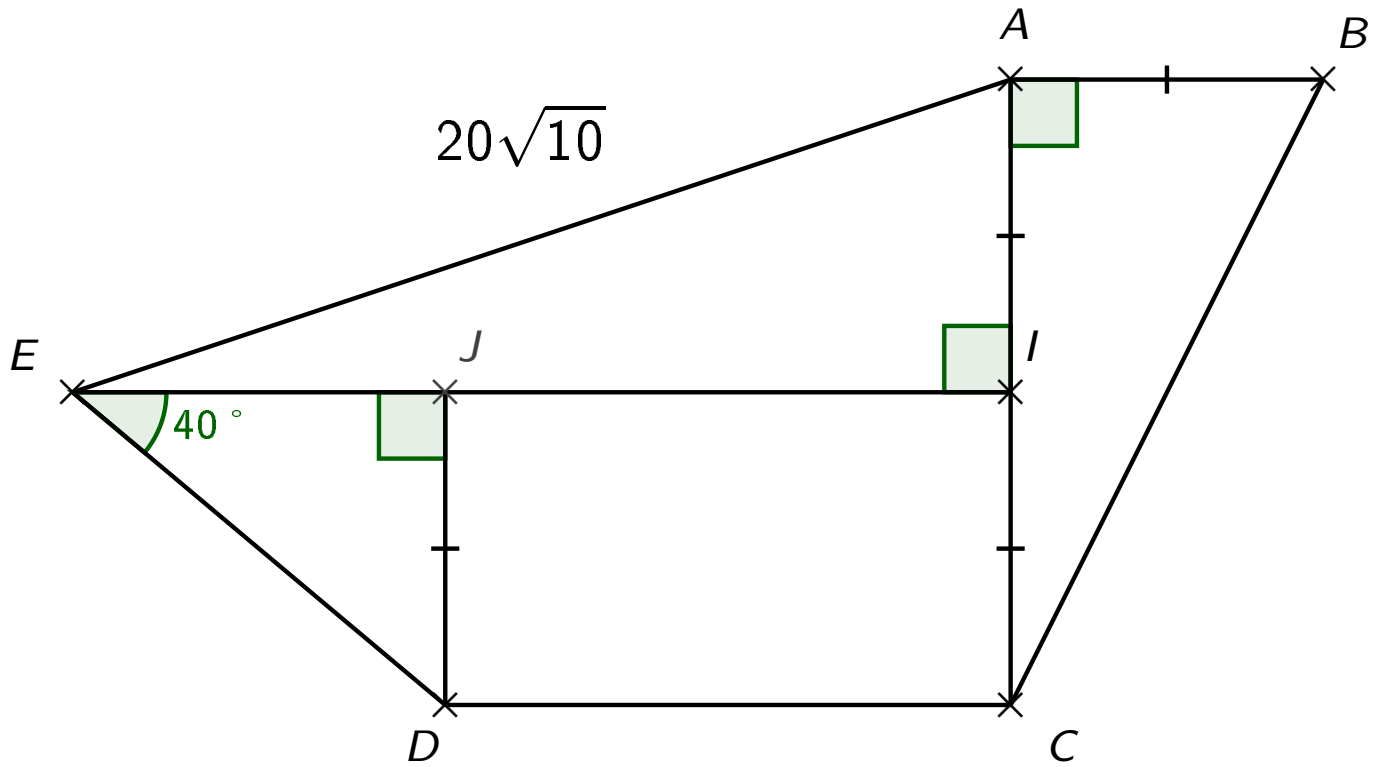
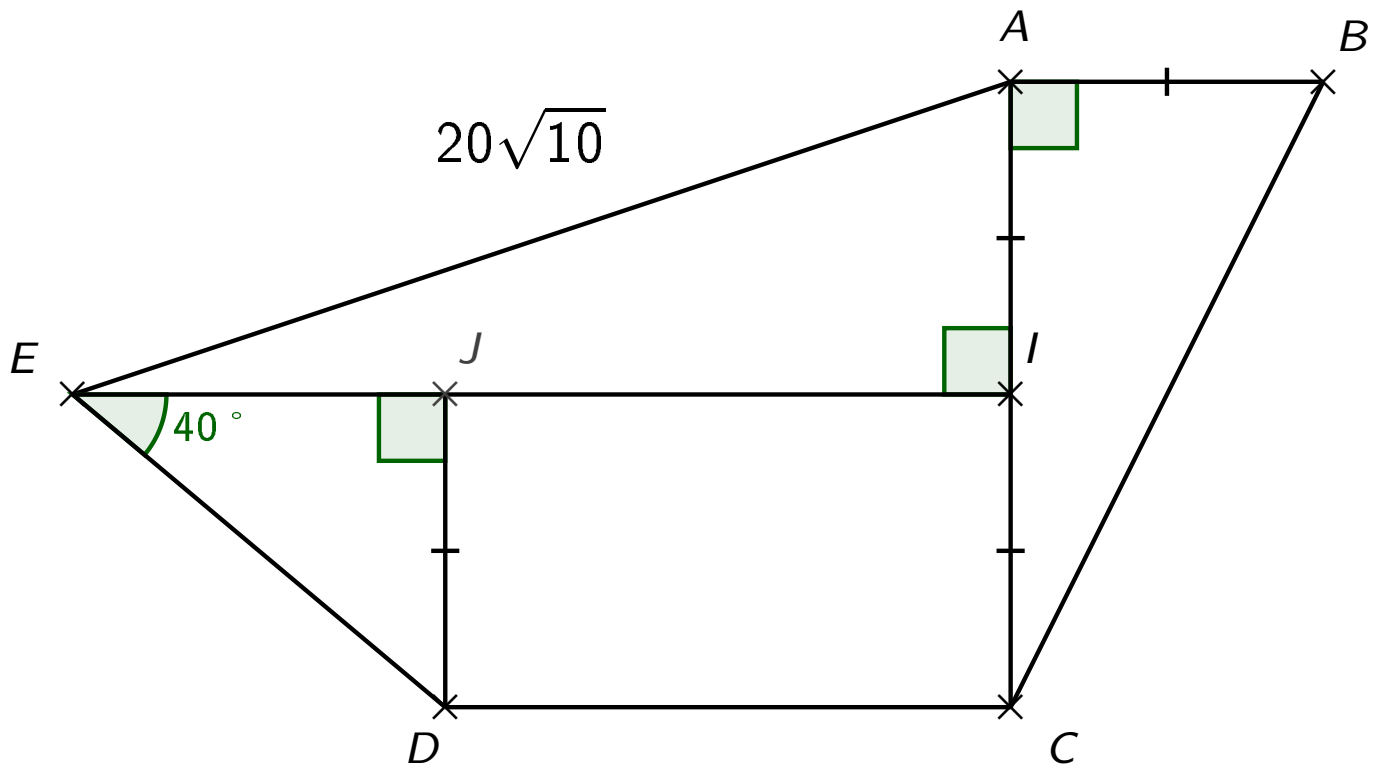
Éléments de correction: Retour au collège!

