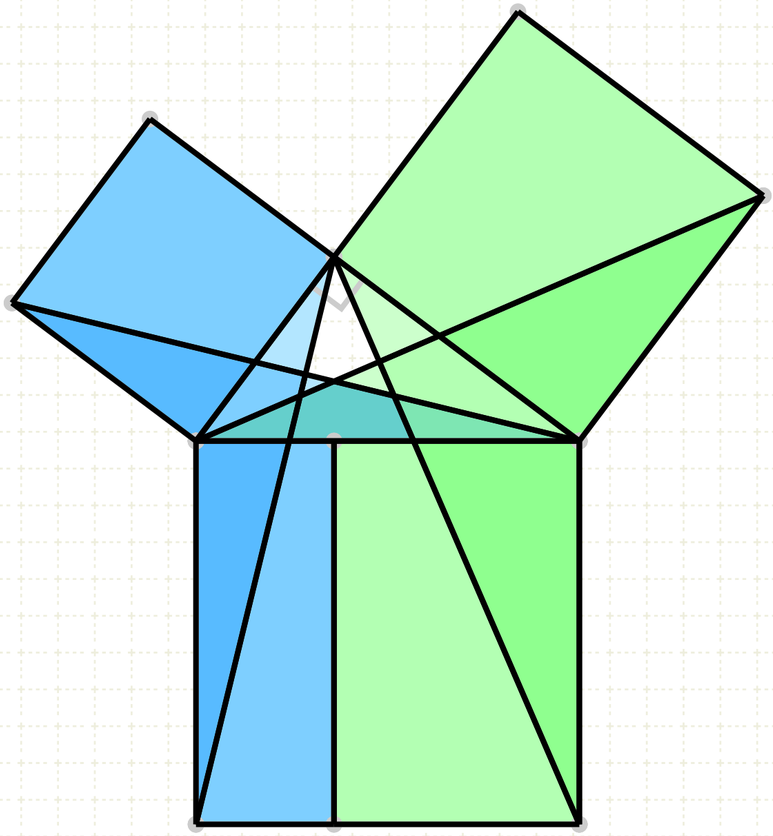
# Euclid's Elements

## Book I



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

Albert Einstein

# Table of Contents, Chapter 1

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# Proposition 41 of Book I

If a parallelogram has the same base with a triangle and is in the same parallels, then the parallelogram is double the triangle.

# Proposition 41 of Book I

If a parallelogram has the same base with a triangle and is in the same parallels, then the parallelogram is double the triangle.

## In other words

If a parallelogram and a triangle have the same base and height, the triangle will have half the area of the parallelogram

# Proposition 41 of Book I

If a parallelogram has the same base with a triangle and is in the same parallels, then the parallelogram is double the triangle.

## In other words

Given two parallel lines

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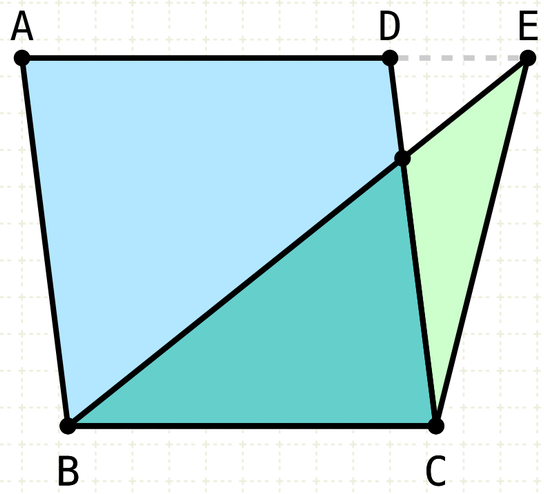


## In other words

Given two parallel lines

Let the parallelogram ABCD and the triangle EBC have the same bases, and be on the same parallels

AE || BC

# Proposition 41 of Book I

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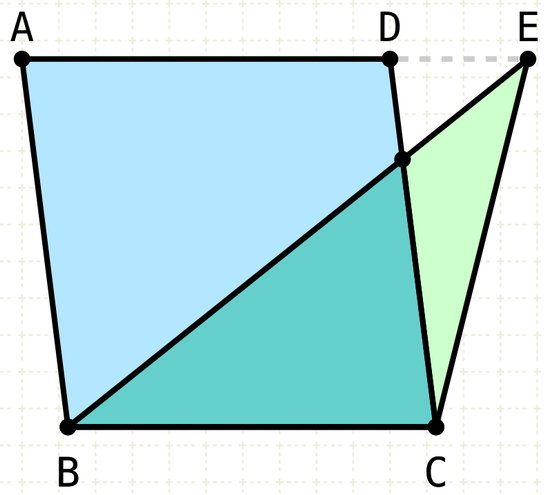


## In other words

Given two parallel lines

Let the parallelogram ABCD and the triangle EBC have the same bases, and be on the same parallels

Then the area of the triangle EBC is half the area of the parallelogram ABCD

AE || BC

EBC = ½ ABCD

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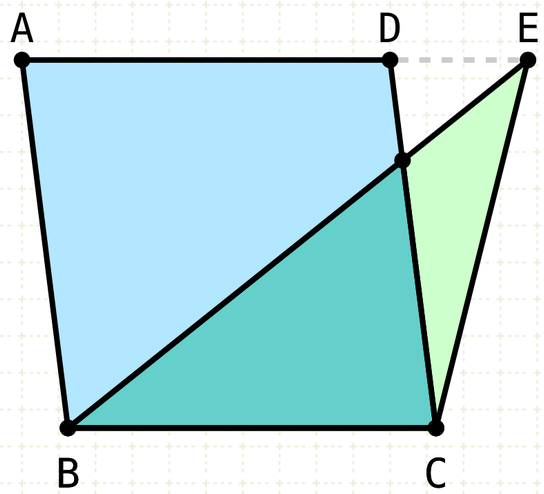


