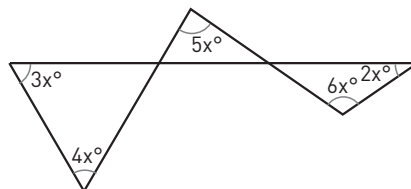
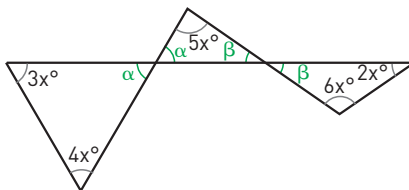


YOU & MATHS In the given diagram, what is the value of x ?

(CAN Canadian Open Mathematics Challenge, COMC, 2001)



Let's call α and β the remaining angles as shown in figure, remembering that opposite angles are congruent.



We know that in all triangles, the sum of the internal angles is 180° , so:

- $3x^\circ + 4x^\circ + \alpha = 180^\circ$ and therefore $\alpha = 180^\circ - 7x^\circ$;
- $6x^\circ + 2x^\circ + \beta = 180^\circ$ and therefore $\beta = 180^\circ - 8x^\circ$.

We also know that:

$$5x^\circ + \alpha + \beta = 180^\circ;$$

and therefore:

$$\alpha + \beta = 180^\circ - 5x^\circ.$$

Substituting the values of α and β in the above equation, we get:

$$180^\circ - 7x^\circ + 180^\circ - 8x^\circ = 180^\circ - 5x,$$

then:

$$360^\circ - 15x^\circ - 180^\circ - 5x \rightarrow 180^\circ - 10x \rightarrow x = 18.$$