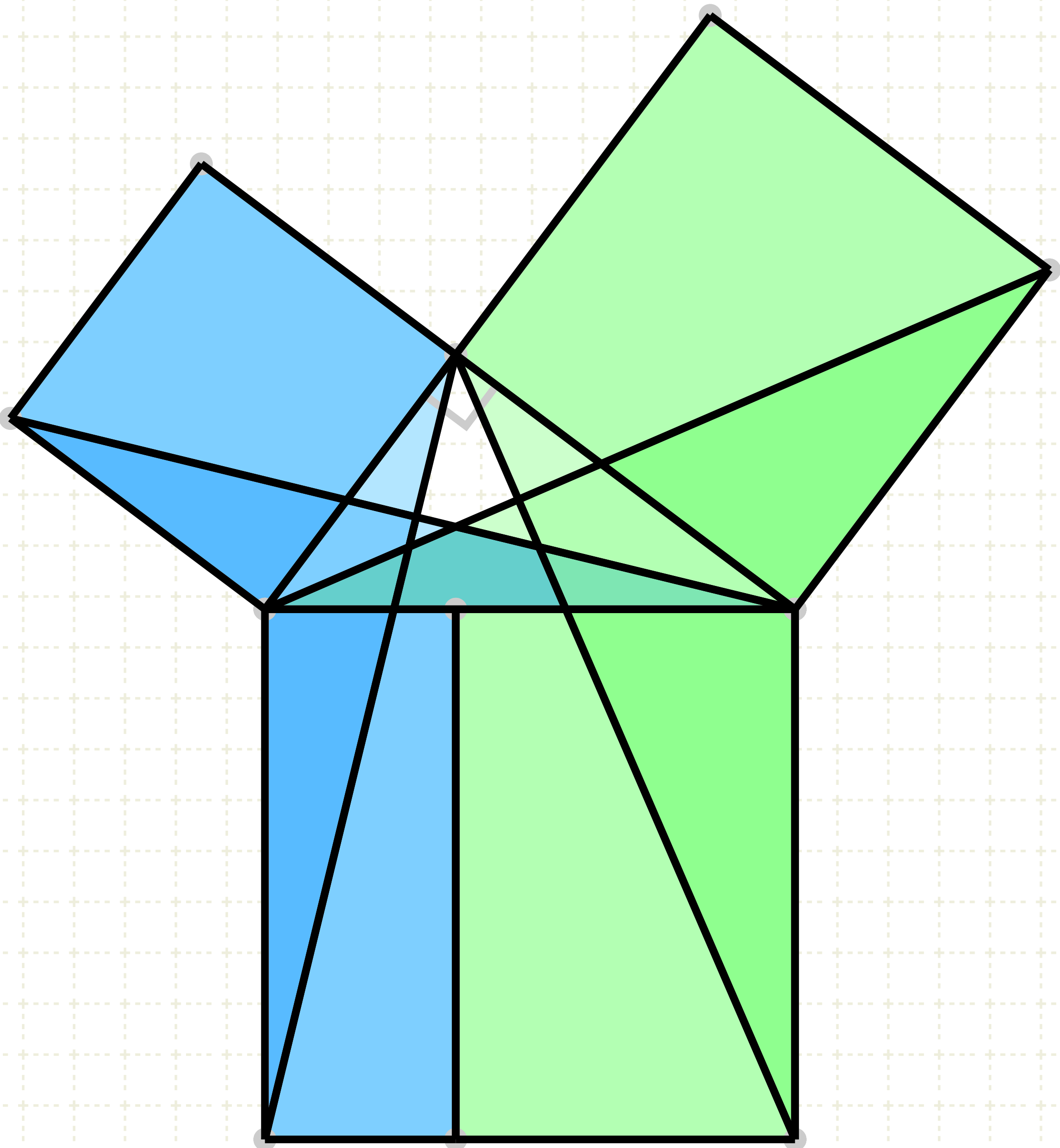
Euclid's Elements

Book I



If Euclid did not kindle your youthful enthusiasm, you were not born to be a scientific thinker.