GREAU D.

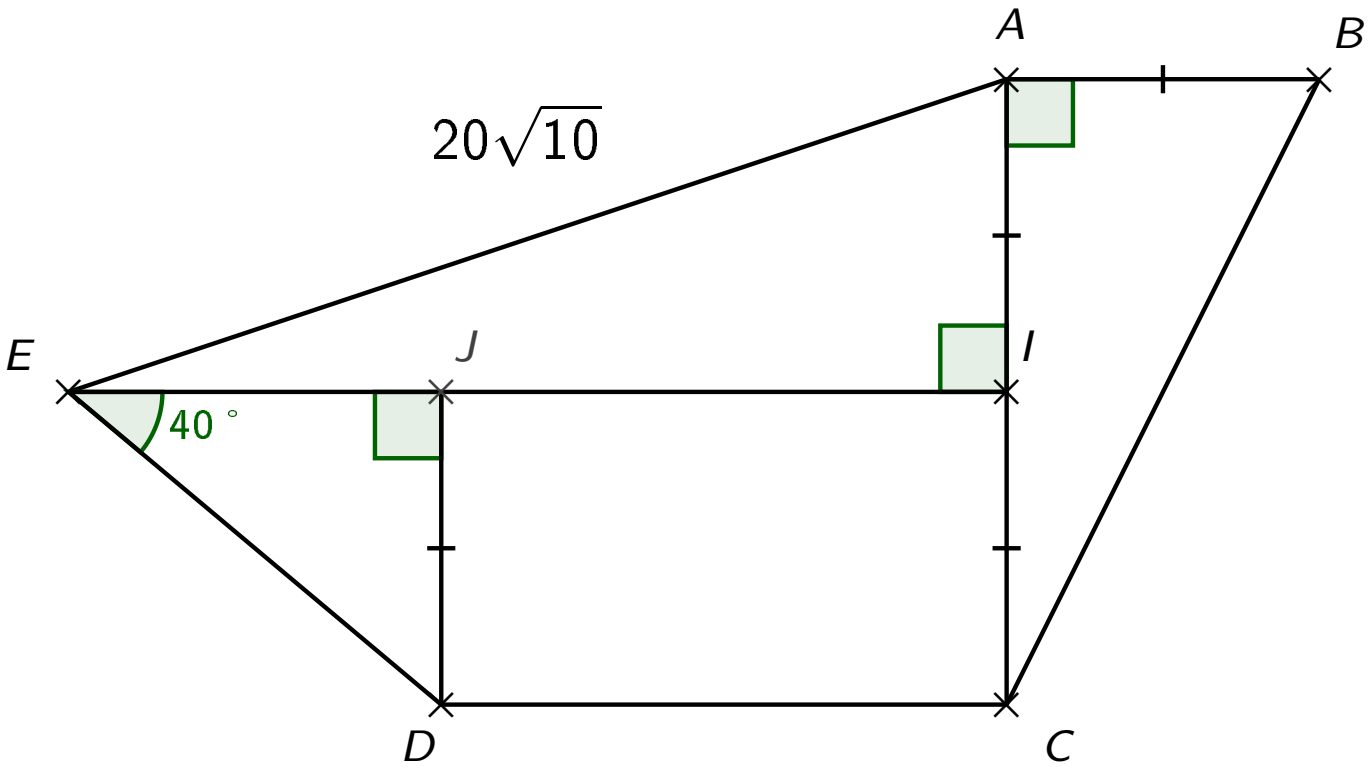
23/02/2016



L'énoncé nous donne $AB = 20$ m et $AE = 20\sqrt{10}$ m

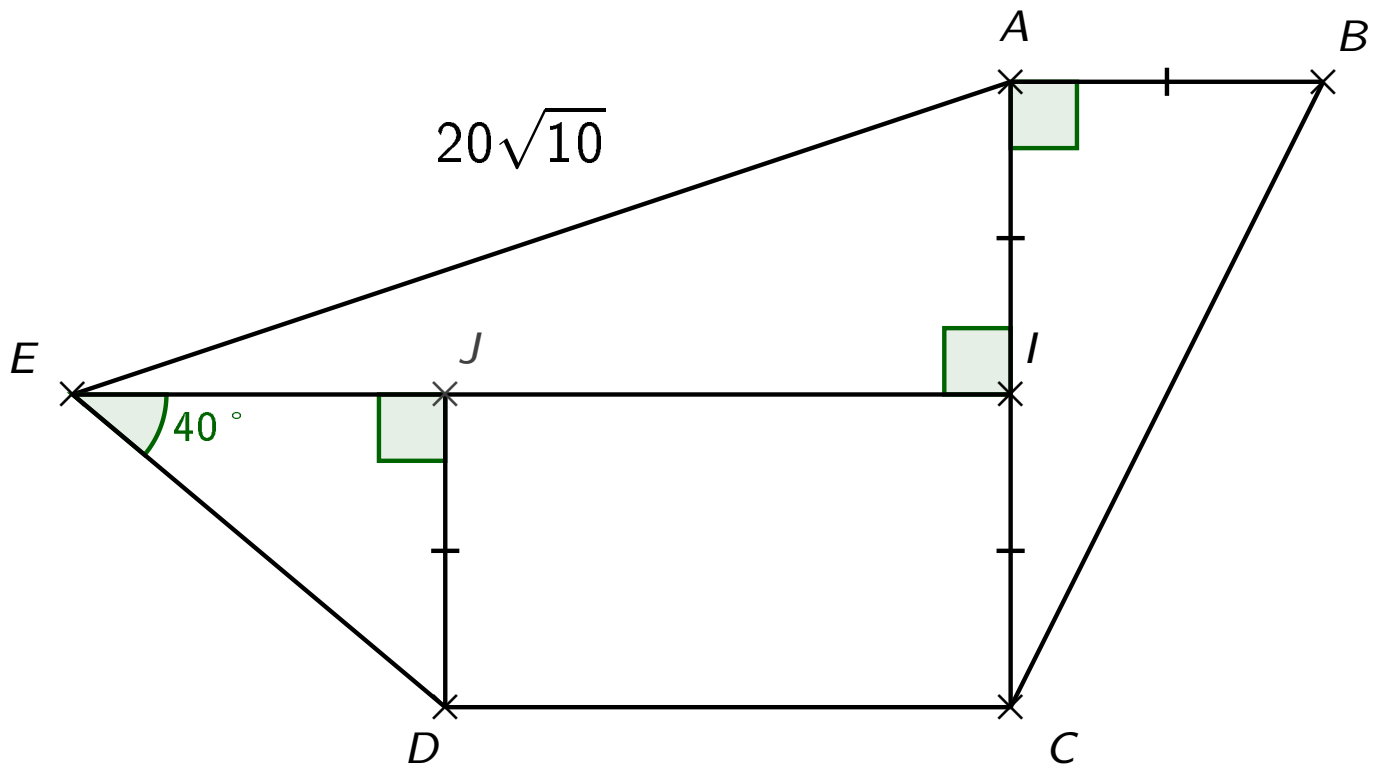


En utilisant le théorème de Pythagore dans le triangle rectangle ABC, on obtient $BC = 20\sqrt{5}$ m

