Great Solutions for an Angle Question in the Triangle

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ABSTRACT

In this study, we have shown that there are different solutions of an angle question in the triangle of secondary education.

Key words: Golden Ratio, Angle Question, Triangle an d Euclid Geometry

1.INTRODUCTION

A major contributor to the field of geometry is Euclid (365-300 B.C.) who is famous for his works called "The Elements." Today we continue to use the rules for geometry. While continuing primary and secondary education, Euclidean geometry and plane geometry are studied.

When the literature is examined, there are multiple definitions for geometry. According to Coxeter, geometry is perhaps the most fundamental of the sciences that allow man to make predictions (based on observations) about the physical world through purely intellectual processes. The power of geometry is impressive in terms of the accuracy and utility of these inferences and has been a strong motivation to study logic geometry.

Perhaps it may be asserted, that there are no difficulties in geometry which are likely to place a serious obstacle in the way of an intelligent beginner, except the temporary embarrassment which always attends the commencement of a new study.

For a time, it had nowhere (in universities) because geometry was obedient to nothing but rigid facts. Hoobes uses the following expression for geometry; if any person who has the creativity of his nature had attained any degree of perfection there, he would generally think of art as evil.

As abstract thinking progresses, geometry becomes much more about analysis and reasoning. Throughout high school there is a focus on analyzing properties of two- and three-dimensional shapes, reasoning about geometric relationships, and using the coordinate system. Studying geometry provides many foundational skills and helps to build the thinking skills of logic, deductive reasoning, analytical reasoning, and problem-solving.

In the following triangle we solved the angle problem in 36 different ways. We are pleased to offer these solutions to geometry lovers.
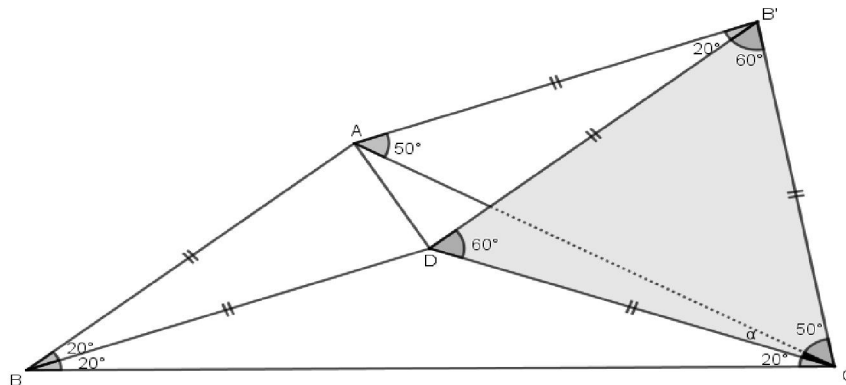
2. Questions and solutions

2.1. Questions:

$|AB| = |BD| = |DC|$ and $mABD = mDBC = 20^0$ if$mDCA =?$ $what$ is it $degree?$ (**Figure.2.1**)
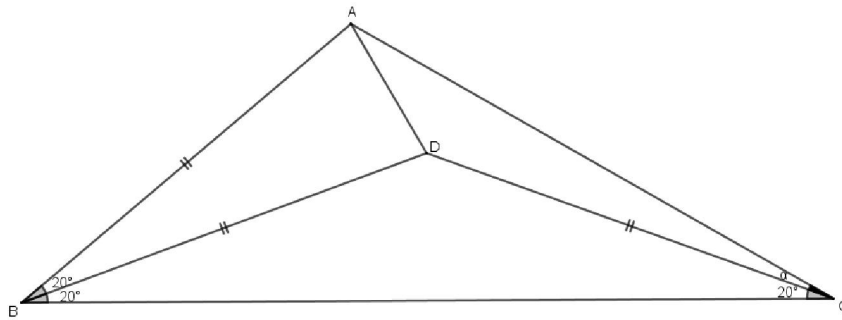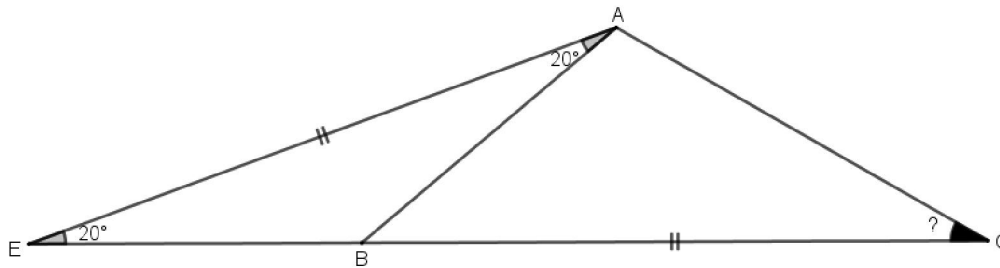

Figure.2.1

2.1.1. The first solution:

Figure.2.2

- Let us draw the symmetry of the ABD triangle against $[AD]$ edge.

- The symmetry of point B is B'.

- $B'DC$ is the equilateral triangle and $B'AC$ is the twin edge triangle.

- That' will be $mDCA = 10^0$.

For the second solution, we have use the following help**.**

Lemma.2.1.1 Helpful questions and answers.

Figure.2.3

? = 30. We will use this in the second solution.

2.1.2. The second solution:

▪ On Figure 2.1, extend the correct segment $[BD]$ and draw the DCD' twin edge triangle with $|CD| = |CD'|$.

▪ $D'EC = 30$ so that the E point on the $\overrightarrow{BD}$.

▪ $mECD' = 10$ is composed of ADC $= ED'$C coincident triangles.

▪ Lemma.2.1.1 gives us $|CB| = |DE|$.

▪ Equality. edge, angle, edge accompanied by axiom ABC = CDE and $|CA| = |CE|$.

▪ If so, the ADC $= ED'C$ is mADC $= 10$, α $= 10$. (Figure.2.4)
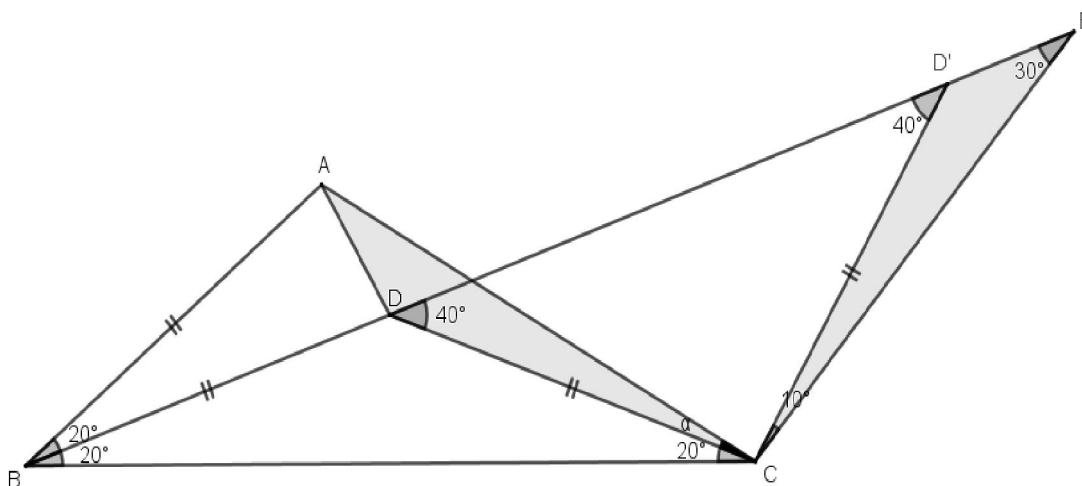
Figure.2.4

2.1.3. The third solution:

▪ Let us take point E so that $|AB| = |BE|$.

▪ On the CB vector and draw the ABE triangle. (Figure.2.5).