Albert Einstein

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Proposition 15 of Book I

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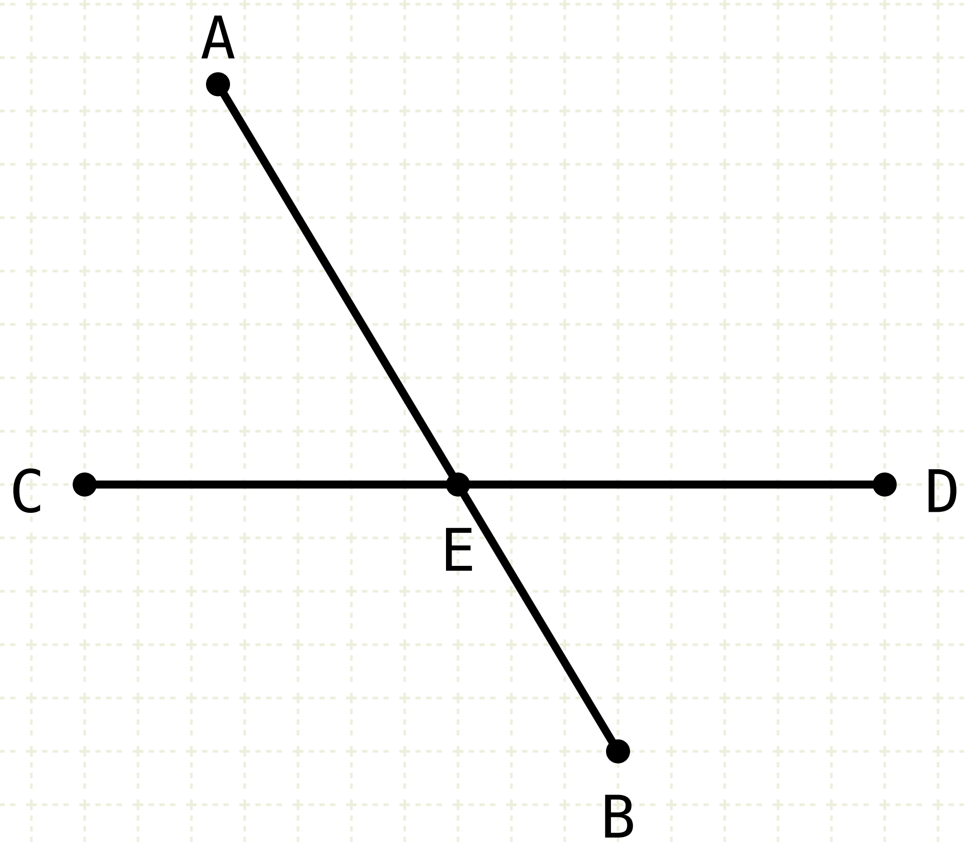
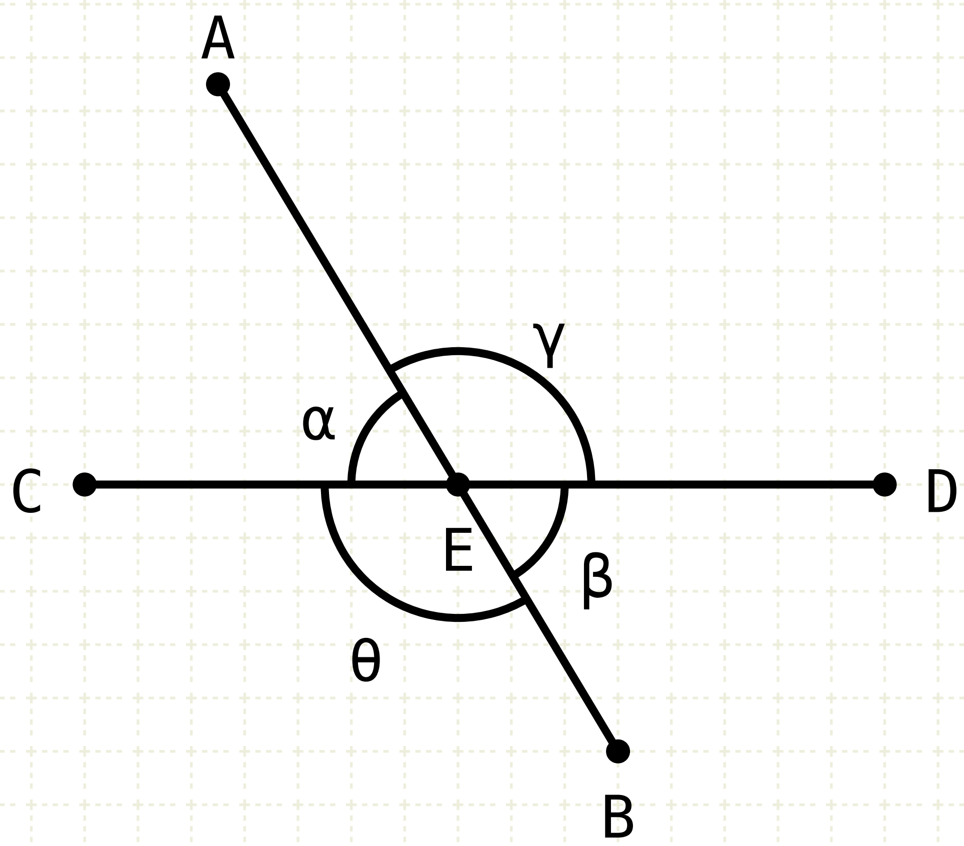


