

FIRST: WE HAVE (AB) AND (DC) PARALLEL LINES AND (AD) AND (BC) ARE ALSO PARALLEL. WE KNOW THAT IN A PARALLELOGRAM EVERY TWO OPPOSITE SIDES ARE PARALLEL AND HENCE ABCD IS A PARALLELOGRAM AND SINCE IN A PARALLELOGRAM EVERY TWO OPPOSITE ANGLES ARE EQUAL THEN

$$ADC=ABC=76^\circ$$

SECOND: WE HAVE (AB) AND (DC) TWO PARALLEL LINES, THE LINE (FG) IS A TRANSVERSAL OF THEM THEN

$$GFA=C=146^\circ$$

THIRD: WE KNOW THAT THE SUM OF THE TWO COMPLEMENTARY ANGLES IS 180° , AND FROM

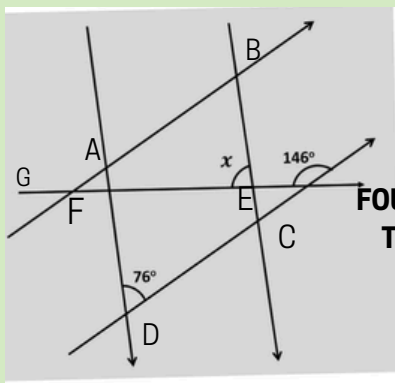
$$\angle GFA + \angle AFE = 180^\circ$$

$$\angle AFE = 180^\circ - \angle GFA$$

$$\angle AFE = 180^\circ - 146^\circ$$

$$\angle AFE = 34^\circ$$

°



FOURTH: WE KNOW THAT THE SUM OF THE ANGLES OF A TRIANGLE IS 180° . SO IN THE TRIANGLE FBE WE FIND

$$x + 76^\circ + 34^\circ = 180^\circ$$

$$x = 180^\circ - 34^\circ - 76^\circ$$

$$x = 70^\circ$$

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MATH LEAGUE 3RD WEEK SOLUTIONS

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CALCULATING X:

$$\angle DFS = 180^\circ - (40^\circ + 2x)$$

$$\angle DFS = 180^\circ - 40^\circ - 2x$$

$$\angle DFS = 140^\circ - 2x$$

FOURTH: WE KNOW THAT THE SUM OF THE ANGLES OF A TRIANGLE IS 180° . SO IN THE TRIANGLE FBE WE FIND

$$\angle DSE + \angle DSE + x = 180^\circ$$

$$140^\circ - 2x + 50^\circ + x = 180^\circ$$

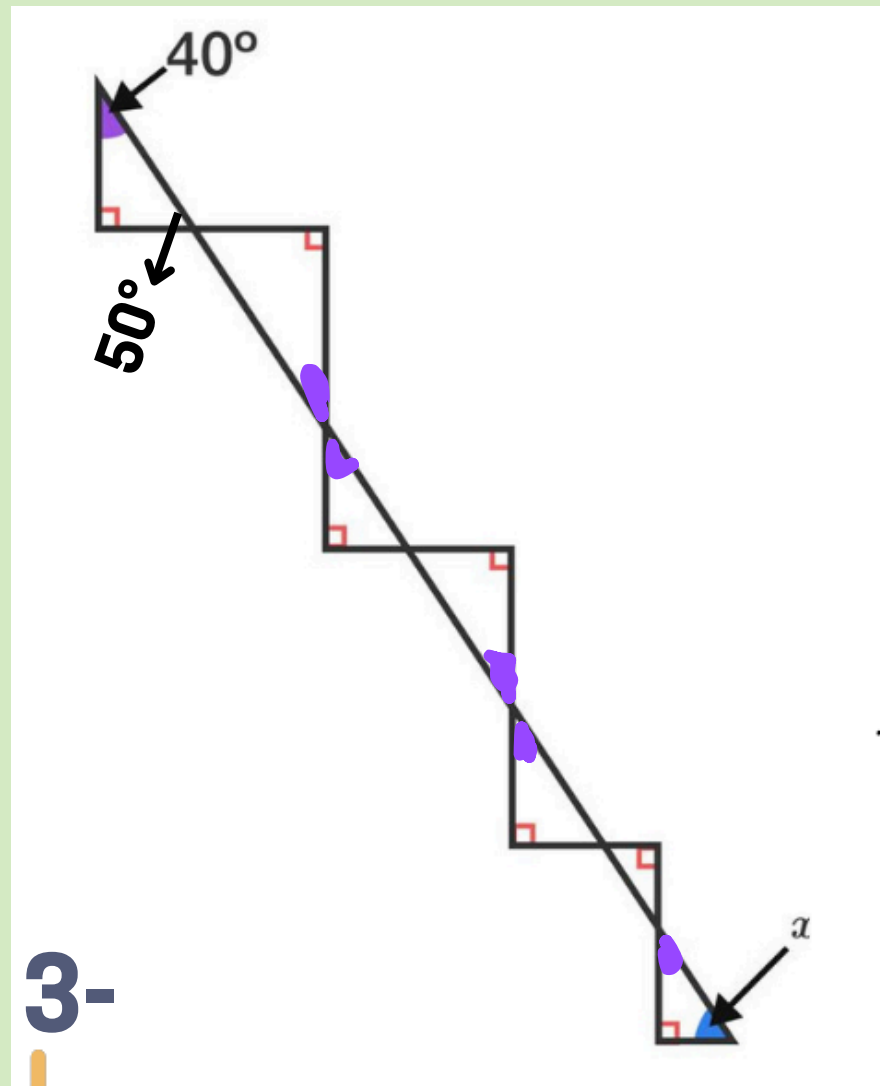
$$-x = 180^\circ - 140^\circ - 50^\circ$$

$$-x = -10^\circ$$

$$\underline{x = 10^\circ}$$

WE KNOW THAT THE SUM OF THE MEASURES OF THE TWO ACUTE ANGLES
IN A RIGHT TRIANGLE IS 90° .

WE KNOW THAT EVERY TWO ANGLES THAT SHARE THE VERTEX AND THE SIDES OF
EACH OF THEM ARE AN EXTENSION OF THE OTHER'S SIDES ARE EQUAL:



$$\underline{X=50^\circ}$$