# Special lines in a triangle	Season	1
	Episode	AP02
	Time frame	1 period

Prerequisites : Knowledge of the special lines and points in a triangle in French.

Objectives :
- Review the special lines and points in a triangle.
- Learn the specific vocabulary.

Materials :
- *Matching cards with figures and words.*
- *Task sheet for the computer work.*

1 – Matching and writing definitions game — 15 mins

Students are handed out cards with either a word or a picture. They mingle to find their match and then work in pairs to write a definition of their word. Definitions are then gathered by the teacher to be handed out to the class later.

2 – Work with Geogebra — 40 mins

Students, still working in pairs, discover Geogebra and use it to draw all the special points and lines in a triangle, using appropriate colors.

Special lines in a triangle	Season Episode Document	1 AP02 ICT worksheet

Geogebra is a free software specifically designed to provide "Dynamic mathematics for schools". It is centered on geometry but can also be used to handle functions, parameters and computations.
Geogebra is very user-friendly, each icon offering a series of options when the user clicks on the small triangle on the bottom-right corner. Here are just a few instructions and tips.

- Geogebra is multilingual. When used in the Euro maths sessions, it will always have to be set to English, following the path `Options>Langue>English (UK)`.
- You can choose to view the Algebra Window, the axes and the grid in the View menu (Affichage in French).
- To move the whole drawing pad, use the mouse while hodling the MAJ or CTRL key.
- To zoom in and out, use the scroll wheel on the mouse.

You can download Geogebra and install it free of charge from the following website :

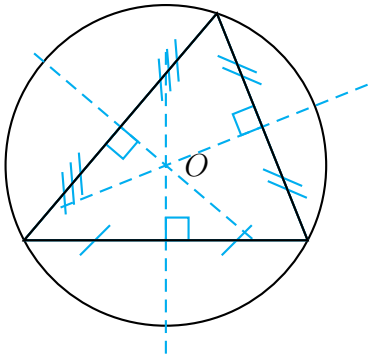
`http://www.geogebra.org/download/install.htm`

1. Use GeoGebra to draw a large triangle ABC and the points K, J and I, respective midpoints of the sides AB, AC and BC. Then, use the tools available to draw precisely :
   (a) the perpendicular bisectors in black ;
   (b) the medians in blue ;
   (c) the altitudes in green ;
   (d) the angular bisectors in grey.
2. Use these lines to build the following special points :
   (a) the center of the circumcircle O ;
   (b) the centroid or center of gravity G ;
   (c) the orthocenter H ;
   (d) the center of the incircle P.
3. What do you notice about these points and lines in a right-angled triangle ?
4. What do you notice about these points and lines in an isosceles triangle ?
5. What do you notice about these points and lines in an equilateral triangle ?

Special lines in a triangle	Season 1 Episode AP02 Document Glossary

Perpendicular bisector

Definition by .....

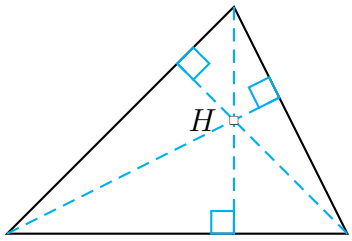


Center of the circumcircle

Definition by .....

Altitude

Definition by .....

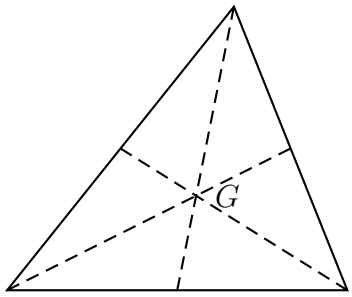


Orthocenter

Definition by .....

Median

Definition by .....



Center of gravity

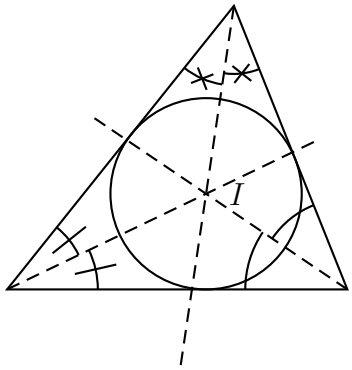
Definition by .....

Angular bisector

Definition by .....

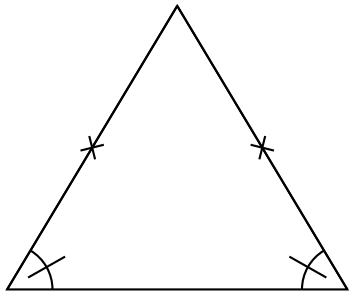
Center of the inside circle

Definition by .....