In other words

Given two arbitrary line segments AB and CD which intersect at point E

Proposition 15 of Book I

If two straight lines cut one another, then they make the vertical angles equal to one another.



$$\alpha = \beta$$
$$\gamma = \theta$$

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Given two arbitrary line segments AB and CD which intersect at point E

Angles AEC and DEB are equal

Angles AED and CEB are equal

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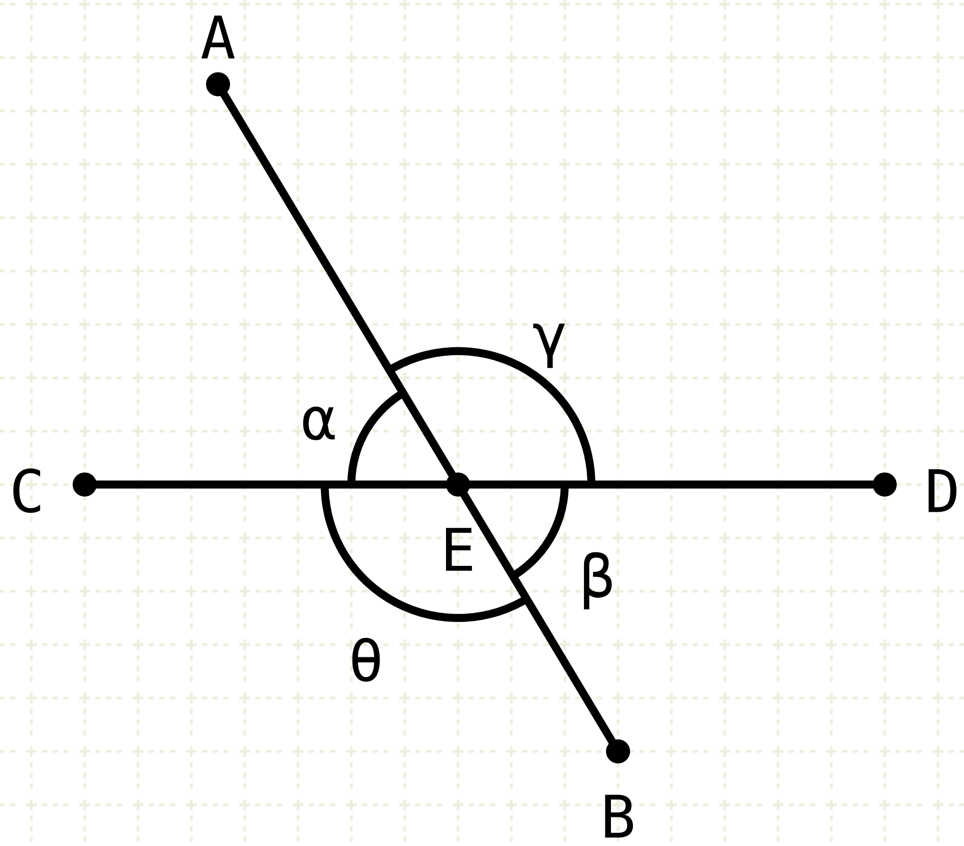

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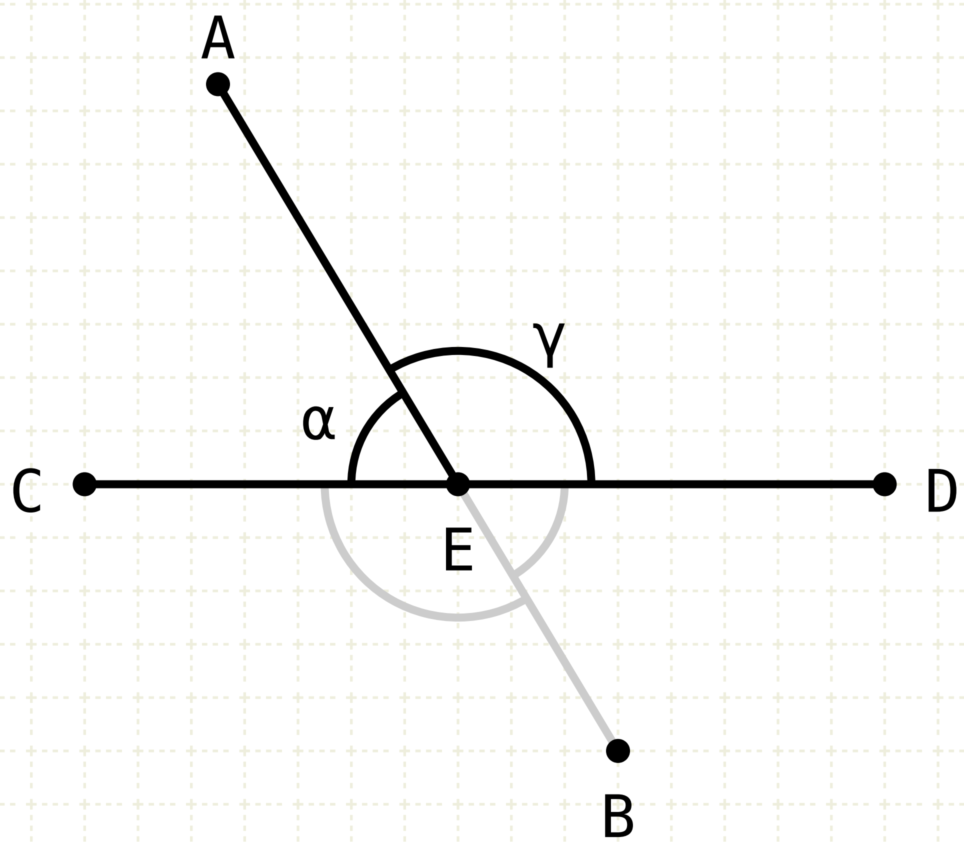

