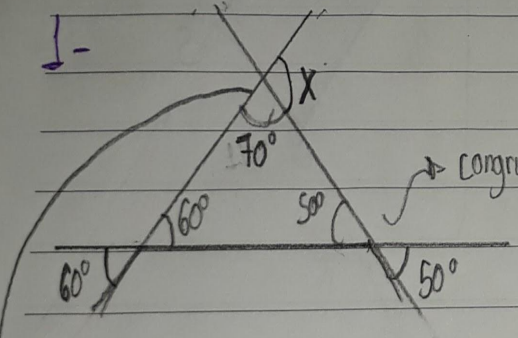


Lista de Exercícios - Aula 19

Lista de Exercícios

1-



→ congruentes, pois são opostos pelo vértice

Alternativa

→  $X + 70^\circ = 180^\circ \rightarrow X = 180^\circ - 70^\circ \rightarrow 110^\circ$  (C)

2 - A soma dos Ângulos internos de um triângulo é igual a  $180^\circ$ , então

$$3x + 4x + 5x = 180$$
$$12x = 180$$
$$x = \frac{180}{12} = 15$$

Alternativa (E)

→  $X = 15^\circ$

3-

Diagram showing a triangle ABC with angle A =  $40^\circ$ . A point D is on BC such that AD is drawn. Angle BDA is labeled  $x$ . Angle ABD is labeled  $\frac{y}{2}$  and angle ACD is labeled  $\frac{z}{2}$ .

Diagram showing the same triangle ABC with angle A =  $40^\circ$ . Angle ABD is labeled  $y$  and angle ACD is labeled  $z$ .

Diagram showing the same triangle ABC with angle A =  $40^\circ$ . Angle ABD is labeled  $\frac{y}{2}$  and angle ACD is labeled  $\frac{z}{2}$ .

Equations:

$$\begin{cases} 40 + y + z = 180 \\ x + \frac{y}{2} + \frac{z}{2} = 180 \cdot (-2) \end{cases}$$

System of equations:

$$\begin{aligned} 40 + y + z &= 180 \\ -2x - y - z &= -360 \end{aligned}$$

Solving the system:

$$\begin{aligned} 40 - 2x &= 180 - 360 \\ -2x &= -180 - 40 \\ x &= \frac{-220}{-2} \\ x &= 110 \end{aligned}$$

Alternative  $\textcircled{D} \rightarrow X = 110^\circ$

4-

Diagram showing a quadrilateral ABCD with side lengths AB = 2, BC = 2, CD = 5, and DA = 3. Diagonal BD is labeled  $x$ .

Diagram showing triangle ABD with side lengths AB = 2, AD = 3, and BD =  $x$ .

Diagram showing triangle BCD with side lengths BC = 2, CD = 5, and BD =  $x$ .

\* Condição de existência de triângulos:

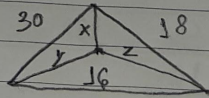
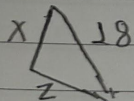
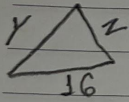
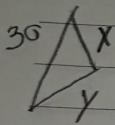
Triangle ABD:  $x < 3 + 2 \rightarrow x < 5$

Triangle BCD:  $x < 5 + 2 \rightarrow x < 7$

Conditions:  $\textcircled{4} < 5$  e  $\textcircled{4} < 7$

Opção que se encaixa é Alternativa  $\textcircled{E} \rightarrow \textcircled{4}$

$$5 - x + y + z = ?$$



Condição de existência de triângulos.

$$\rightarrow 30 < x + y$$

$$\rightarrow 16 < y + z \quad (+)$$

$$\rightarrow 18 < x + z$$

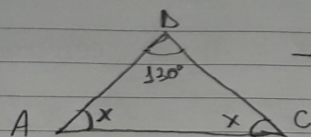
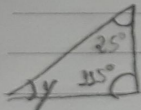
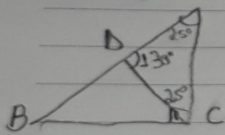
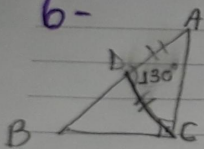
$$30 + 16 + 18 < x + y + y + z + x + z$$

