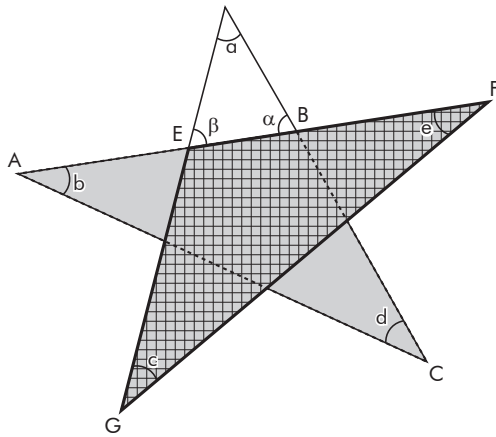
Prolongar o segmento  $\overline{AB}$  no sentido de A para B determinando o ponto E em  $\overline{DC}$ .

O ângulo  $\hat{B}EC$  é externo do  $\triangle ADE$ , logo  $med(\hat{B}EC) = a + b$ .

O ângulo  $x$  é externo do  $\triangle BCE$ , então a medida  $x$  é igual a  $a + b + c \therefore x = a + b + c$

Resposta: D

15.



Tomamos como  $\alpha$  o ângulo externo do  $\triangle ABC$ , então  $\alpha = b + d$ .

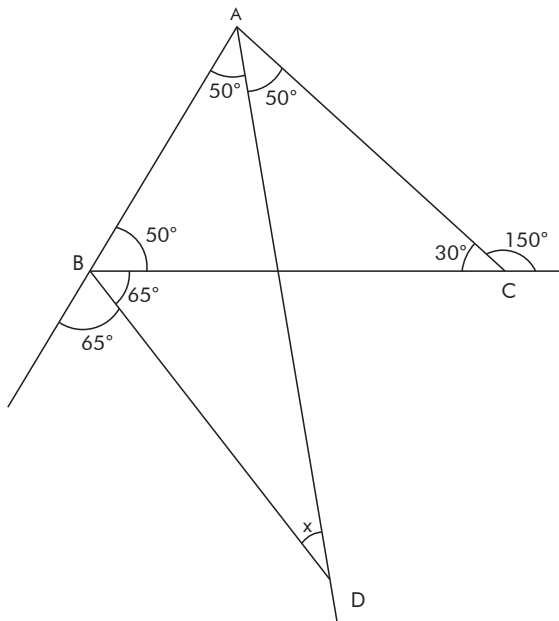
E  $\beta$  o ângulo externo do  $\triangle EFG$ , então  $\beta = c + e$ .

Como  $a + \beta + \alpha = 180^\circ$ , então  $a + c + b + d + e = 180^\circ$

Resposta: D

Aula 3

4.



$\triangle ABD$

$$50^\circ + 50^\circ + 65^\circ + x = 180^\circ$$

$$x = 15^\circ$$

Resposta: B

6.  $\frac{\hat{A}}{5} = \frac{\hat{B}}{7} = \frac{\hat{C}}{8}$

$\frac{\hat{A}}{5} = k \Leftrightarrow \hat{A} = 5k$

$\frac{\hat{B}}{7} = k \Leftrightarrow \hat{B} = 7k$

$\frac{\hat{C}}{8} = k \Leftrightarrow \hat{C} = 8k$

$\hat{A} + \hat{B} + \hat{C} = 180^\circ$

$5k + 7k + 8k = 180^\circ$

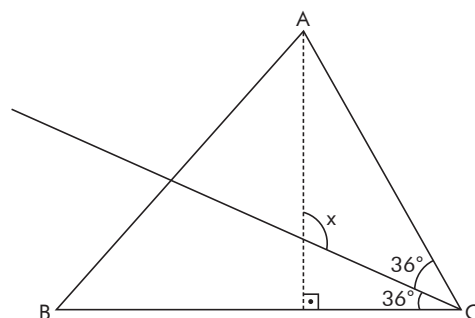
$k = 9^\circ$

$\therefore$

$\hat{A} = 45^\circ, \hat{B} = 63^\circ \text{ e } \hat{C} = 72^\circ$

$x = 36^\circ + 90^\circ$

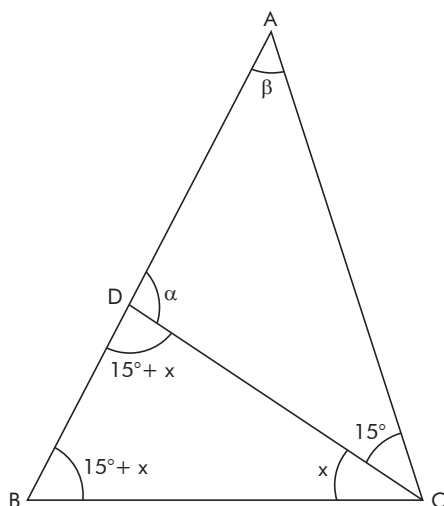
$x = 126^\circ$



Resposta: D

Aula 4

8.



$\triangle BCD \quad 15^\circ + x + 15^\circ + x + x = 180^\circ$

$x = 50^\circ$

$15^\circ + x + \alpha = 180^\circ$

$\alpha = 115^\circ$

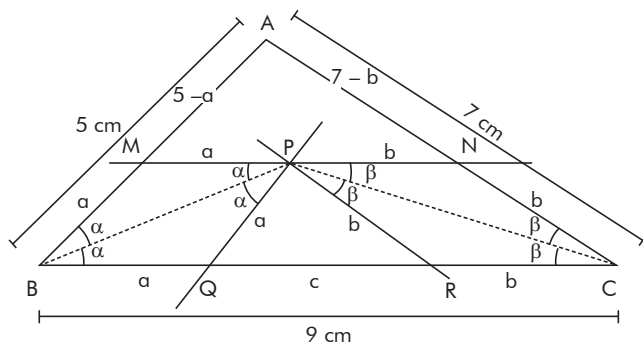
$\triangle ACD \quad 15^\circ + \alpha + \beta = 180^\circ$

$\beta = 50^\circ$

$\alpha - \beta = 65^\circ$

Resposta: D

10.