▪ Lemma 2.1.1 gives us mACB = 30, where mACD = 10
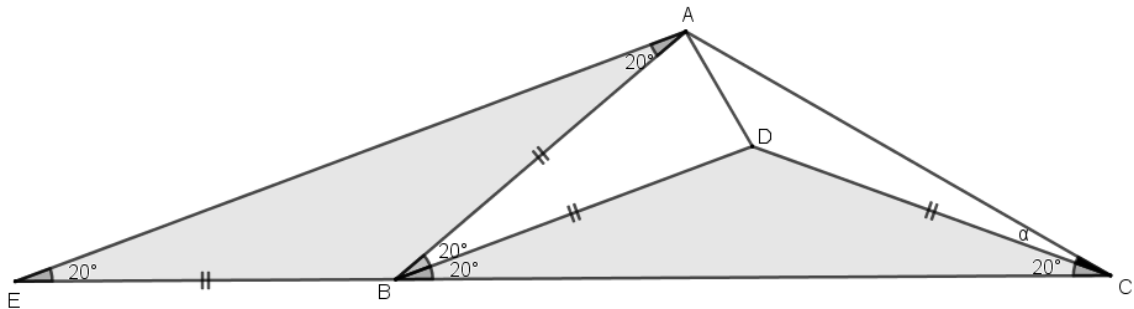
Figure.2.5

2.1.4. The fourth solution:

▪ Let's create the ABD equilateral triangle**.**

▪ Let's draw the right part of $[CD]$.

▪ ADC triangle is isosceles triangle and ADC angle is 80. From here it is seen that ACD angle is 10 degrees. (Figure.2.6)
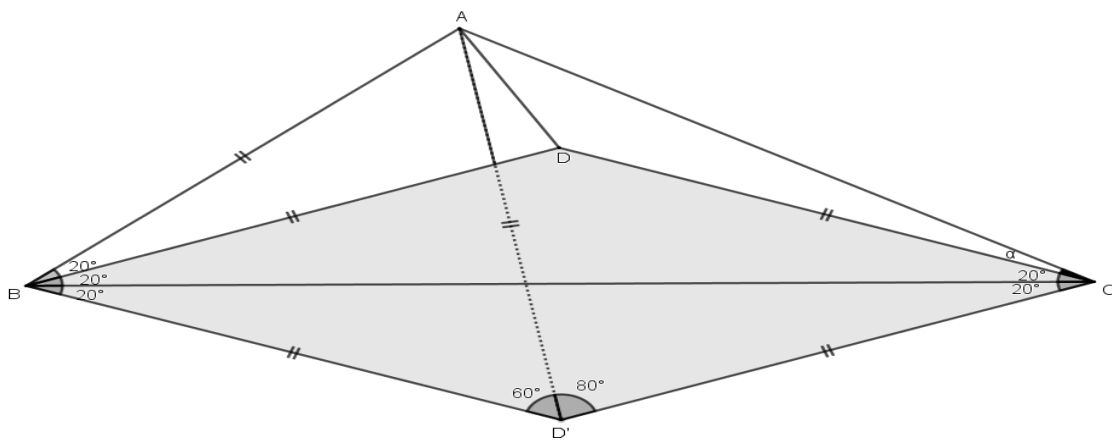
Figure.2.6

2.1.5. The fifth solution:

▪ Let's draw the C'BA equilateral triangle.

 ▪ Then combine the points C and C'.(Figure.2.7)

 ▪ CBA and $C'D$C triangles become twin edge triangles.

 ▪ The base angles of both are 10.

 ▪ In this case the $AC'$and CC' overlap and mACD = 10.
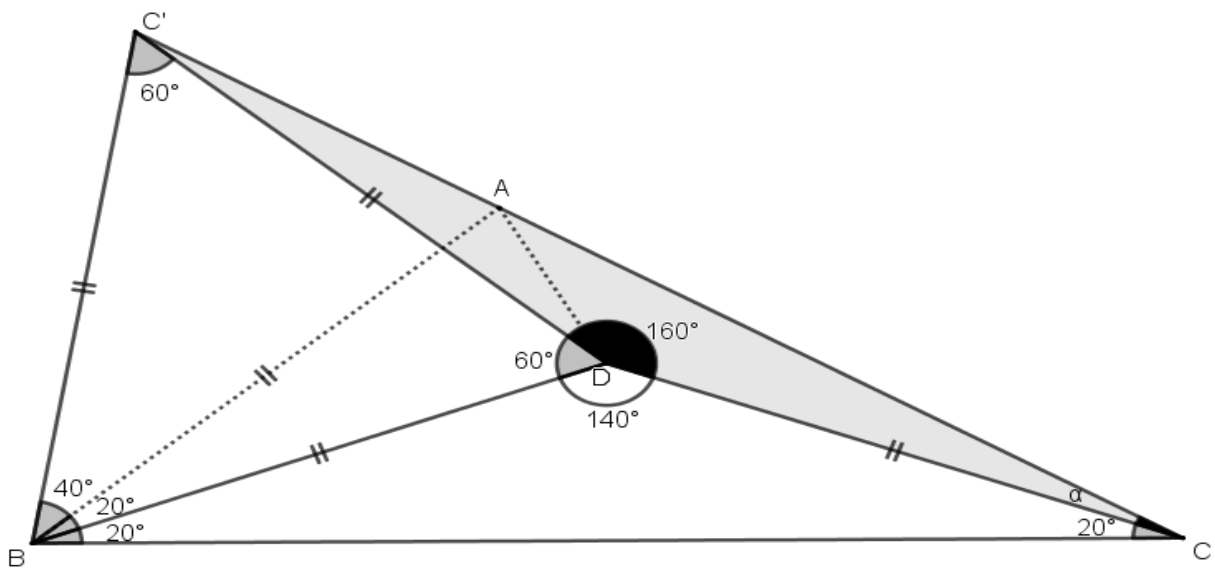
Figure.2.7

2.1.6. The sixth solution:

 ▪ Let's draw ABD = $D'CD$ (Figure.2.8).

 ▪ mADD'= 60 ve ADD' equilateral triangle becomes

 ▪ ADCD' is deltoid, $[AC]$ becomes angle bisector. Then mACD = 10
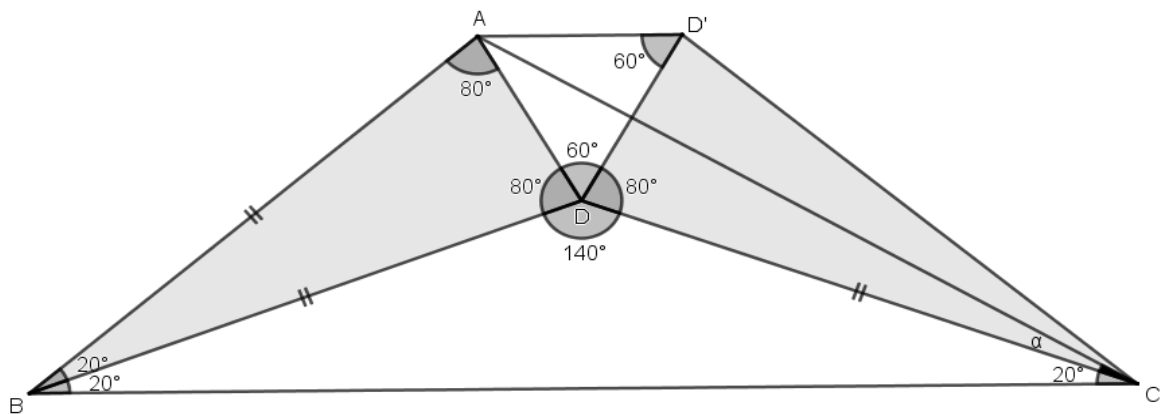
Figure.2.8

2.1.7. The seventh solution:

▪ $|BD| = |DC'|$ and $C'DD'$ let's draw equilateral triangle. (Figure 2.9)

▪ The triangle $DD'C$ is drawn.