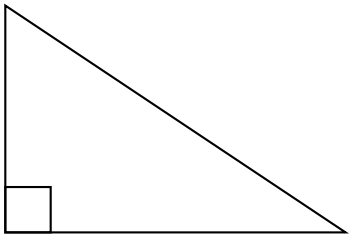
Isosceles triangle

Definition by .....



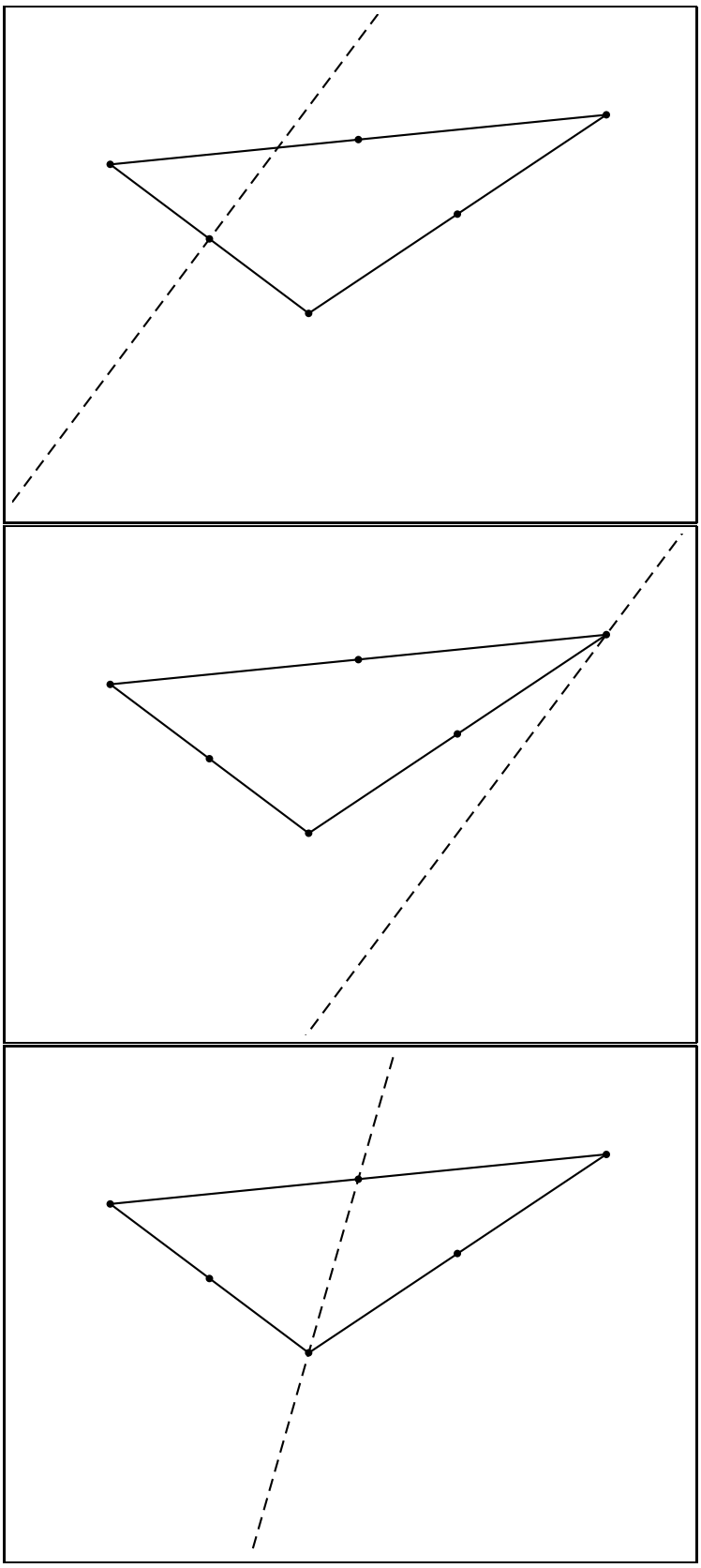