$$64 < 2x + 2y + 2z \quad (\div 2)$$

$$32 < x + y + z$$

A opção que se encaixa é a **E**, 33

6-



Triângulo Isósceles

$$x + x + 130 = 180$$

$$2x = 180 - 130$$

$$x = \frac{50}{2} = x = 25^\circ$$

$$\hat{C} = 90 + 25 = 115^\circ$$

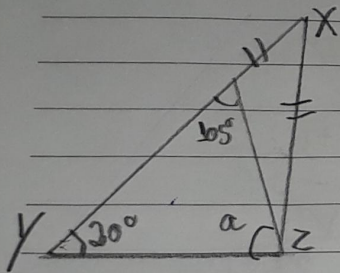
$$25^\circ + 115^\circ + y = 180^\circ$$

$$y = 180 - 140$$

$$y = 40^\circ = \hat{B}$$

R:  $25^\circ$ ,  $40^\circ$  e  $115^\circ$ .

7-  $\hat{x}$  e  $\hat{z} = ?$  /  $\hat{y} = 20^\circ$  /  $\hat{r}\hat{k}\hat{z} = 105^\circ$

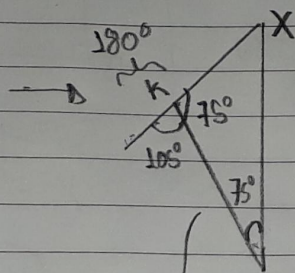


$$20^\circ + a + 105^\circ = 180^\circ$$

$$a = 180 - 125$$

✓

$$a = 55^\circ$$



→ Triângulo isósceles

$$\hat{z} = a + 75^\circ$$

$$\hat{z} = 55 + 75$$

$$\hat{z} = 130^\circ$$

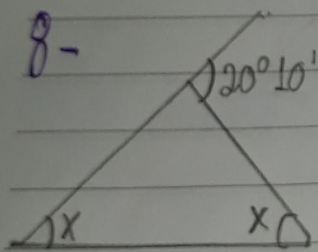
$$75^\circ + 75^\circ + \hat{x} = 180$$

$$\hat{x} = 180 - 150$$

$$\hat{x} = 30^\circ$$

R:  $130^\circ$  e  $30^\circ$

8-



}  $X = \text{Ângulos congruos}$

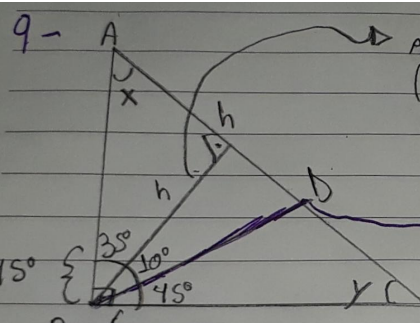
$$20^\circ 10' = x + x \text{ (Regra Ângulos internos)}$$

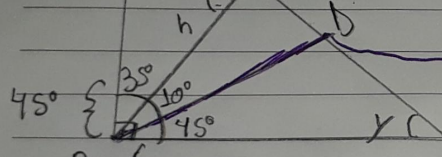
$$20^\circ 10' = 2x$$

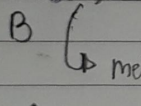
$$x = (20^\circ 10') \div 2$$

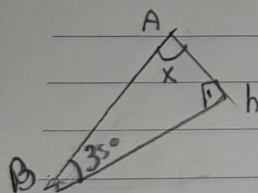
Alternativa (B)

$$x = 10^\circ 5'$$

9-  altura relativa à hipotenusa  
(é perpendicular à hipotenusa)

 bissetriz do ângulo reto  
(divide em 2 partes iguais de 45°)

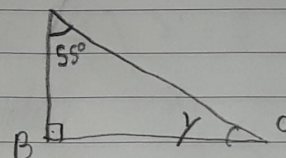
 metade do ângulo reto



$$\left. \begin{array}{l} x + 90^\circ + 35^\circ = 180 \\ x = 180 - 125 \end{array} \right\}$$

$$\checkmark$$
  

$$x = 55^\circ$$



$$55^\circ + 90^\circ + y = 180$$

$$y = 180 - 145$$

$$\checkmark$$
  

$$y = 35^\circ$$

R: 35° e 55°