▪ ABD = D$D'C$ (Edge-angle-edge accompaniment axiom)

▪ Then mACD = 10
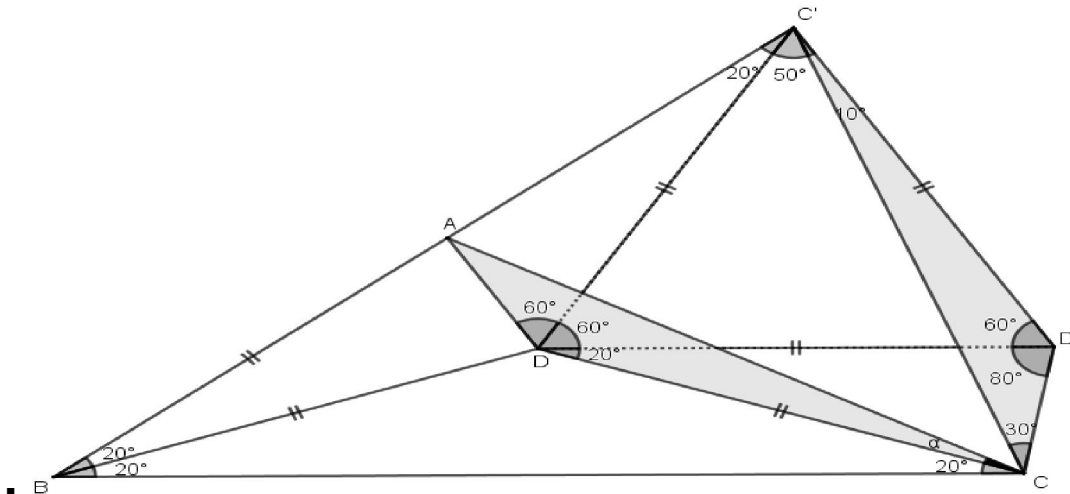
Figure.2.9

3. Conclusion

3.1 This question is solved in about 36 ways. Other solutions are given below. I hope the readers will discover these solutions with pleasure. Contact me when they are geared up.