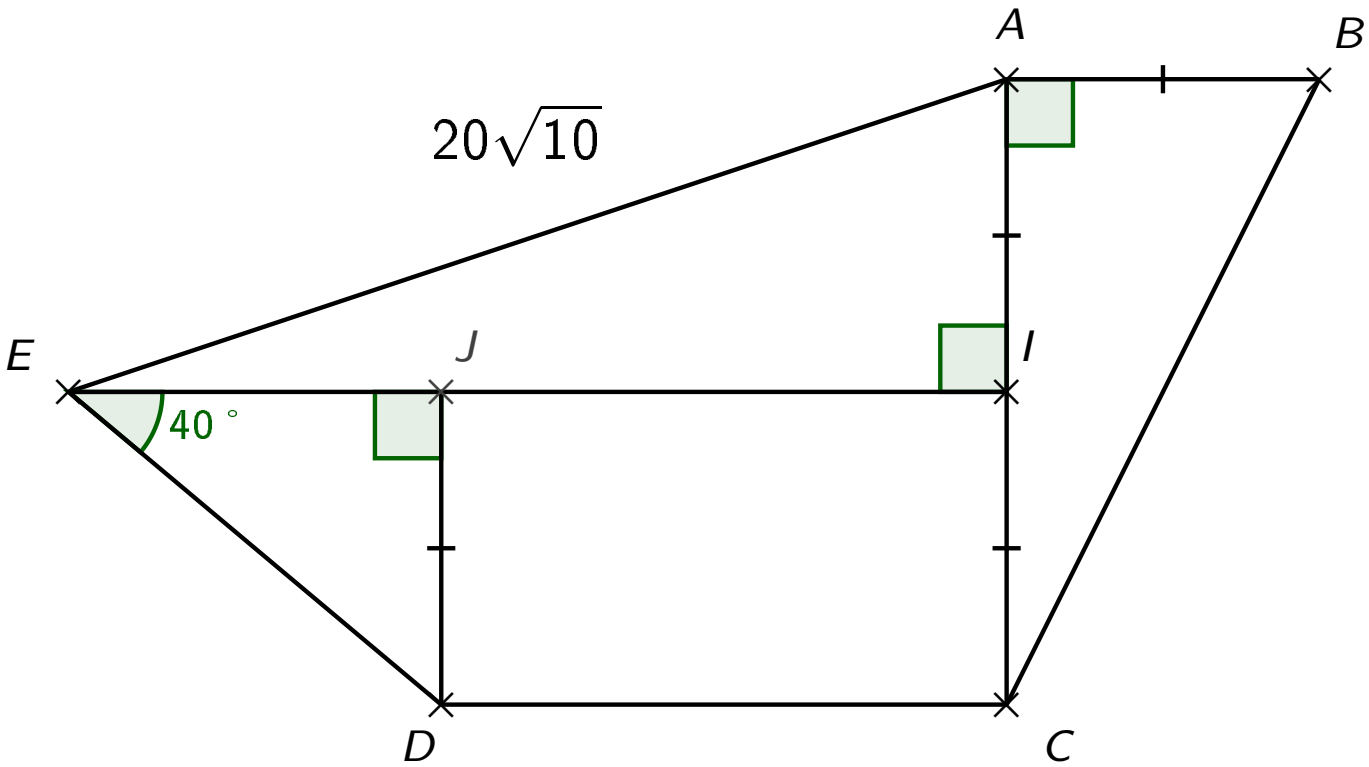


Dans le triangle rectangle EJD, $sin\widehat{DEJ} = \dfrac{DJ}{ED}$ donc $ED = \dfrac{20}{sin\,40}$

