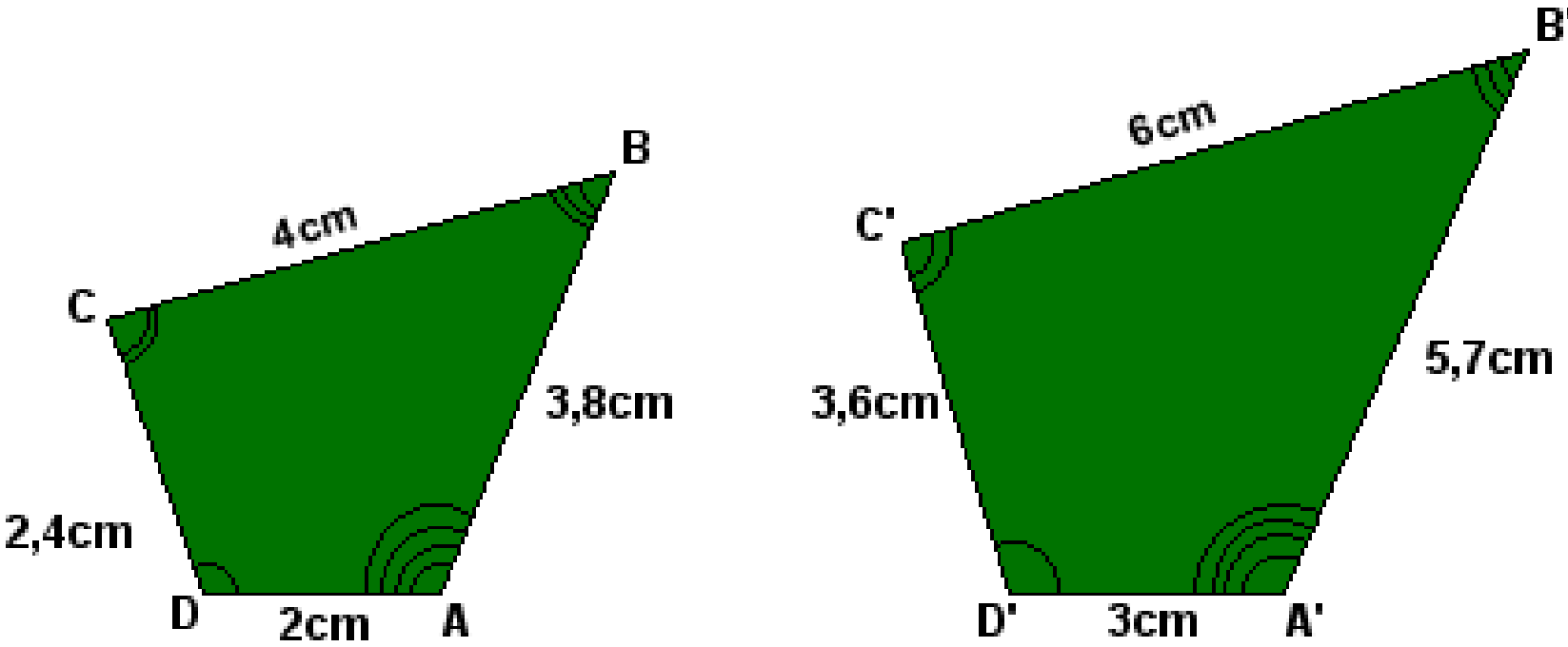
Geometria

Polígonos semelhantes

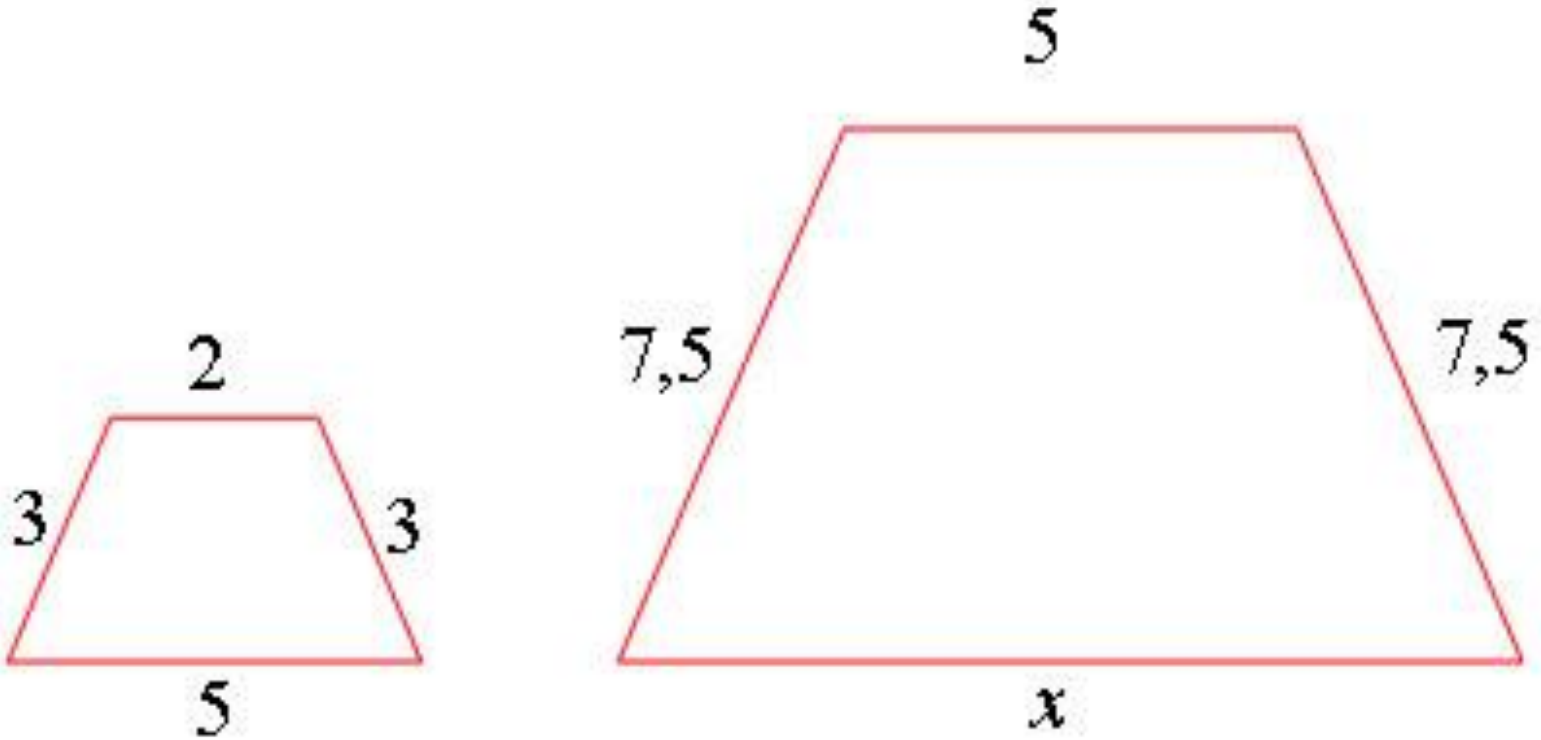


- ABCD ~ EFGH

(~ = Semelhante)

Oque são os polígonos semelhantes:

- São polígonos que apresentam ângulos congruentes e lados proporcionais (Comparando figuras da mesma forma).