3.2 Other solutions

3.2.1 Solutions:
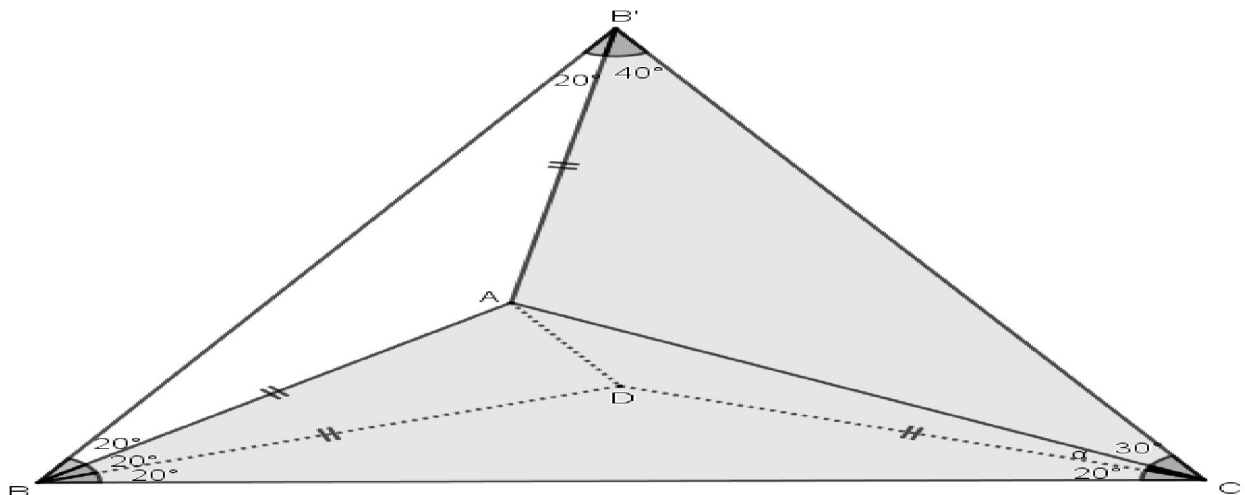
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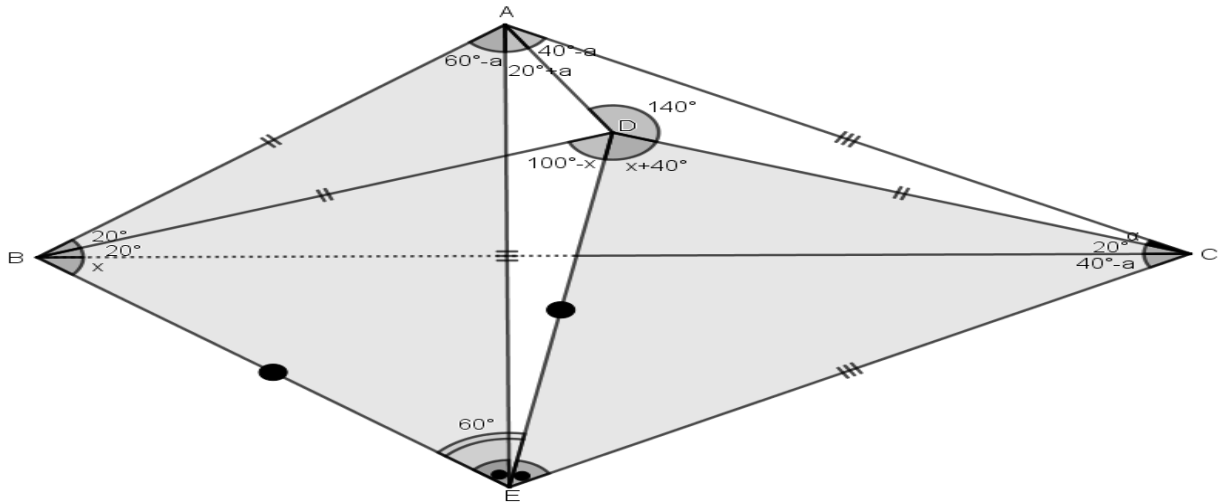
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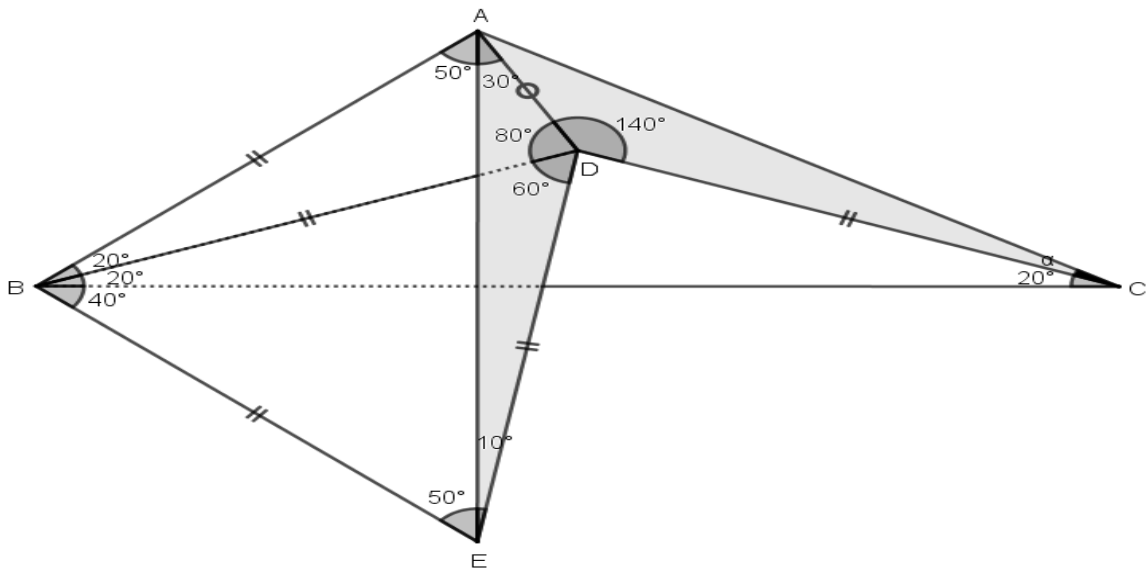
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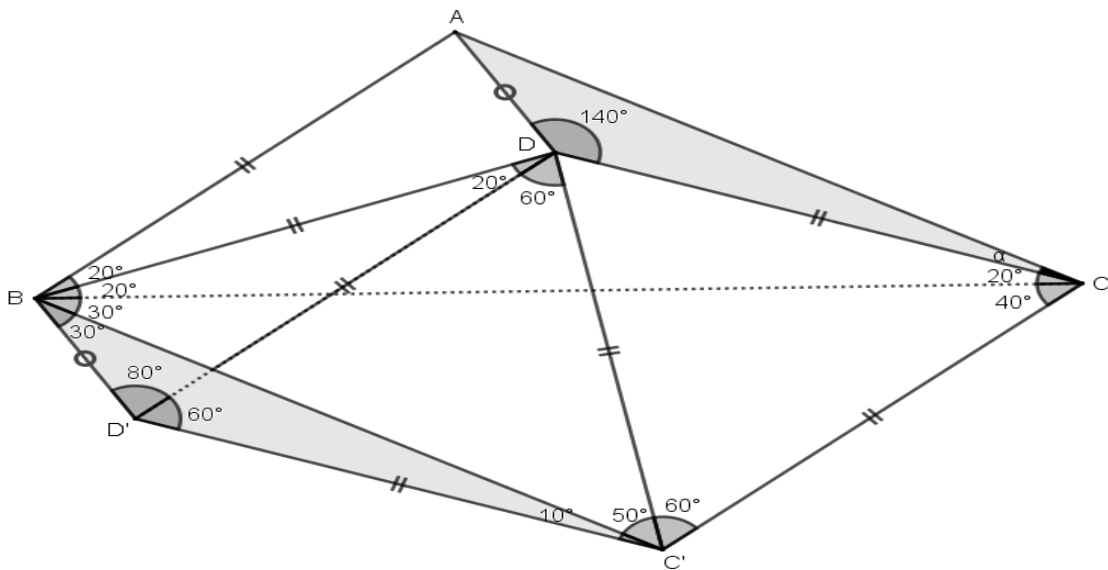
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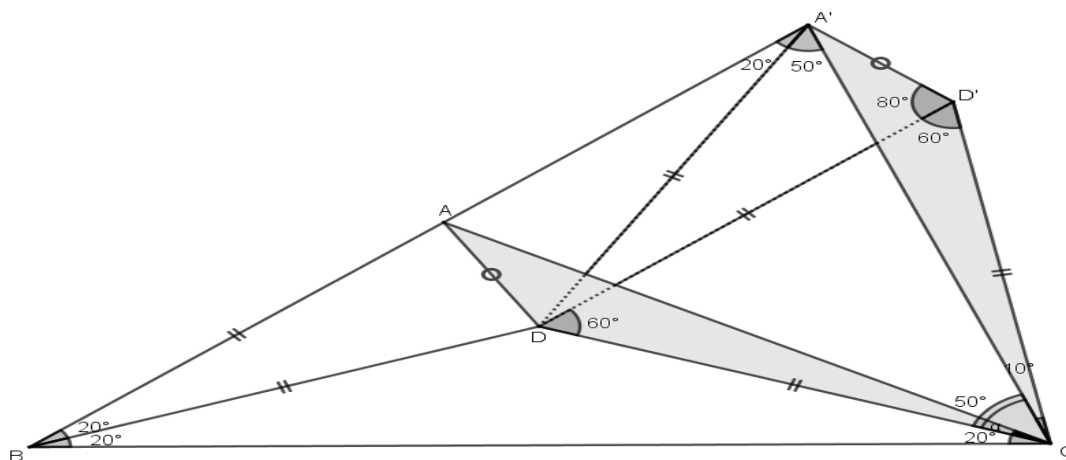
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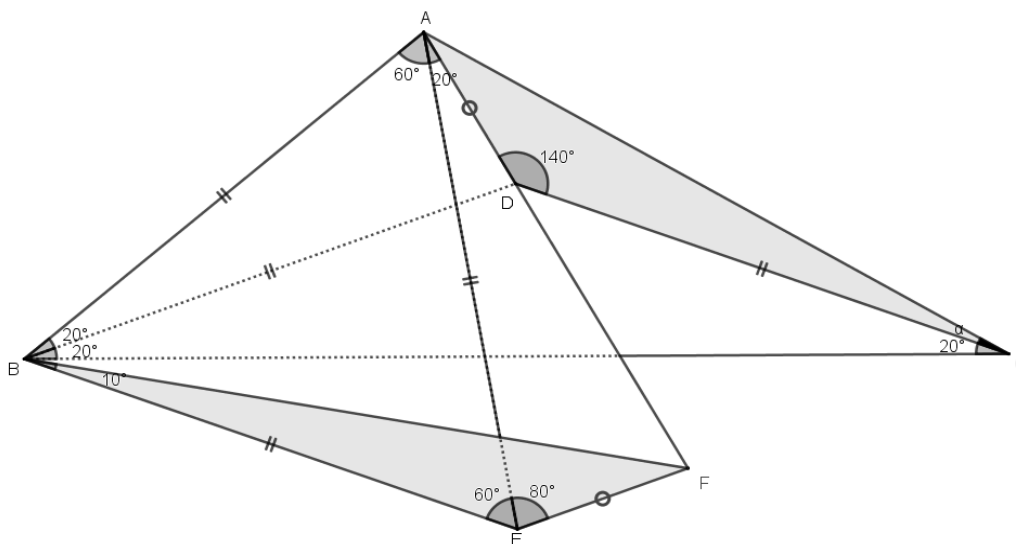