soit $ED \simeq 31,1$ m

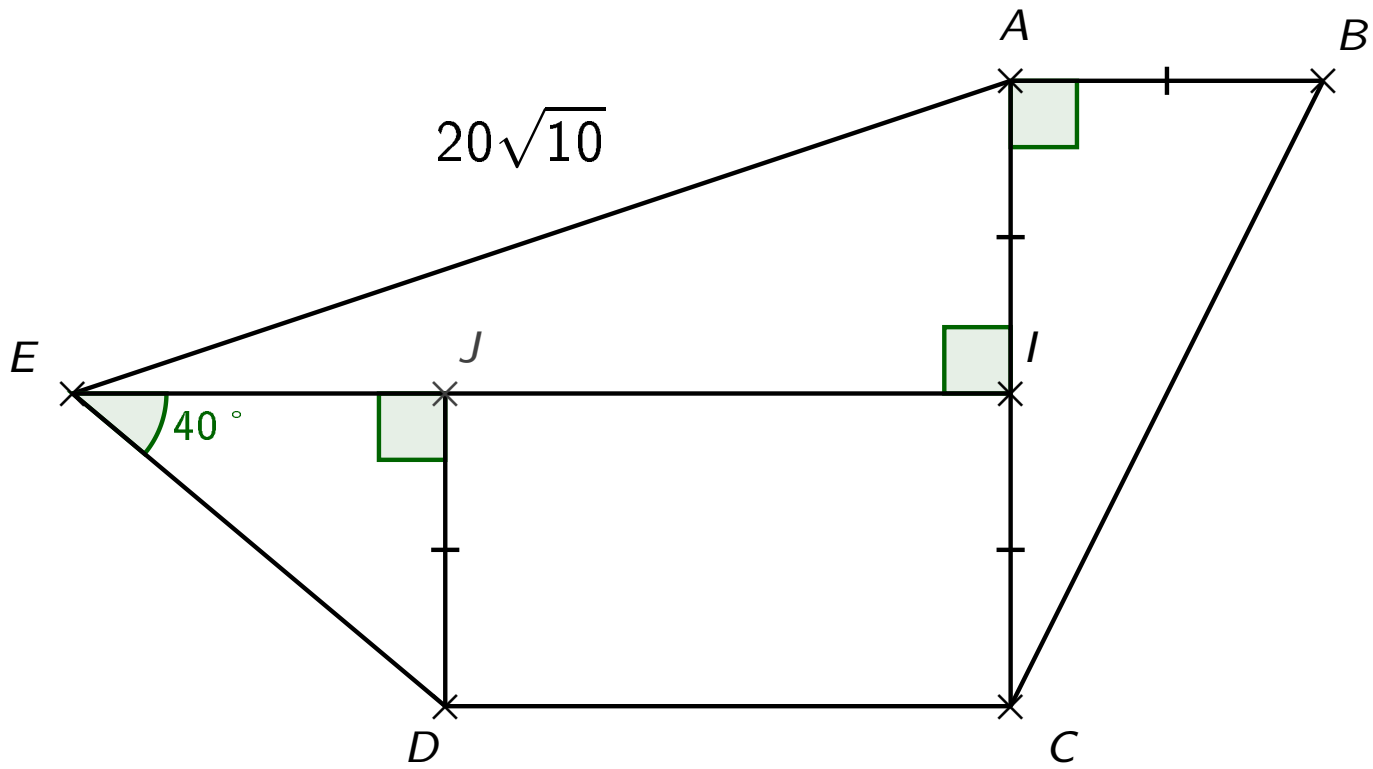


En utilisant le théorème de Pythagore dans le triangle rectangle AEI, on obtient $EI = 60$ m