$$\alpha + \gamma = \llcorner + \llcorner$$

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Given two arbitrary line segments AB and CD which intersect at point E

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CD is a straight line, so the sum of AEC and AED equals two right angles (I·13)

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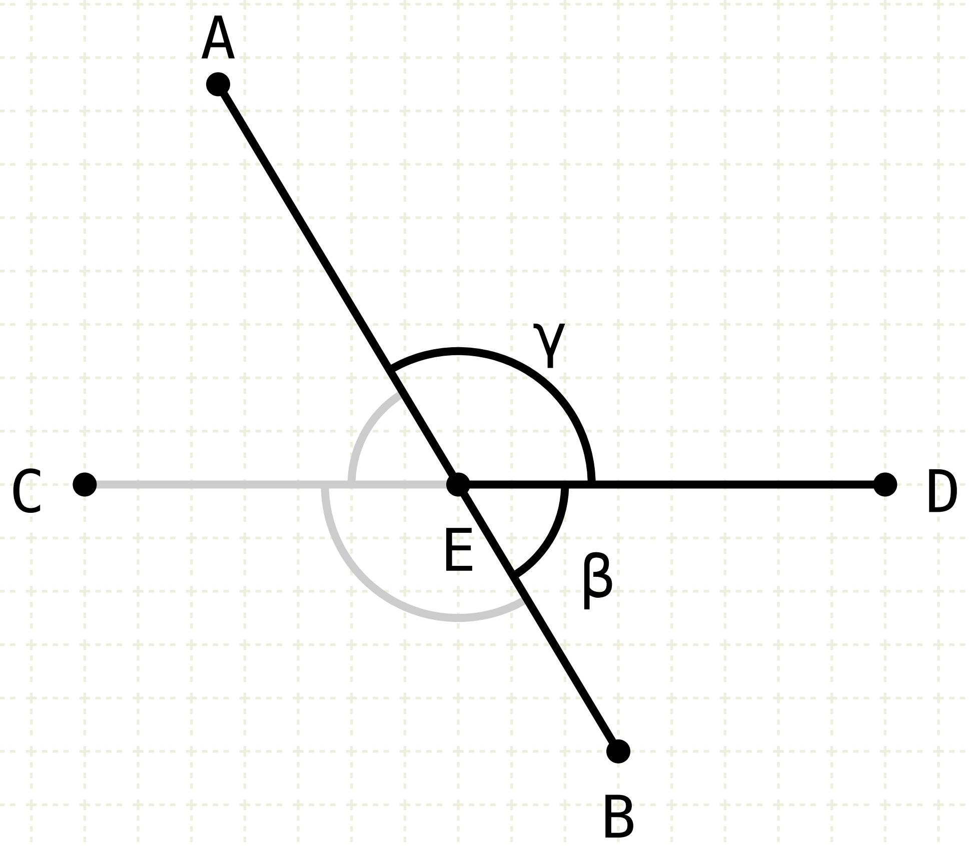
If two straight lines cut one another, then they make the vertical angles equal to one another.