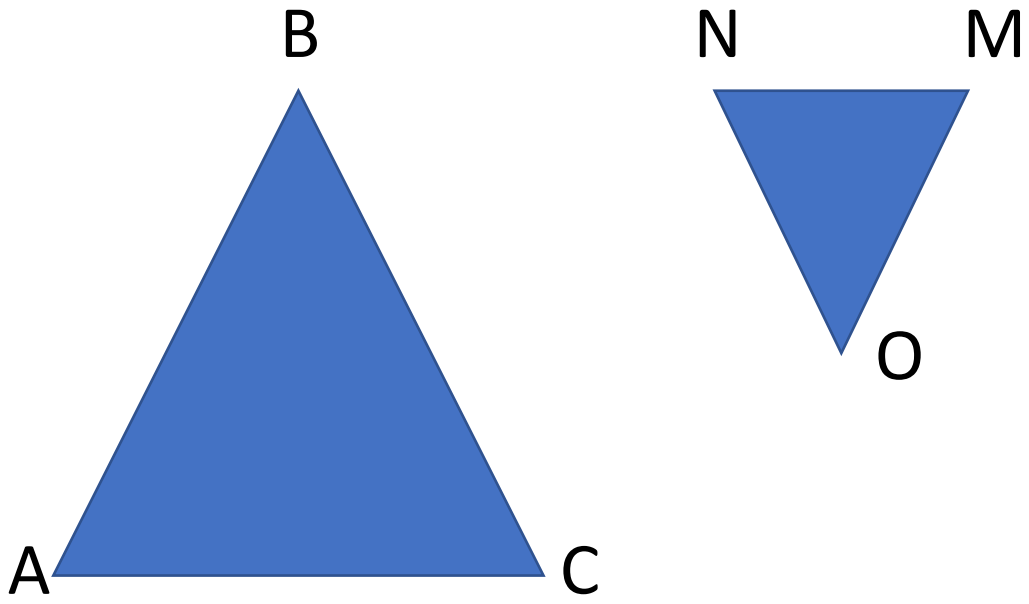


Propriedade

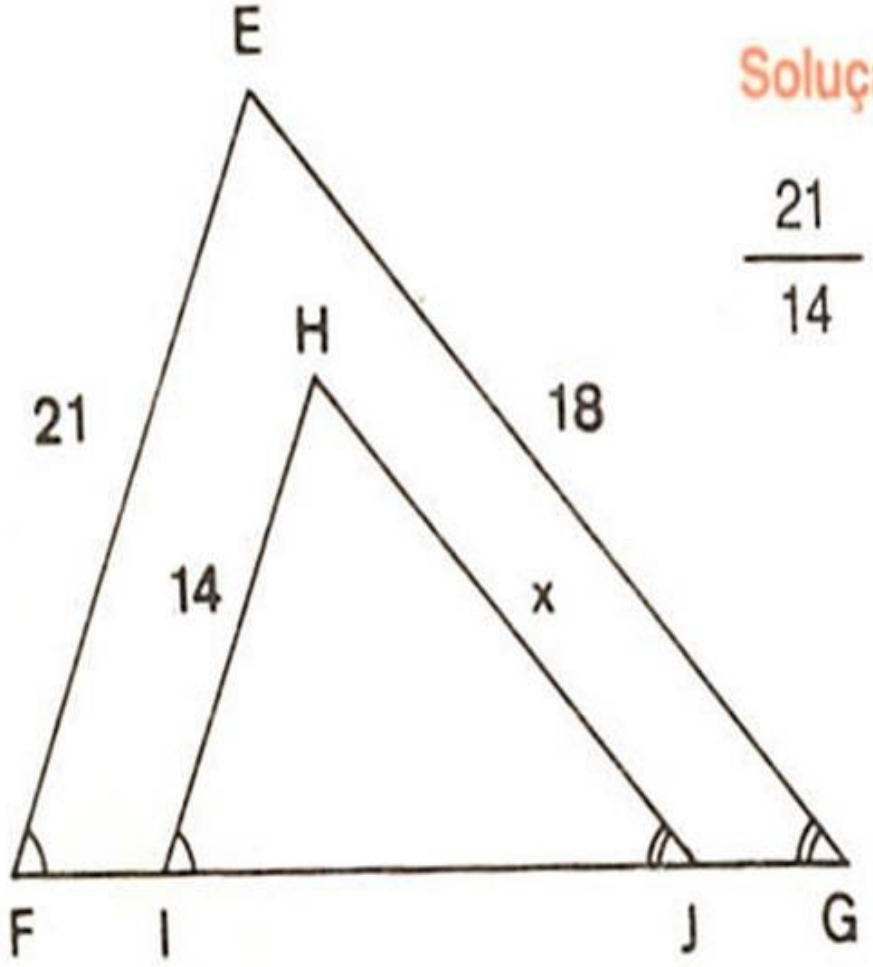
- Quando dois polígonos são semelhantes, os perímetros desses polígonos são proporcionais às medidas de dois lados correspondentes quaisquer.