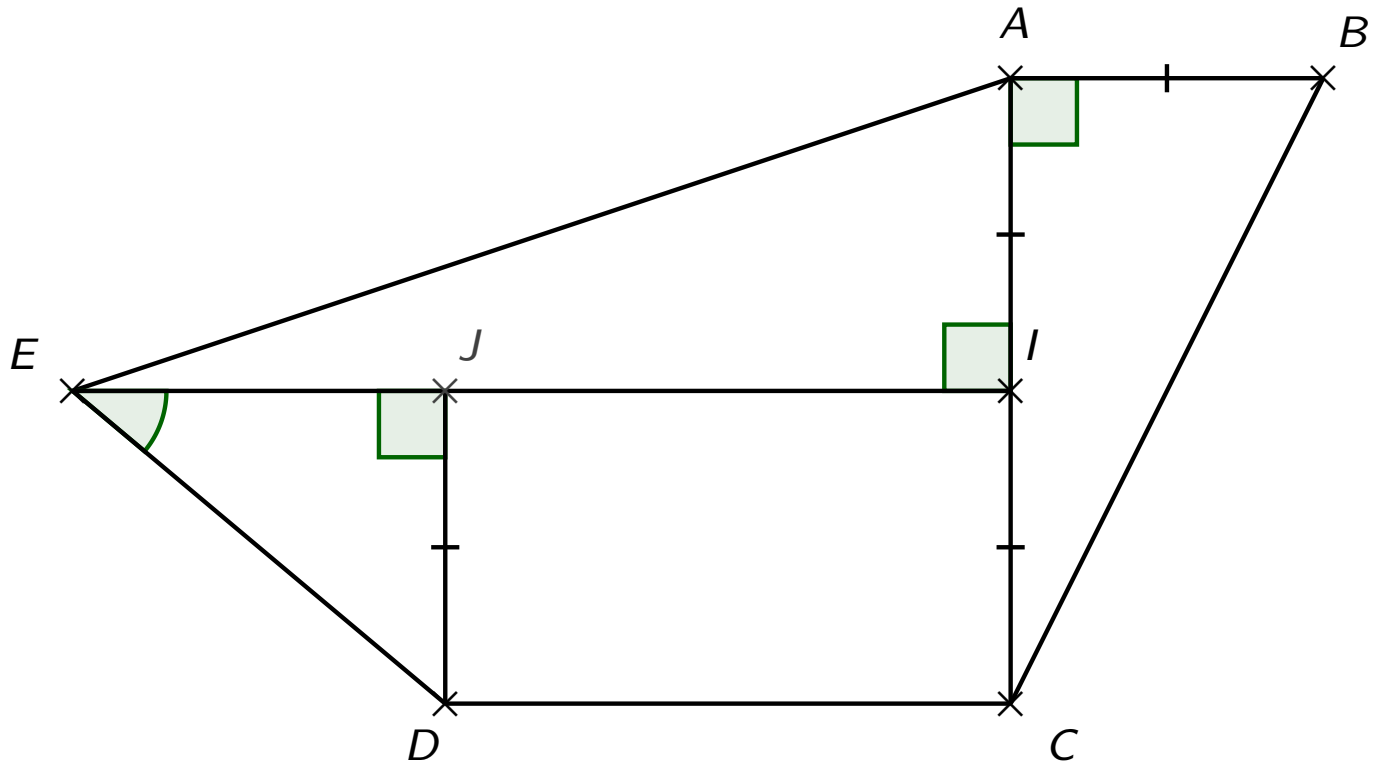


Dans le triangle rectangle EJD, $tan\widehat{DEJ} = \dfrac{DJ}{EJ}$ donc $EJ = \dfrac{20}{tan\,40}$