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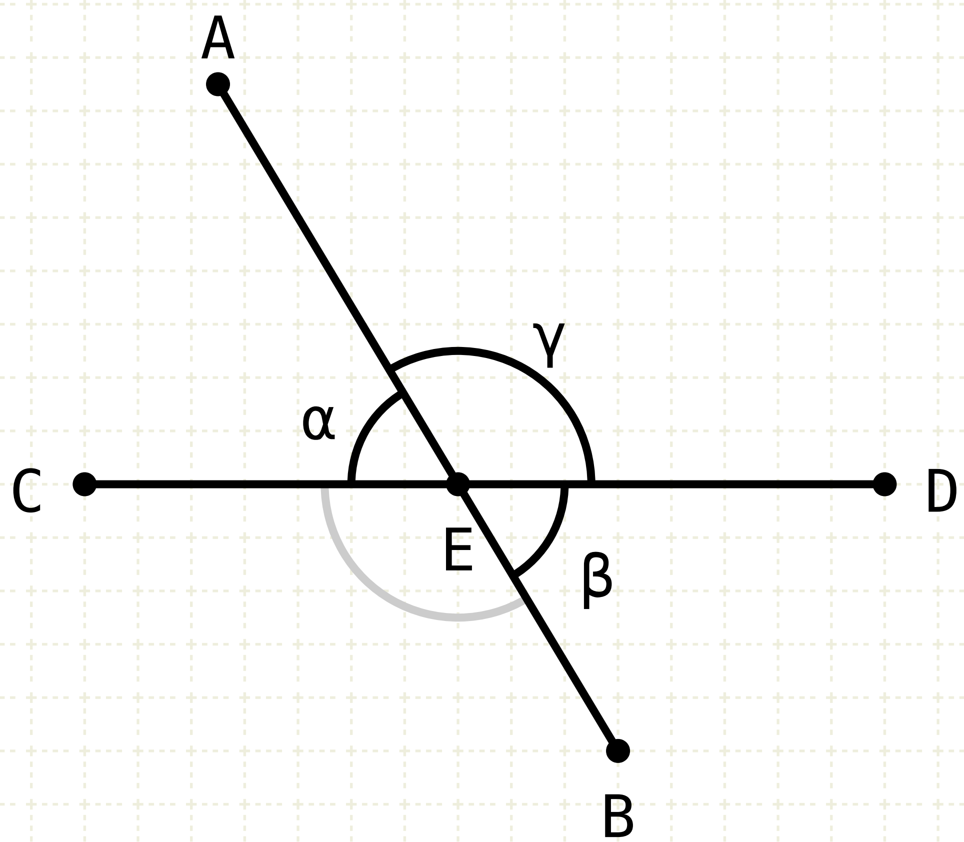

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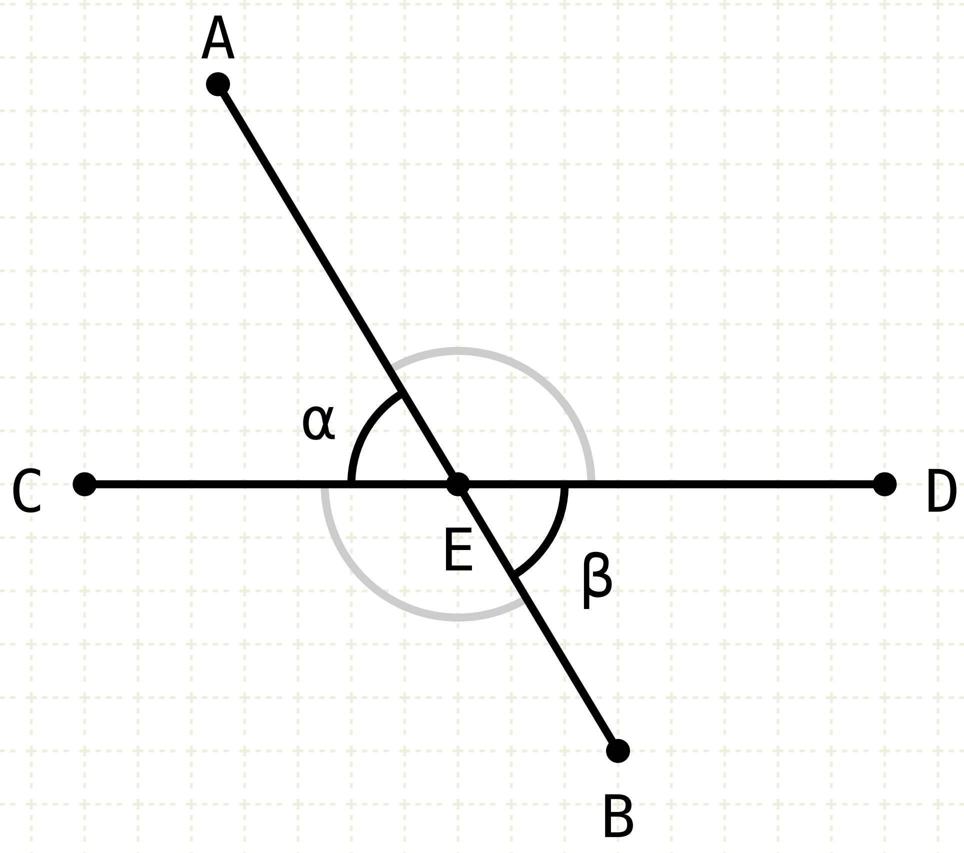