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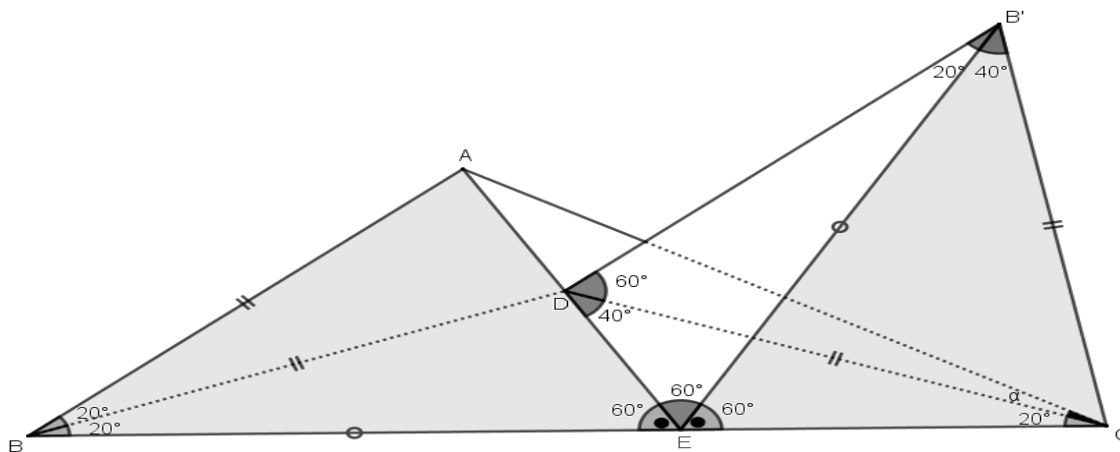
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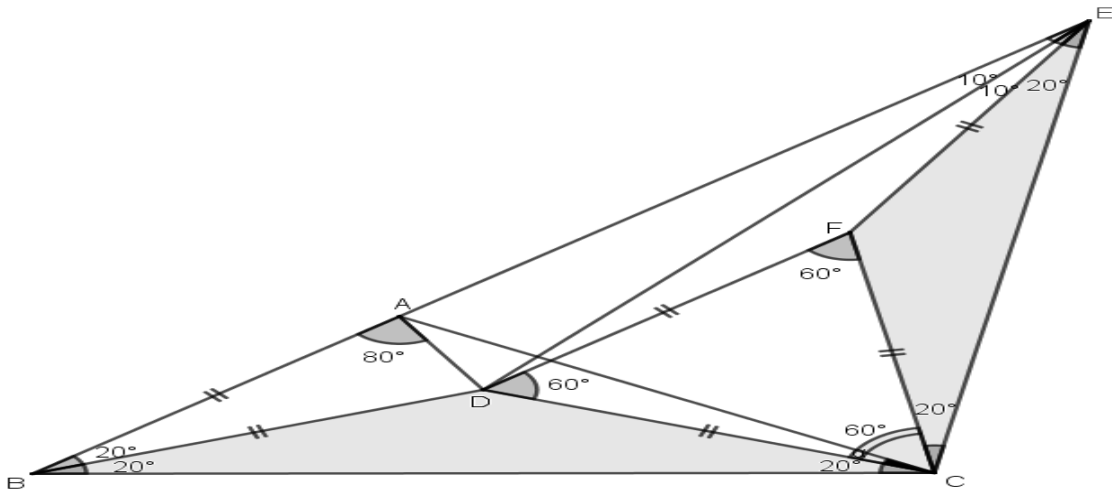
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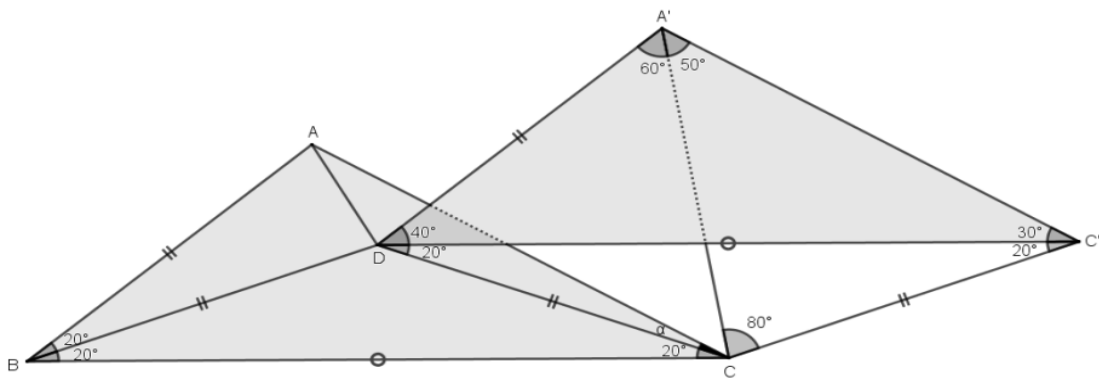
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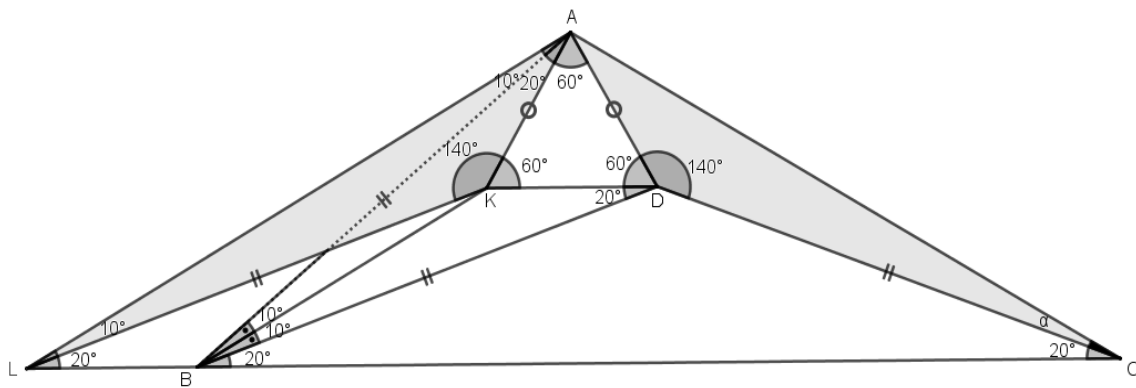
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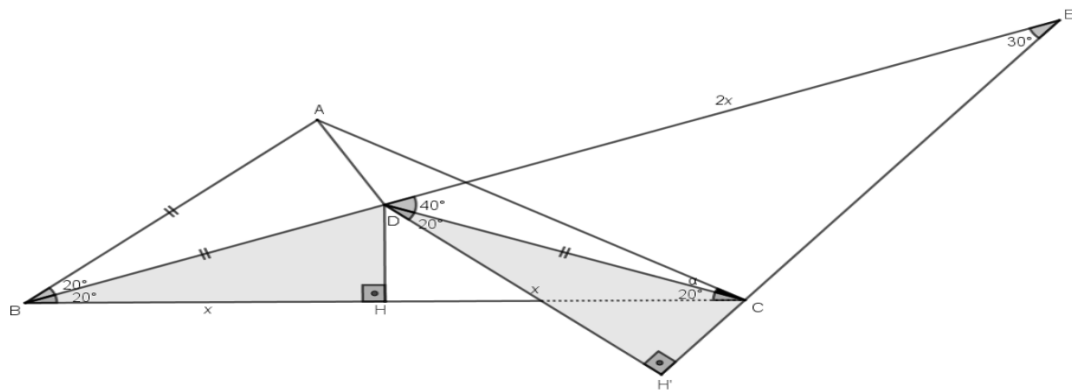