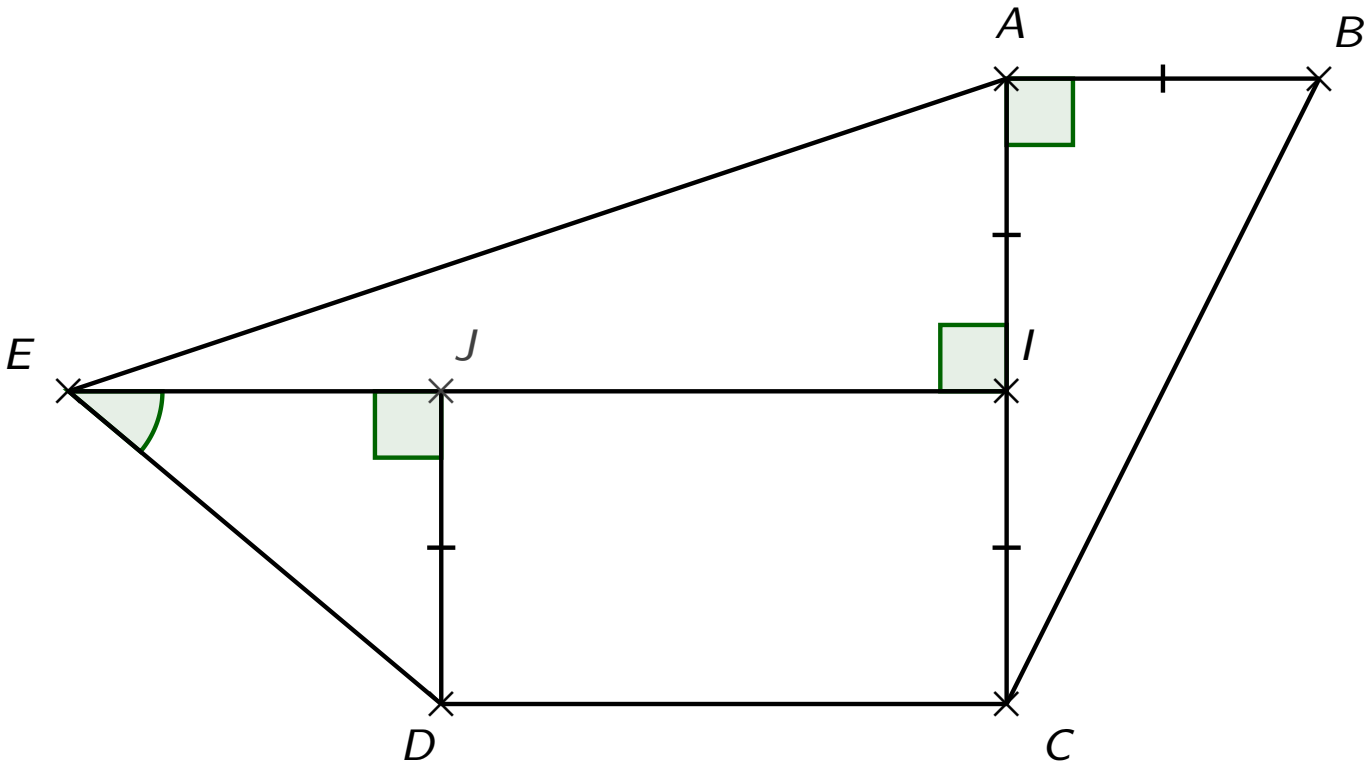
soit $EJ \simeq 23,8$ m



$EI = 60$ m et $EJ = \simeq 23,8$ donc $JI = 36,2$ m d'où $DC = 36,2$ m puisque $JICD$ est un rectangle.