$\overline{BP}$  e  $\overline{CP}$  são bissetrizes. Como  $MN \parallel BC$ ,  $PQ \parallel MB$  e  $PR \parallel NC$ , temos ângulos alternos internos (Zorro). Logo, os quadriláteros  $BMPQ$  e  $CNPR$  são losangos (lados congruentes).

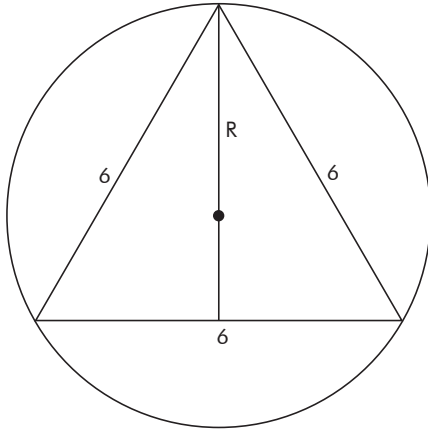
Razão entre os perímetros (2p):

$$\frac{2p_{AMN}}{2p_{PQR}} = \frac{5 - a + a + b + 7 - b}{\underbrace{a + b + c}_{\text{med}(\overline{BC}) = 9}} = \frac{12}{9} = \frac{4}{3}$$

Resposta: D

Aula 5

9.



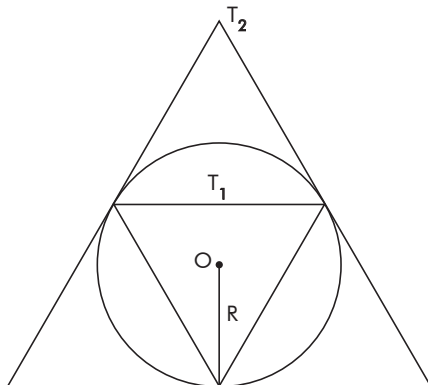
$$R = \frac{2}{3} h$$

$$R = \frac{\cancel{2}}{3} \cdot \frac{6\sqrt{3}}{\cancel{2}}$$

$$R = 2\sqrt{3}$$

Resposta: B

10.



$$\Delta T_1 \quad R = \frac{2}{3} h_1 \quad \text{e} \quad \Delta T_2 \quad R = \frac{1}{3} h_2$$

$$h_1 = \frac{3}{2} R$$

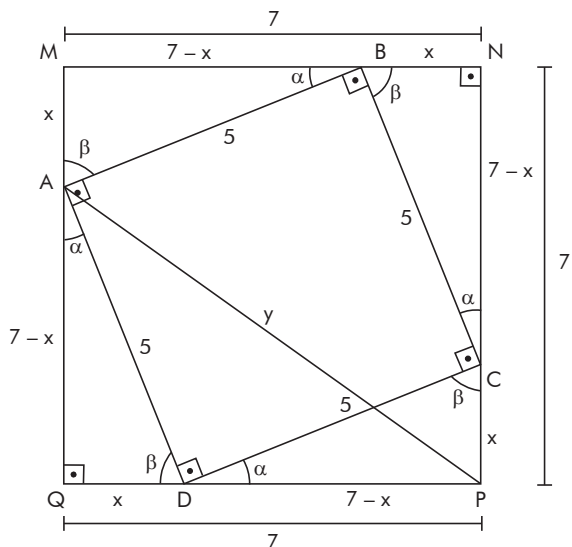
$$h_2 = 3R$$

$$\frac{h_2}{h_1} = \frac{3R}{\frac{3R}{2}} = 2$$

Resposta: E

Aula 6

9.

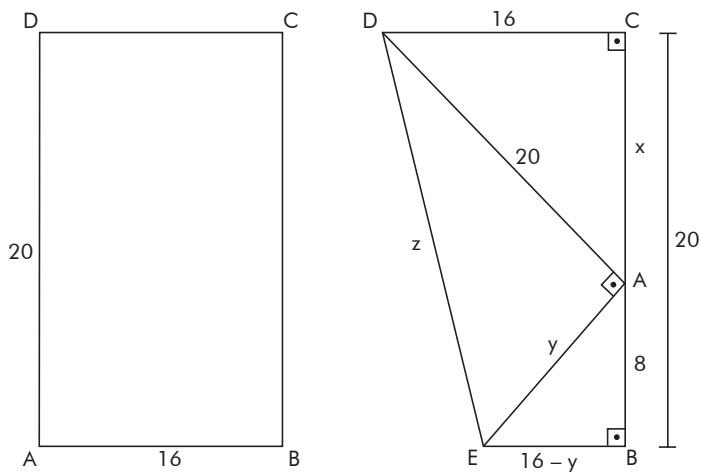


$\Delta ABM$   
 $(5)^2 = x^2 + (7-x)^2$   
 $x^2 - 7x + 12 = 0$   
 $x_1 = 3$   
 $x_2 = 4$

$\Delta APQ$   
 $x = 3$   
 $y^2 = 4^2 + 7^2$   
 $y = \sqrt{65}$

Resposta: D

10.



$\Delta ACD$   
 $20^2 = 16^2 + x^2$   
 $x = 12$

$\Delta ABE$   
 $y^2 = 8^2 + (16-y)^2$   
 $y = 10$

$\Delta ADE$   
 $z^2 = y^2 + 20^2$   
 $z = 10\sqrt{5}$

Resposta: A