ABC ~ NMO

$$\frac{AB}{MO} = \frac{BC}{NO} = \frac{AC}{MN} = \frac{AB + AC + BC}{MN + MO + NO}$$



Exemplos:1)



Solução:

$$\frac{21}{14} = \frac{18}{x} \Rightarrow 21 \cdot x = 14 \cdot 18$$

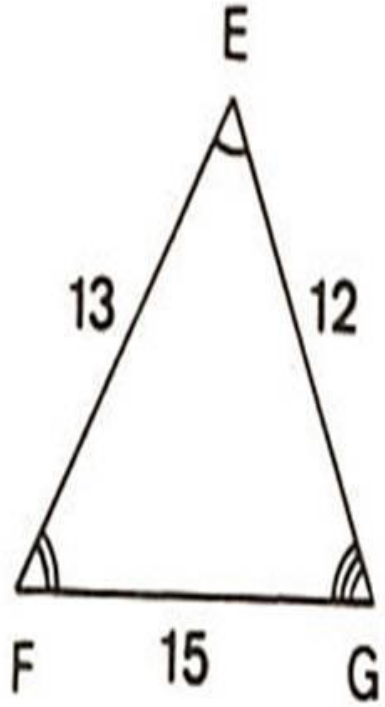
$$21x = 252$$

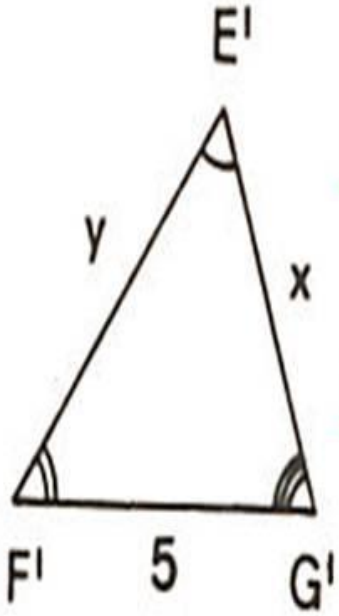
$$x = \frac{252}{21}$$

$$x = 12$$

2)

b)



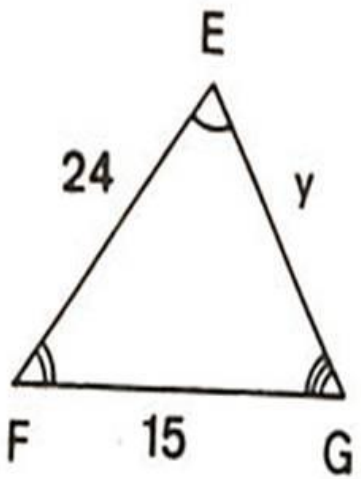


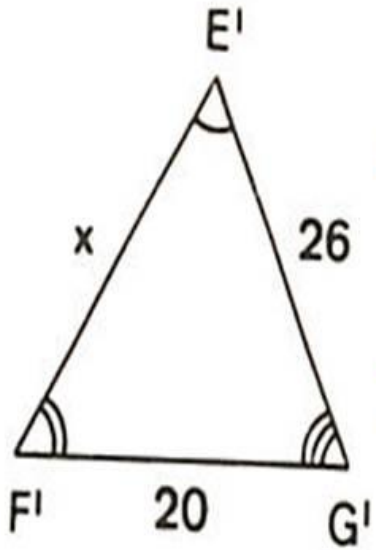
$$\frac{13}{y} = \frac{15}{5} \Rightarrow y = \frac{13}{3}$$

$$\frac{12}{x} = \frac{15}{5} \Rightarrow x = 4$$

3)

a)