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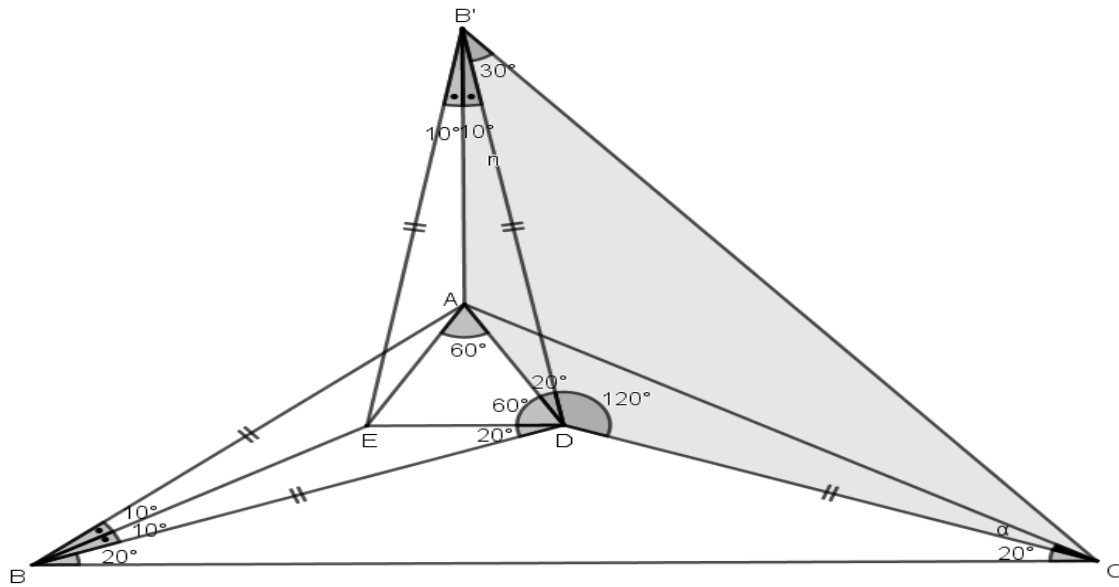
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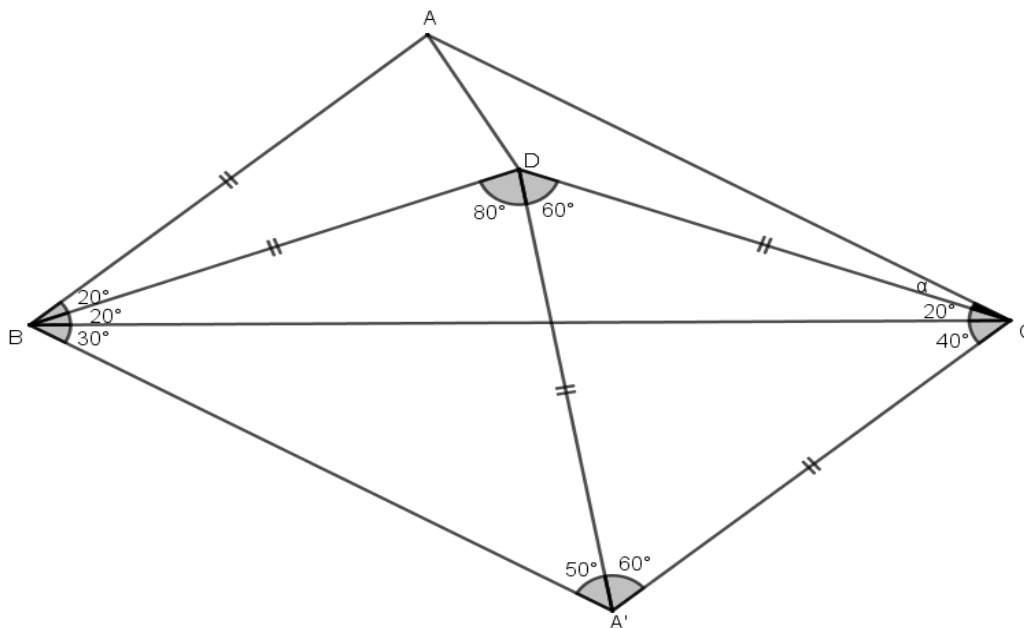
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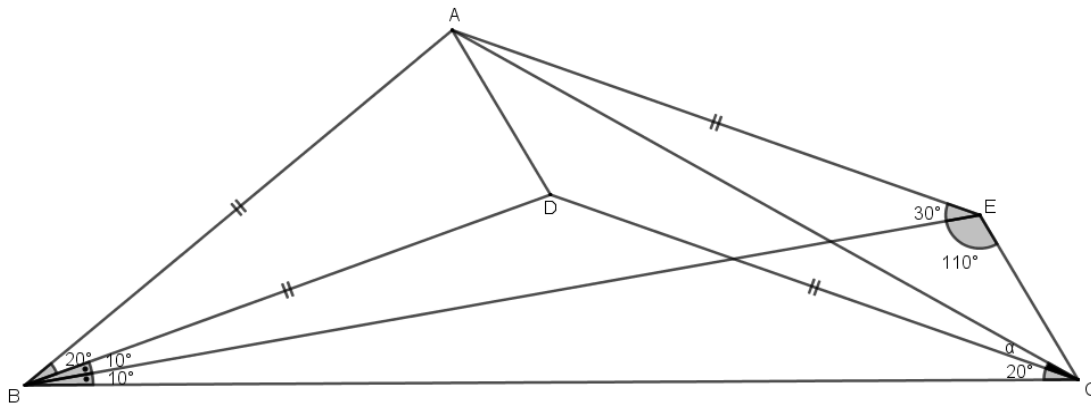
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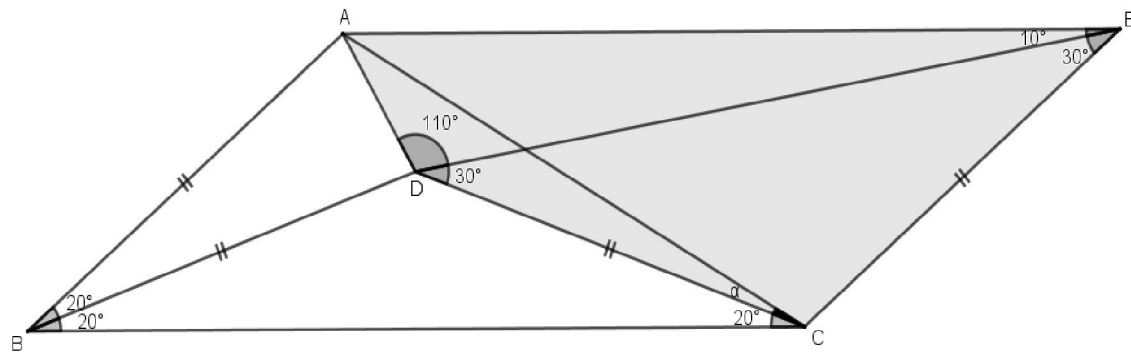
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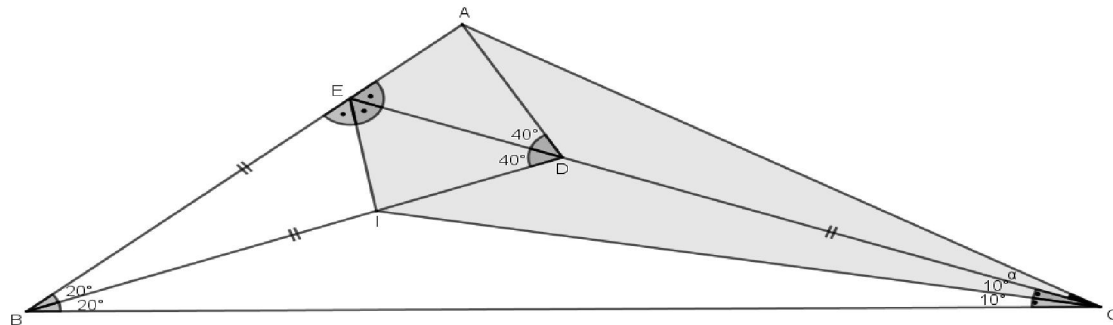
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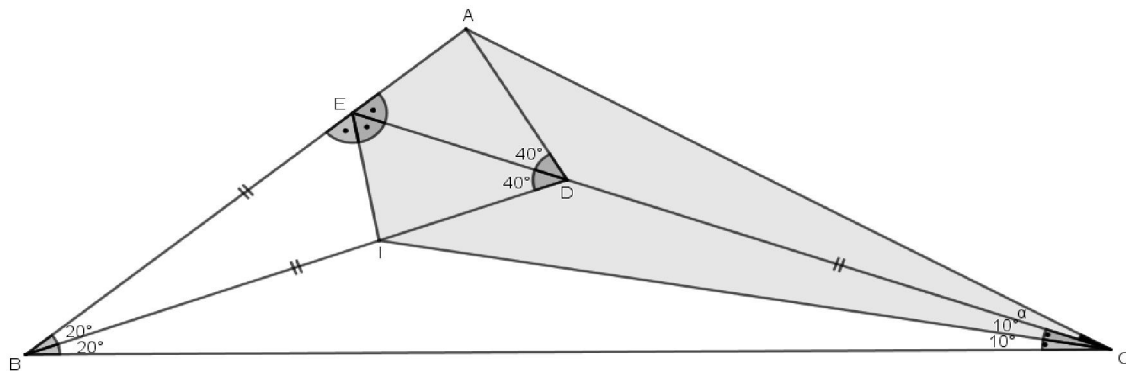