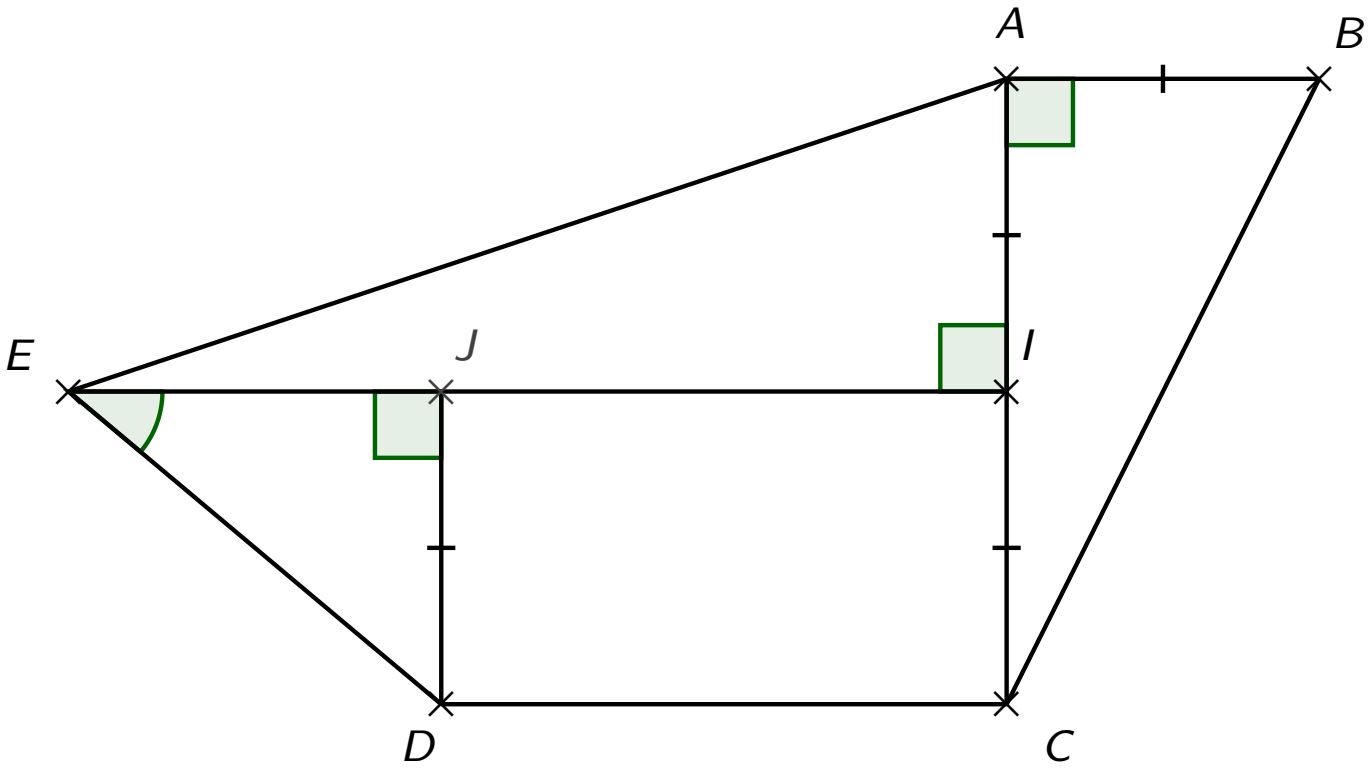


$\widehat{DEJ} = 40\,^\circ$ donc $\widehat{EDJ} = 50\,^\circ$ et $\widehat{JDC} = 90\,^\circ$ d'où $\widehat{EDC} = 140\,^\circ$

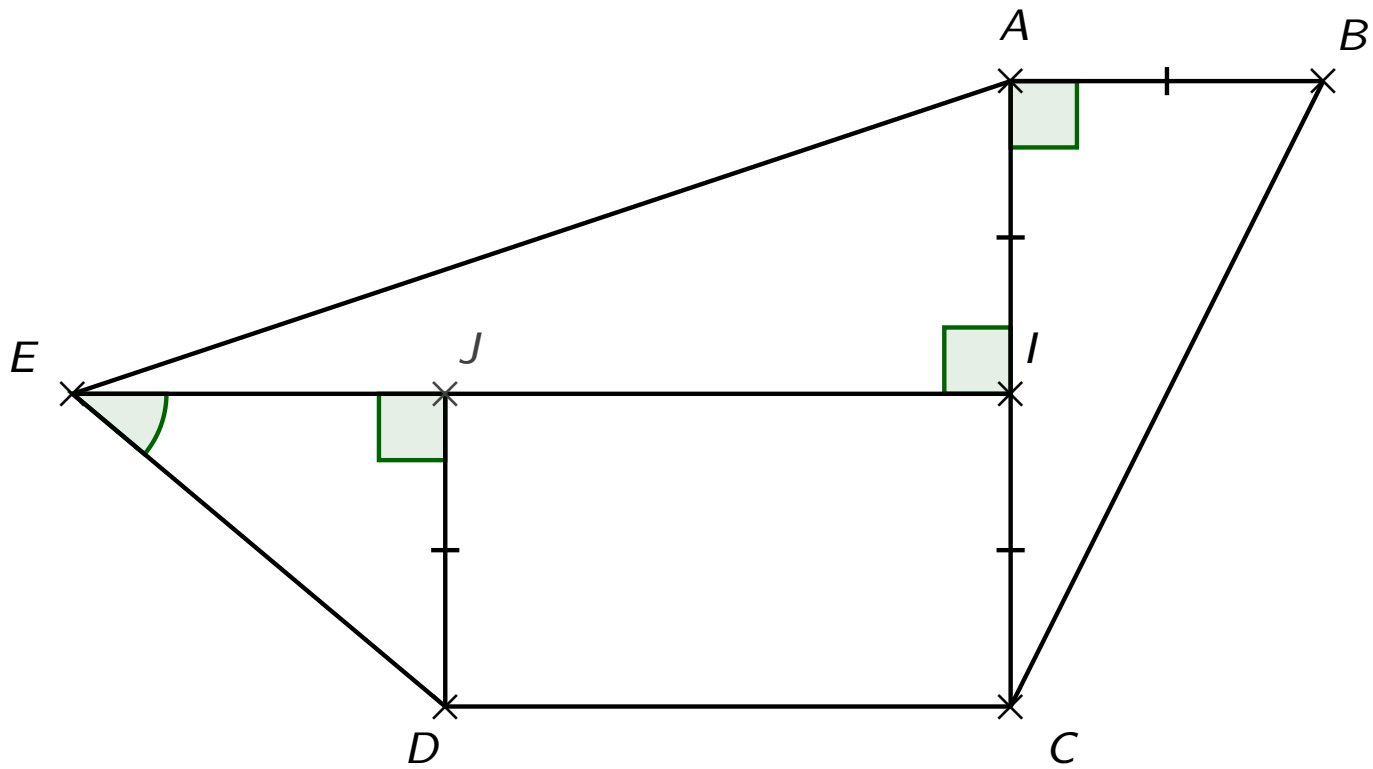


Dans le triangle rectangle ABC, $tan\widehat{ABC} = \dfrac{AC}{AB}$ donc $tan\widehat{ABC} = 2$