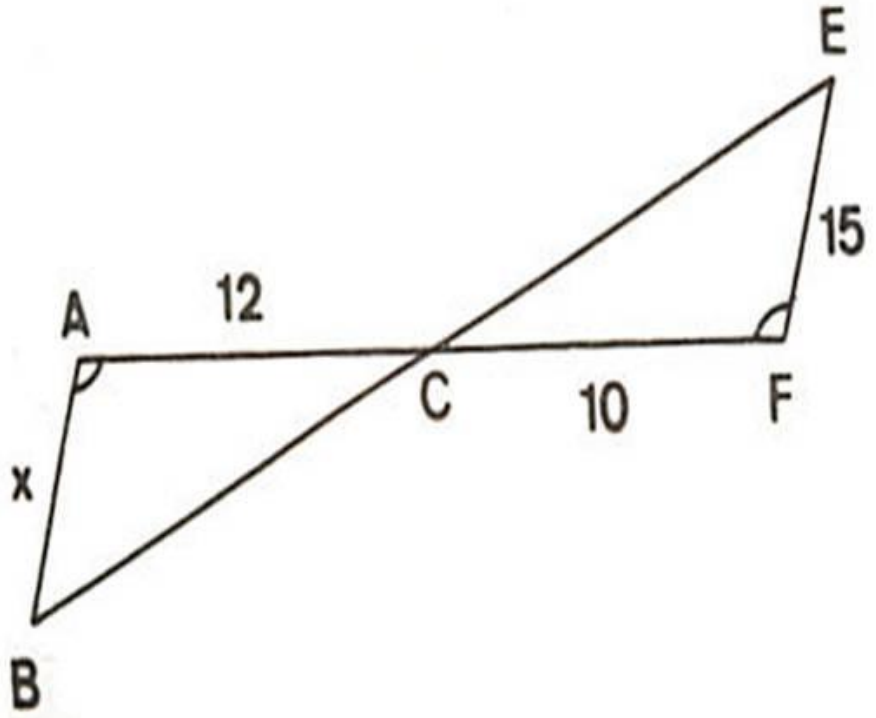




$$\frac{24}{x} = \frac{15}{20} \Rightarrow x = 32$$

$$\frac{y}{26} = \frac{15}{20} \Rightarrow y = 19{,}5$$

4)



$$\frac{x}{15} = \frac{12}{10} \qquad 10.x = 12.15$$

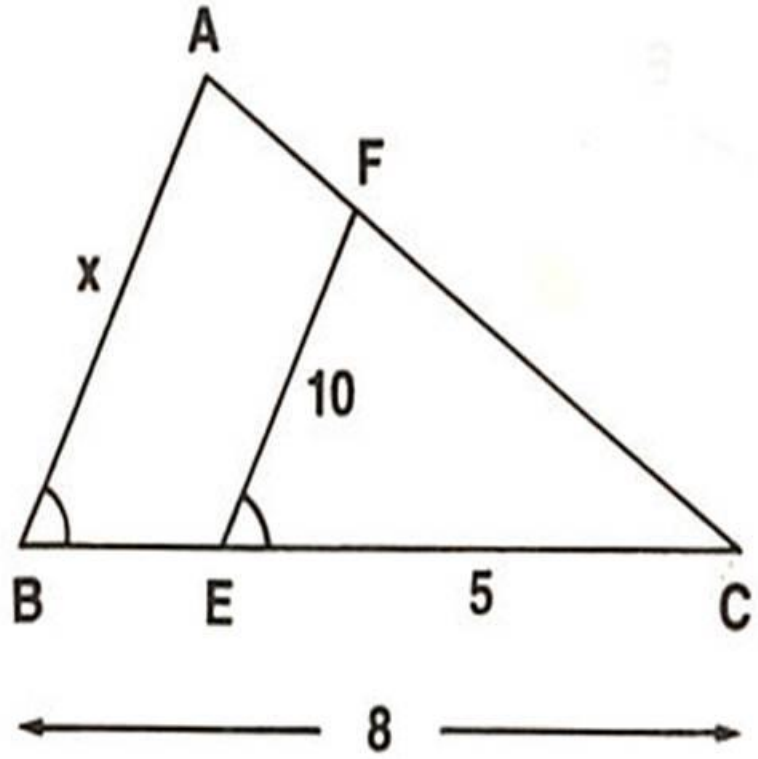
$$10x = 180$$

$$x = \frac{180}{10}$$

$$x = 18$$

5)

d)