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Given two parallel lines

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Then the area of the triangle EBC is half the area of the parallelogram ABCD

## Proof

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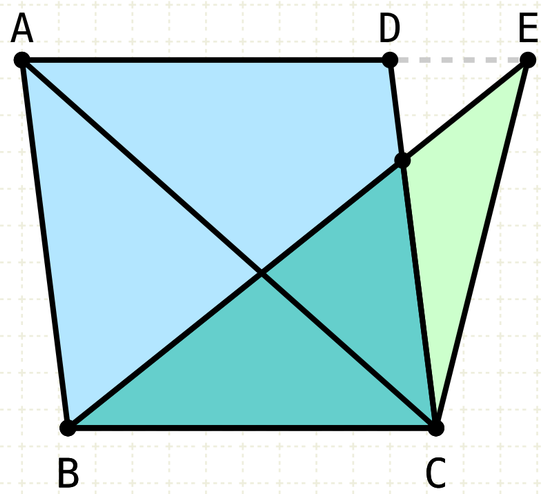


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## Proof

Draw the line AC

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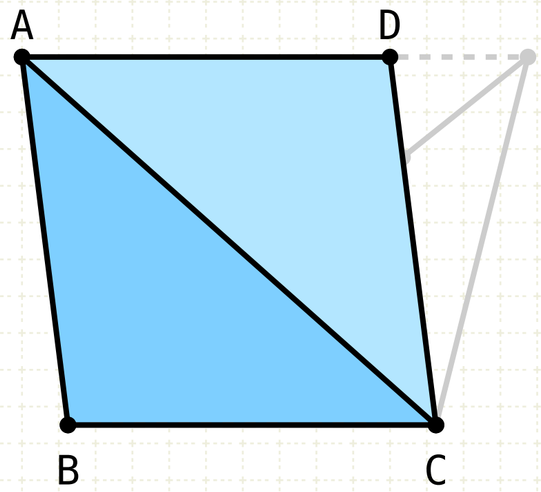


AE ∥ BC

ΔABC = ½ ABCD

## In other words

Given two parallel lines

Let the parallelogram ABCD and the triangle EBC have the same bases, and be on the same parallels

Then the area of the triangle EBC is half the area of the parallelogram ABCD

## Proof

Draw the line AC

Triangle ABC is equal to one half of ABCD (I·34)

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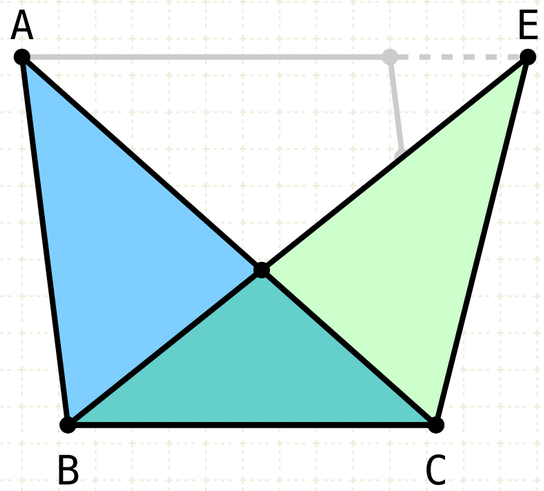


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## Proof

Draw the line AC

Triangle ABC is equal to one half of ABCD (I·34)

Triangles ABC and EBC are equal, since they are on the same parallels (I·37)

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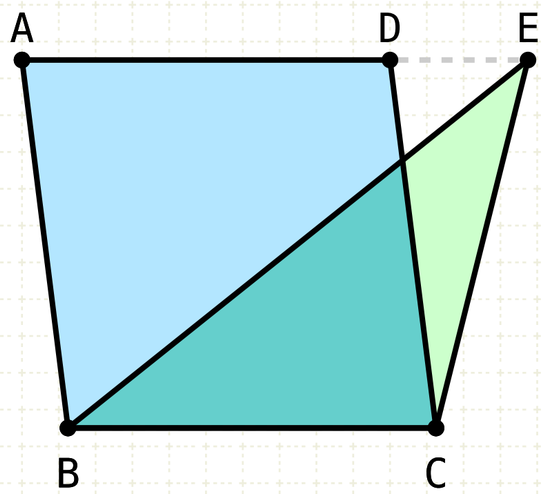


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Triangles ABC and EBC are equal, since they are on the same parallels (I·37)

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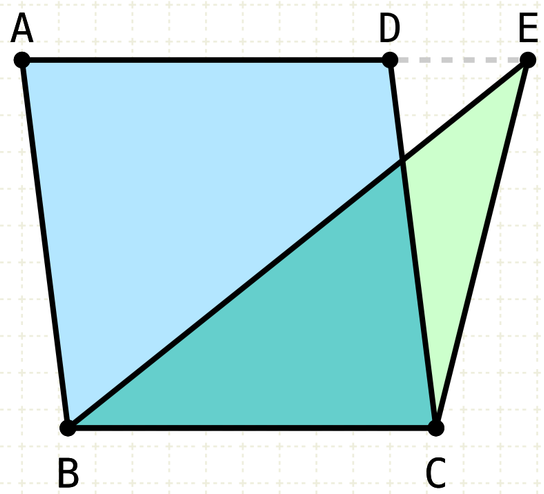


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