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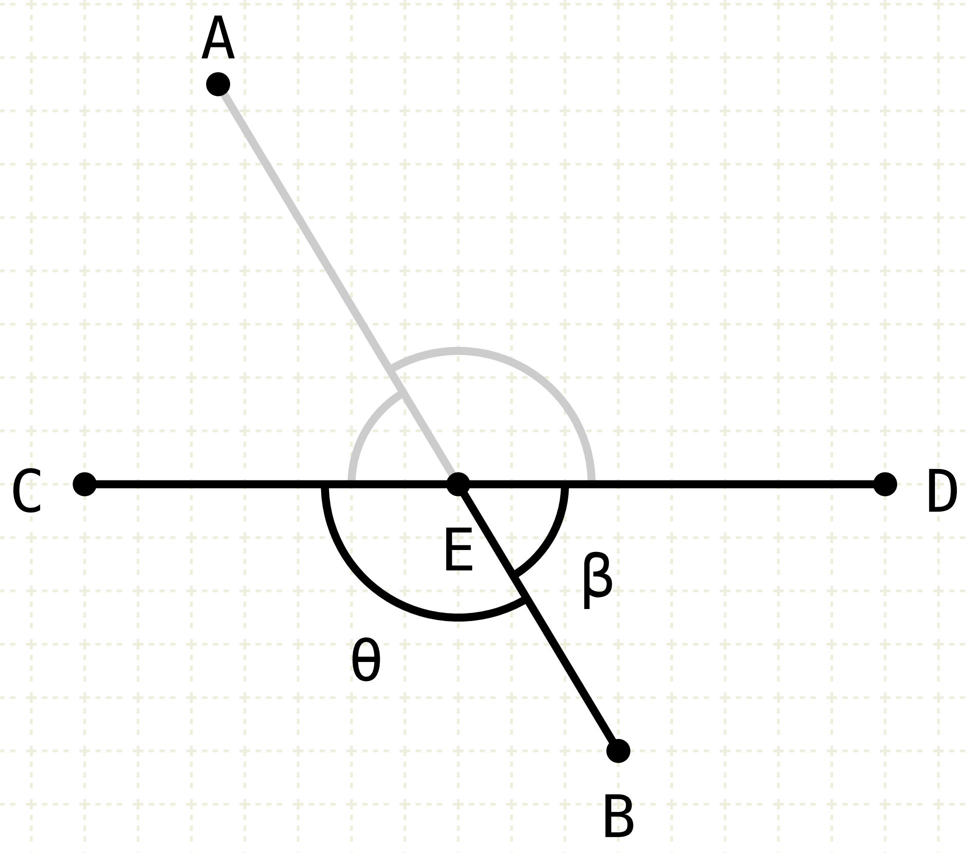

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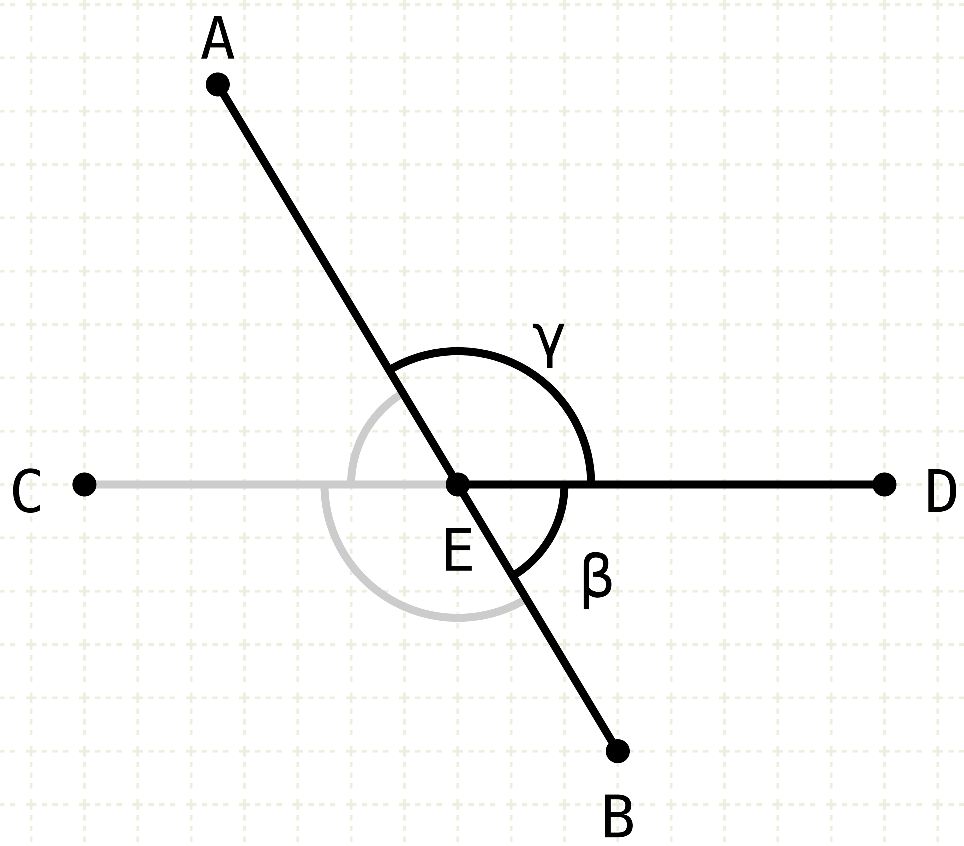