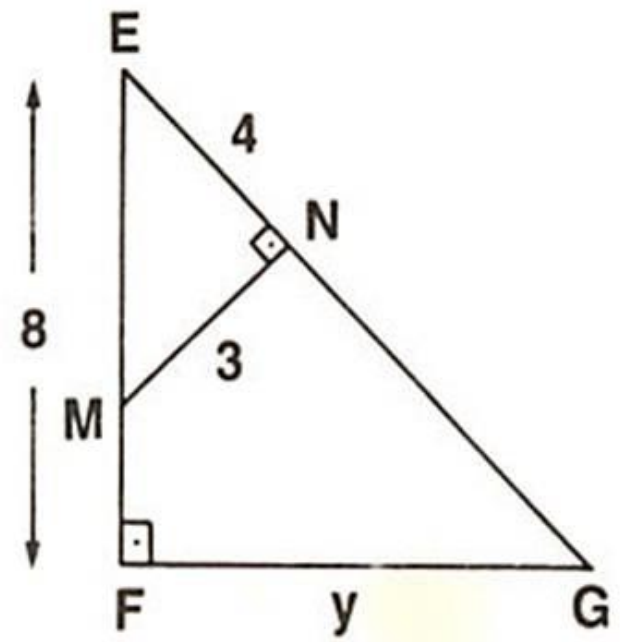
$$\frac{x}{10} = \frac{8}{5}$$

$$5x = 80$$

$$x = 16$$

6)

a)

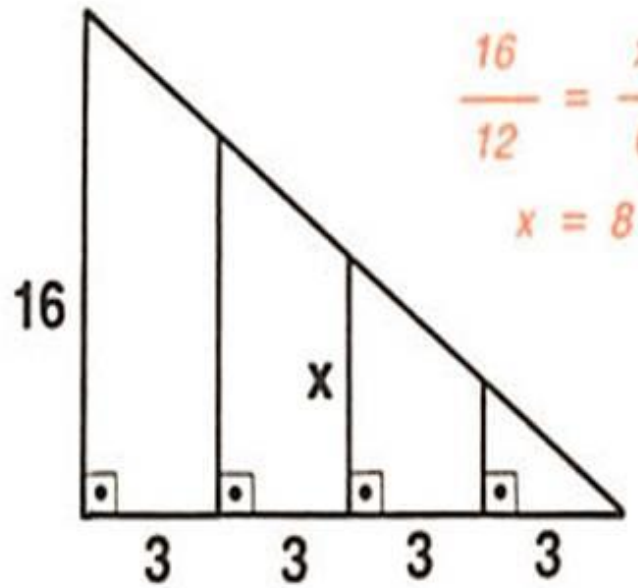


Sugestão: *separar os triângulos, indicando os ângulos congruentes com "marcas iguais".*

$$\frac{y}{3} = \frac{8}{4} \Rightarrow y = 6$$

7)

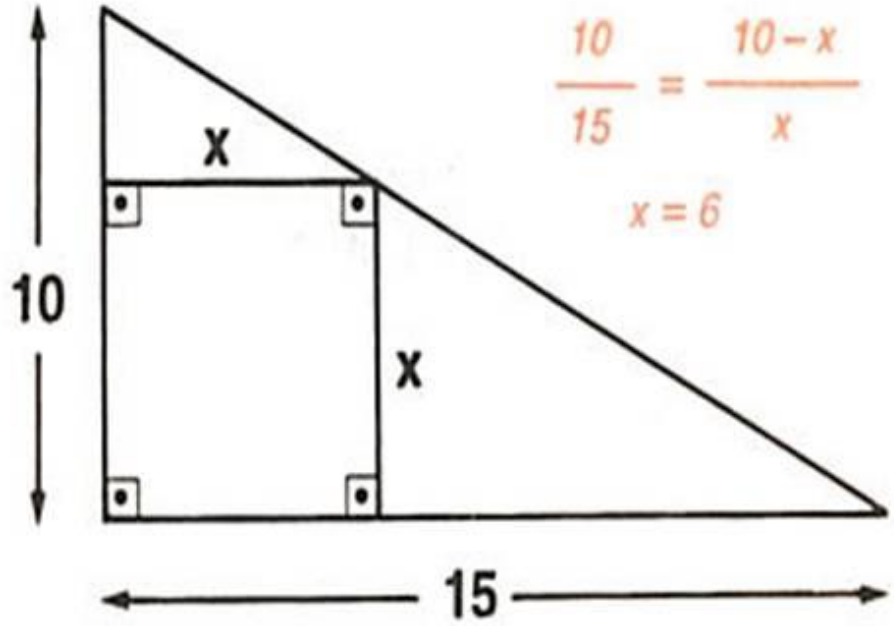
a)



$$\frac{16}{12} = \frac{x}{6}$$

$$x = 8$$

b)