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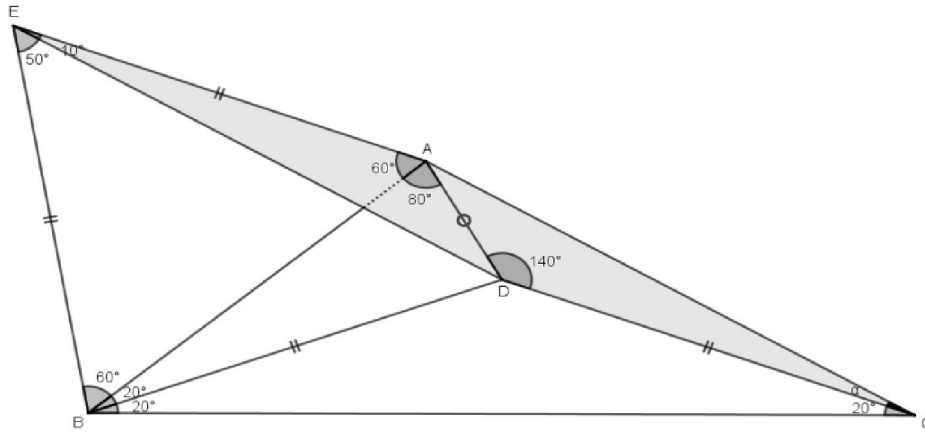
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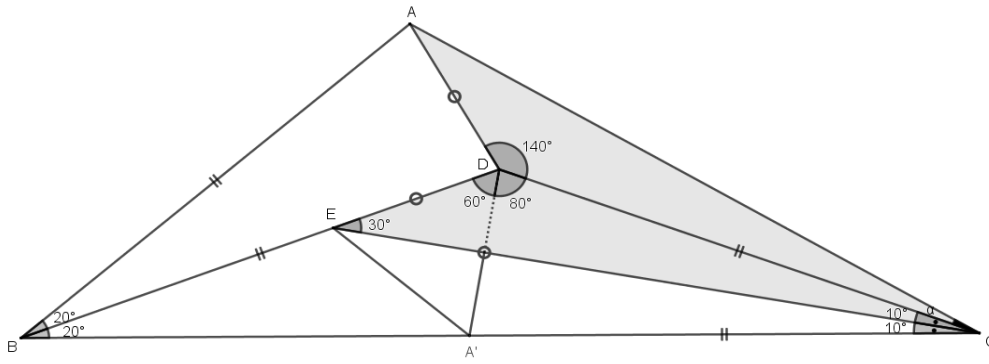
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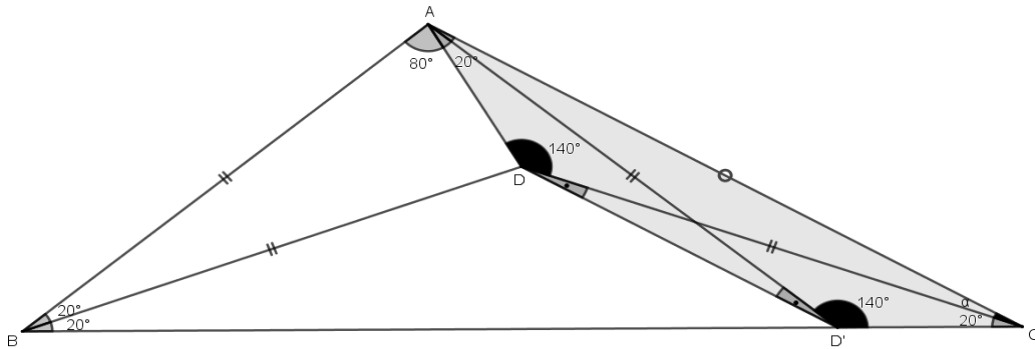
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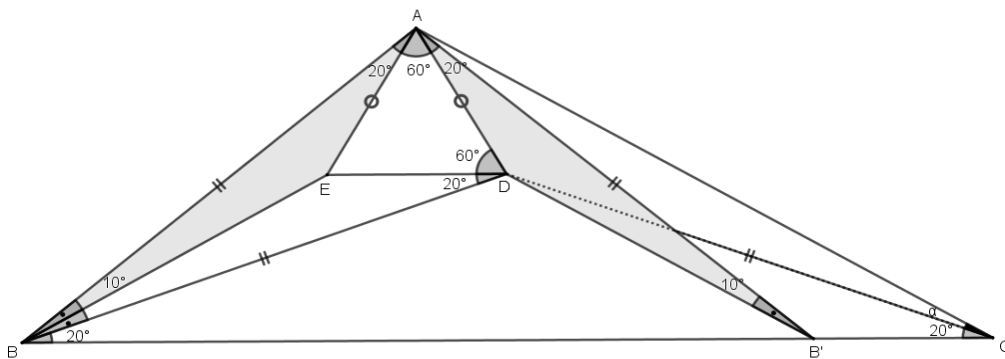
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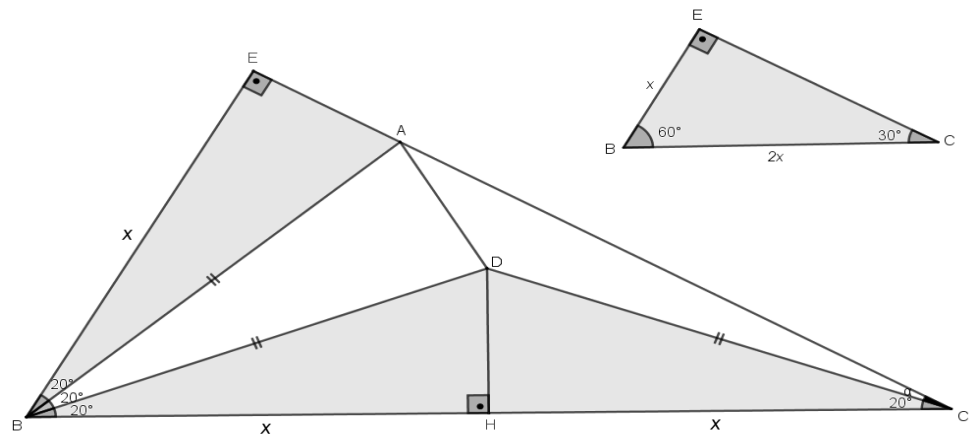
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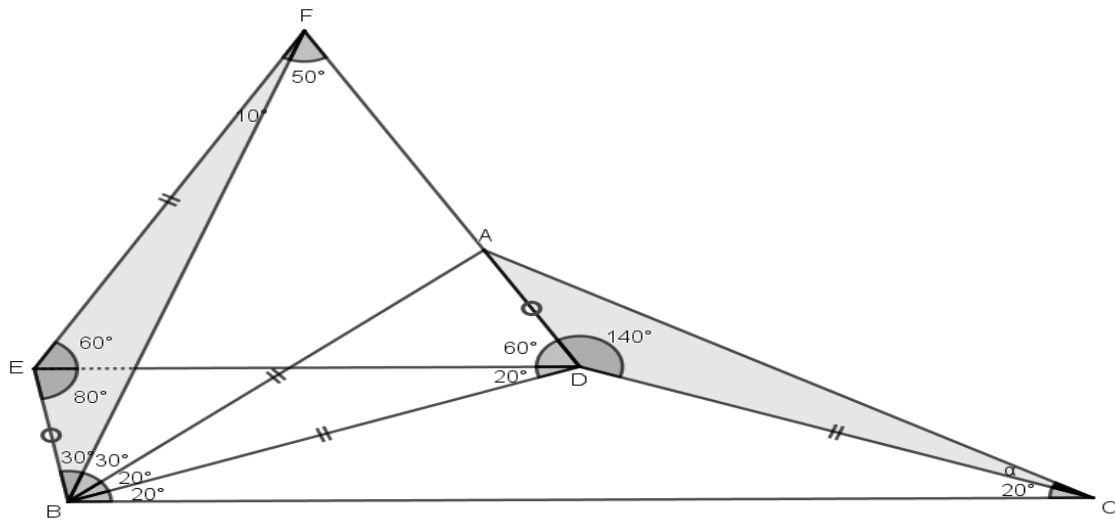