soit $\widehat{ABC} \simeq 63,4\,^{\circ}$

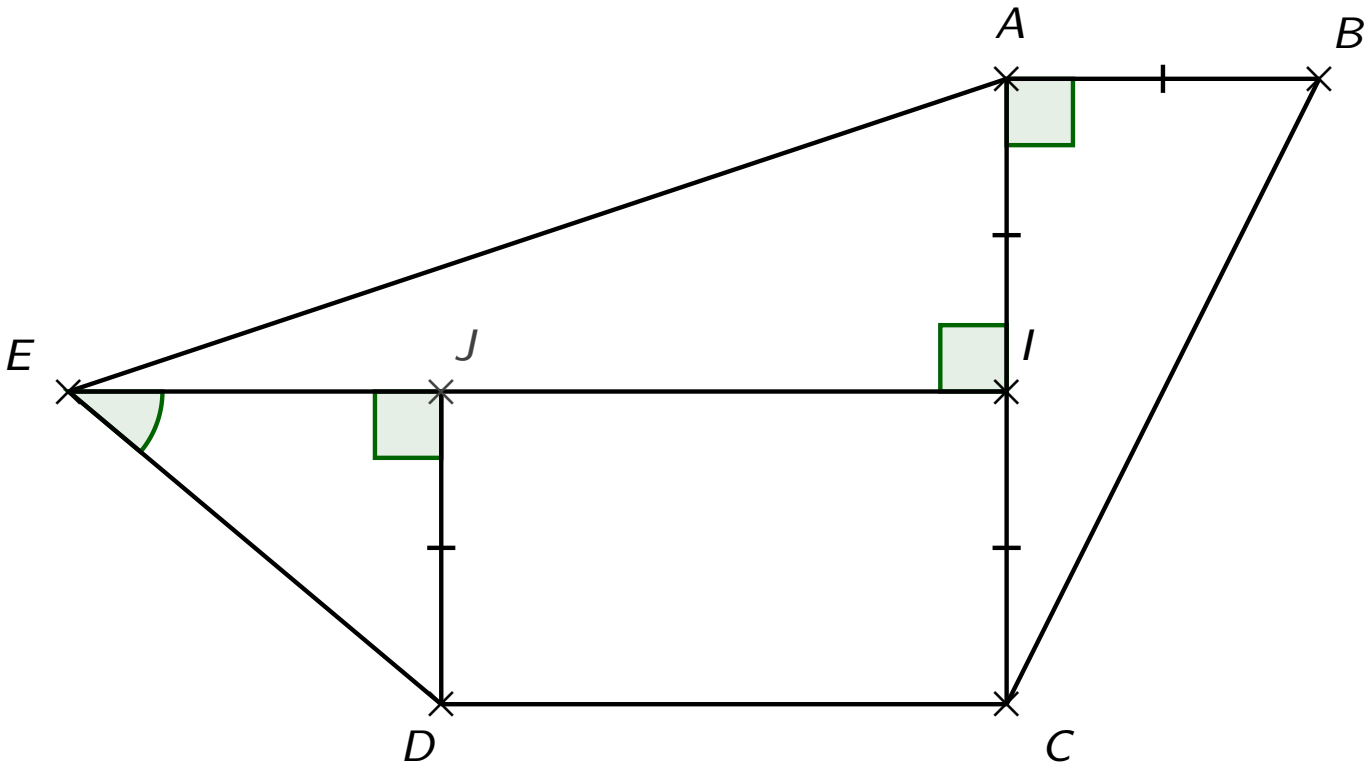


$\widehat{ABC} \simeq 63,4\,^\circ$ et $\widehat{CAB} = 90\,^\circ$ donc $\widehat{ACB} \simeq 26,6\,^\circ$ d'où $\widehat{BCD} \simeq 116,6\,^\circ$



Dans le triangle rectangle AEI, $sin\widehat{AEI} = \dfrac{AI}{AE}$ donc

$sin\widehat{AEI} = \dfrac{20}{20\sqrt{10}}$ soit $\widehat{AEI} \simeq 18,4\,^\circ$ d'où $\widehat{AED} \simeq 58,4\,^\circ$



$\widehat{AEI} \simeq 18,4\,^\circ$ et $\widehat{AIE} = 90\,^\circ$ donc $\widehat{EAI} \simeq 71,6\,^\circ$ d'où $\widehat{EAB} \simeq 161,6\,^\circ$