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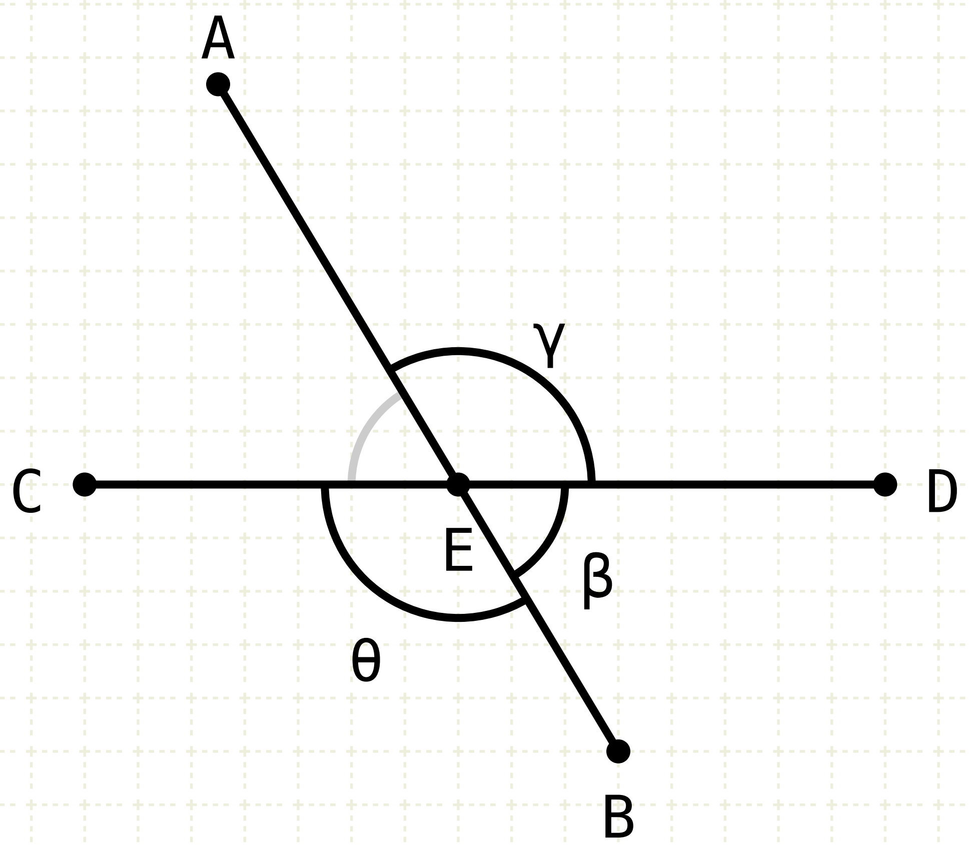