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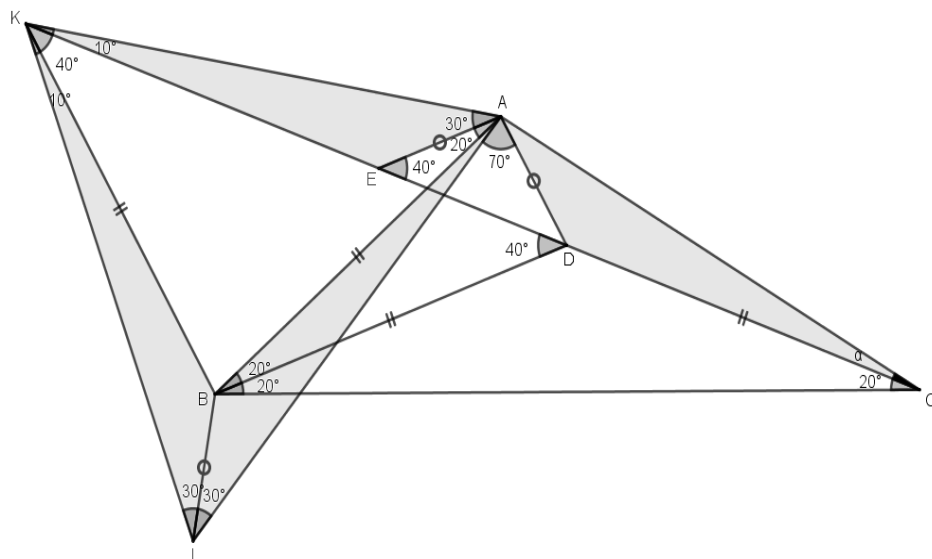
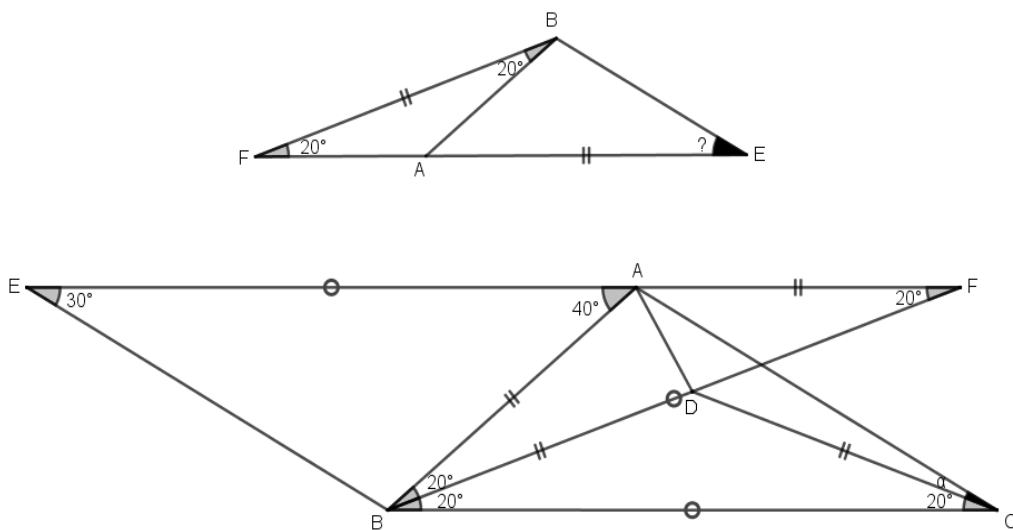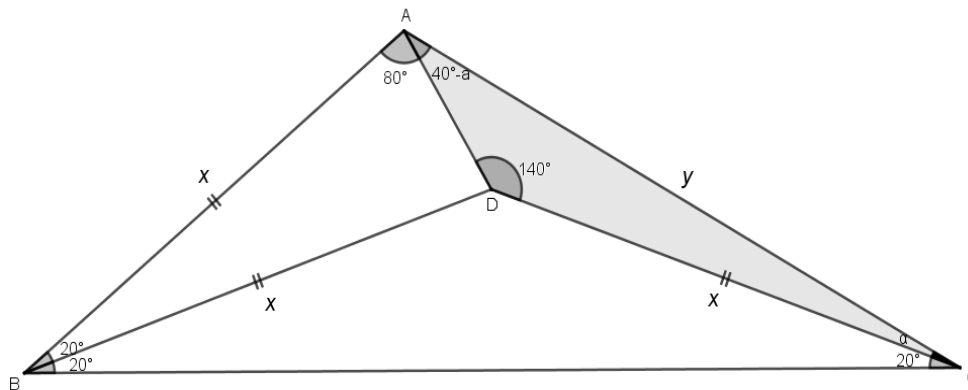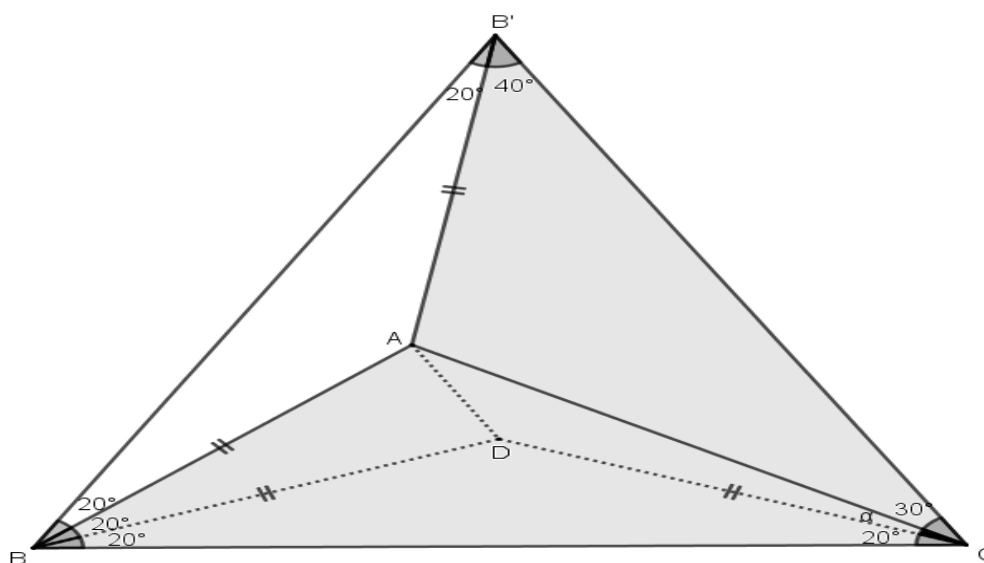### 3.2.25 Solutions:
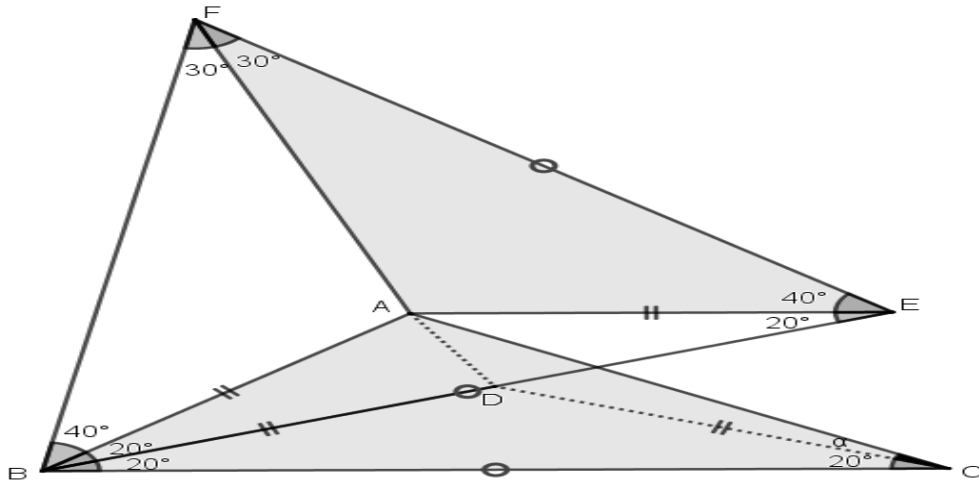
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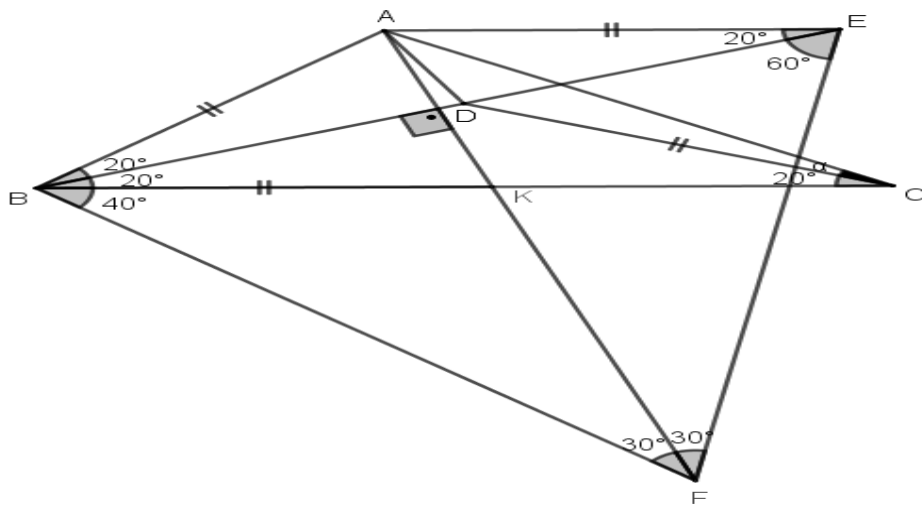
3.2.27 Solutions:

3.2.28 Solutions:

3.2.29 Solutions:

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