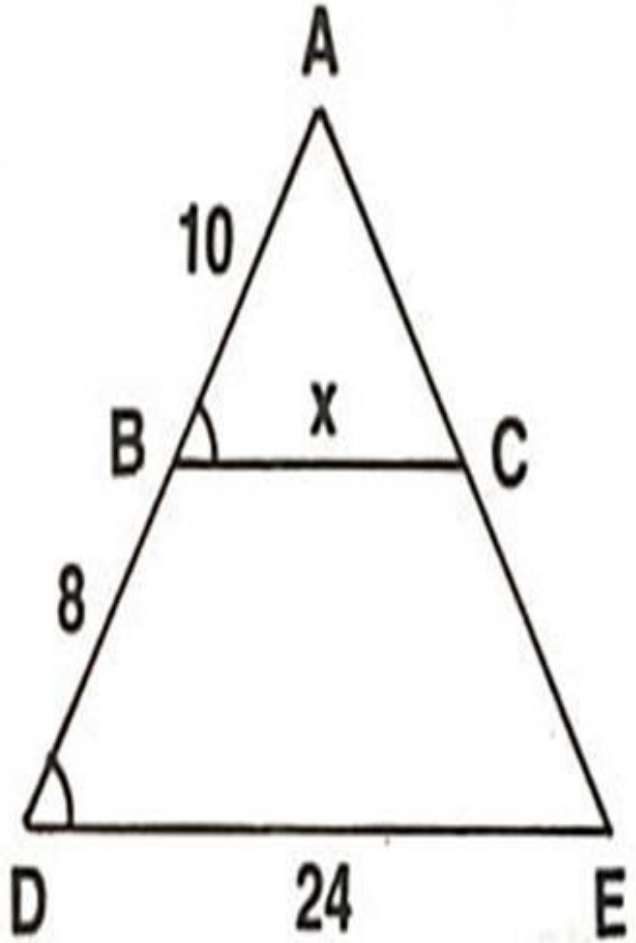


$$\frac{10}{15} = \frac{10-x}{x}$$

$$x = 6$$

8)

c)

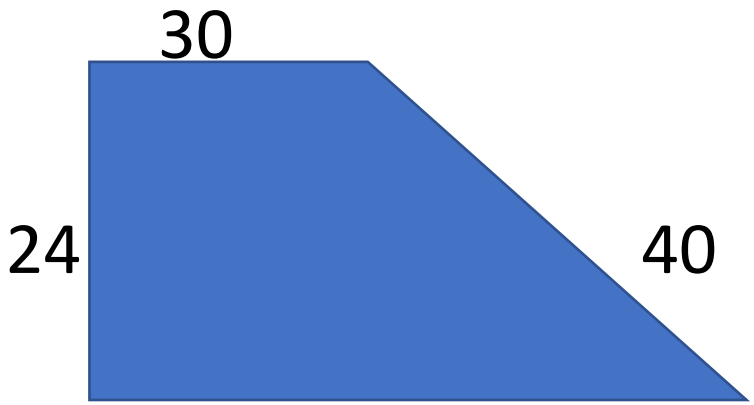


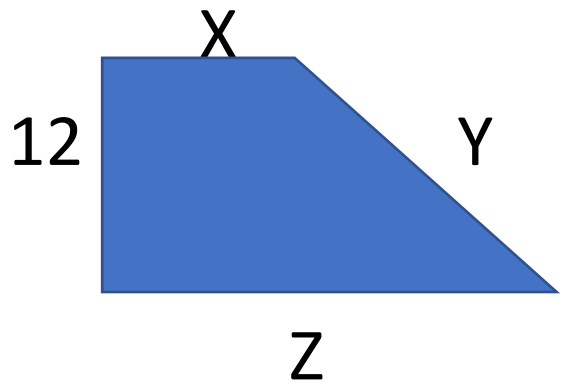
$$\frac{x}{24} = \frac{10}{18}$$

$$18x = 240$$

$$x = \frac{40}{3}$$

9)





$\frac{12}{X} = \frac{24}{30}$ → $360 = 24x$ → $X=15$ → $\frac{30}{15} = \frac{2}{1}$ $Z=31$ $Y=20$

10)

10

15

5

X

$\frac{15}{10} = \frac{X}{5}$ → $75 = 10x$ → $X = 7{,}5$

Alunos 9ºB

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