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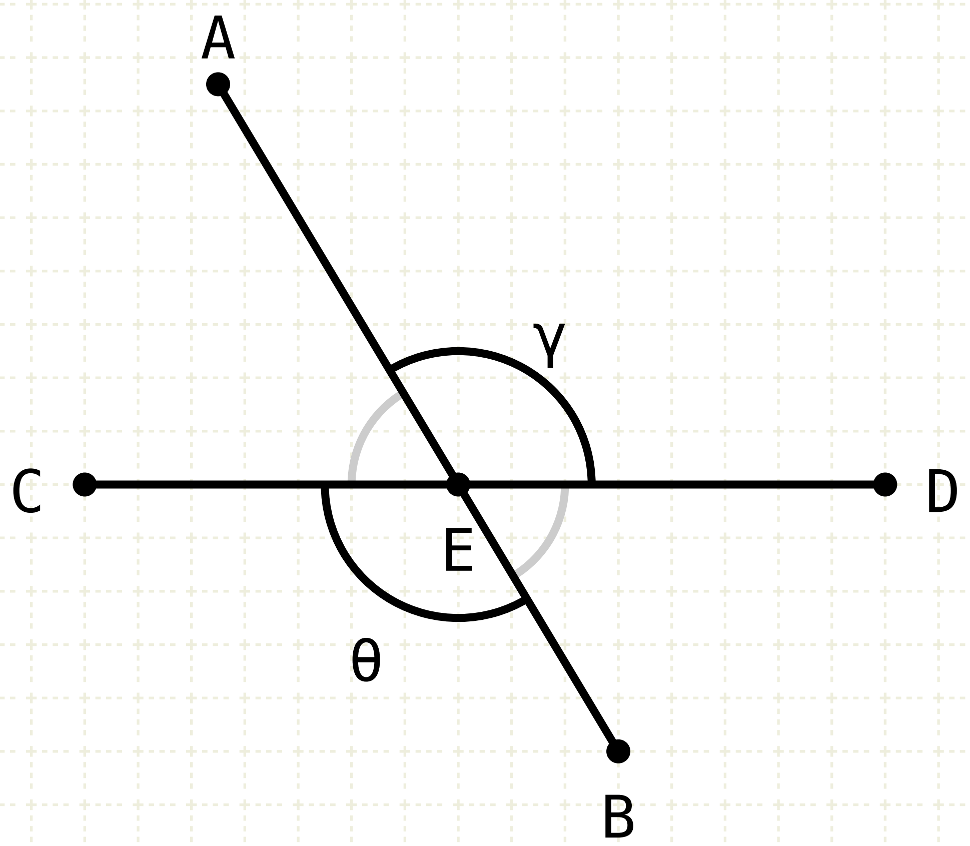

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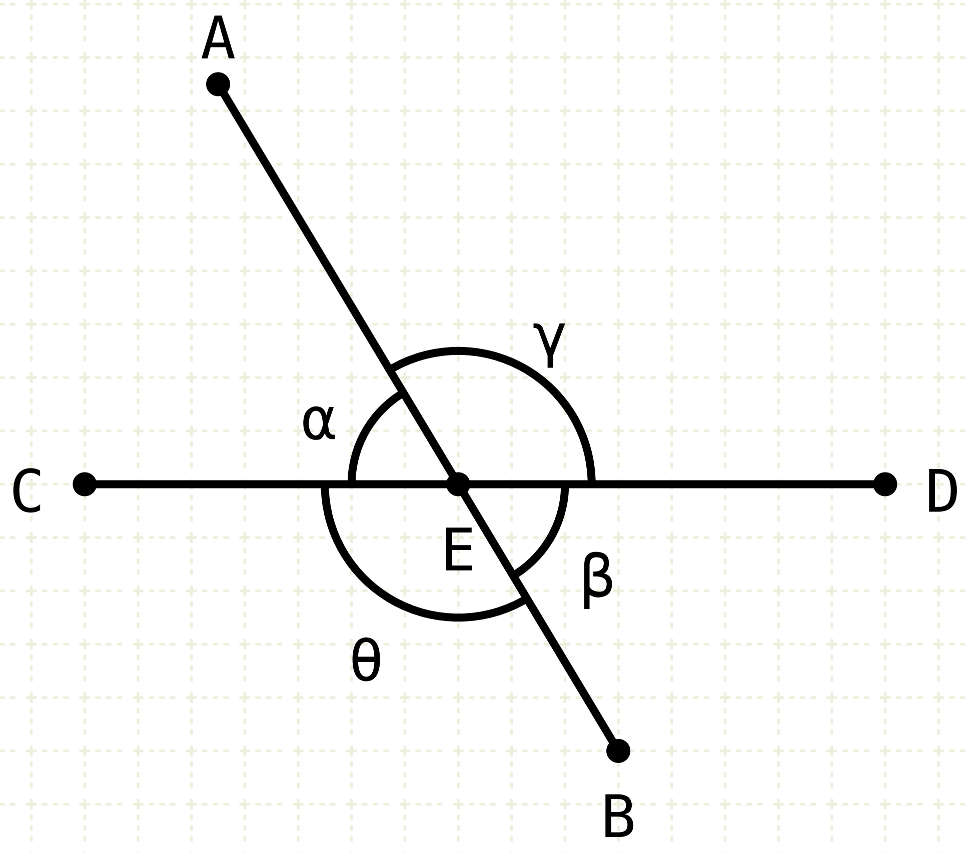

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