Right-angled triangle

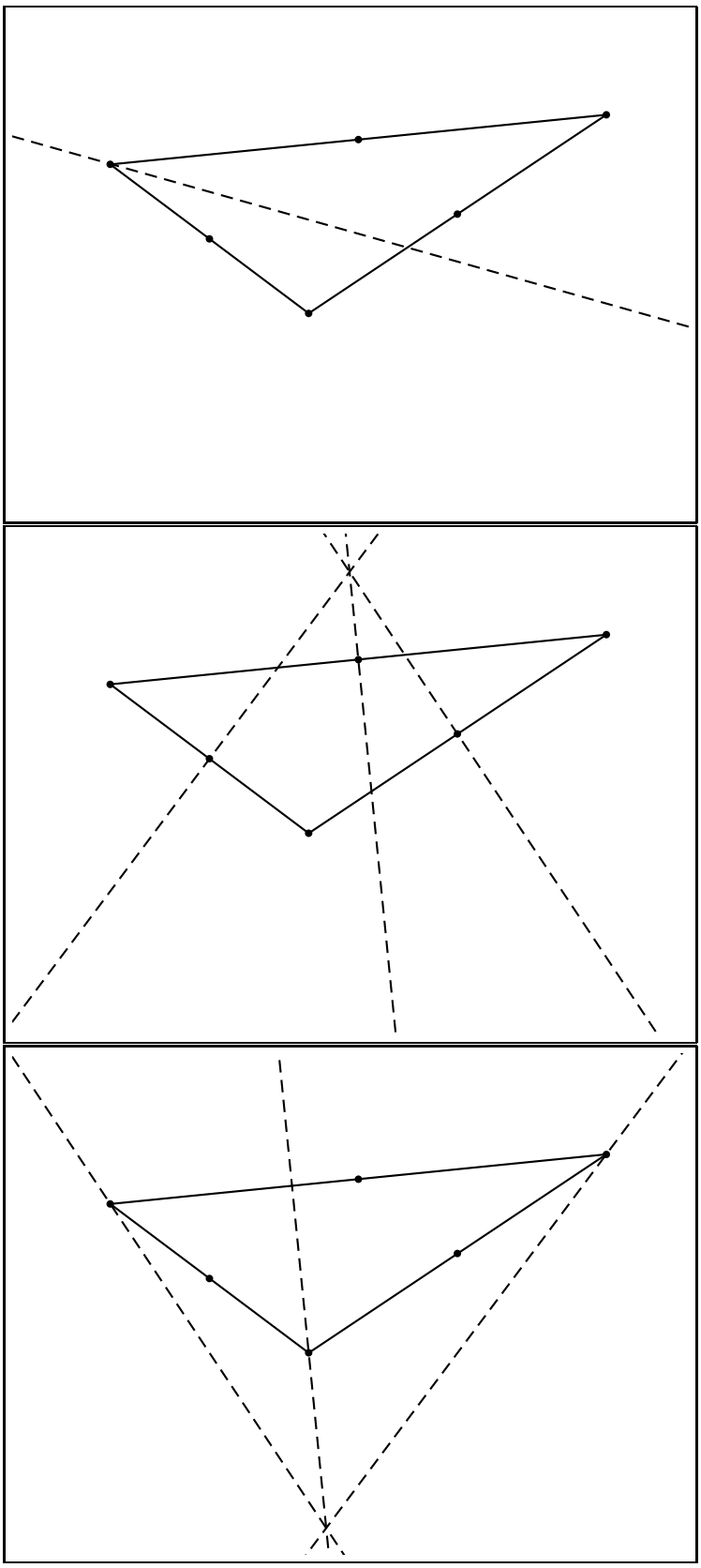
Definition by .....

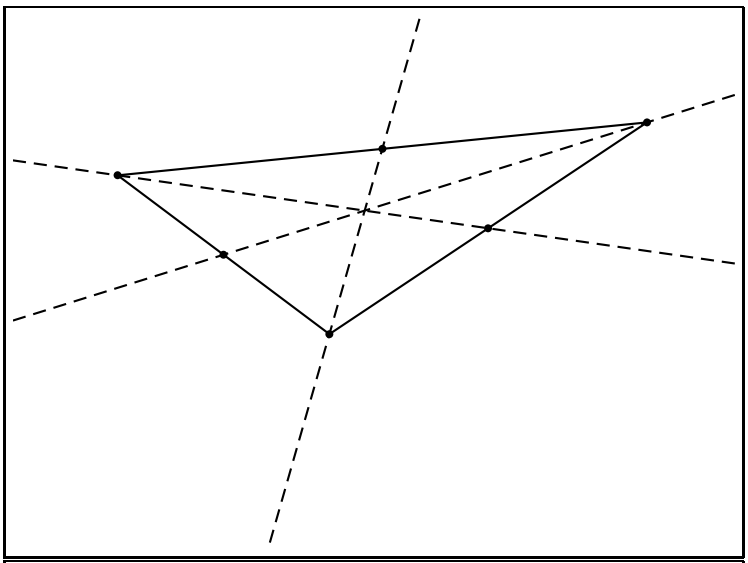


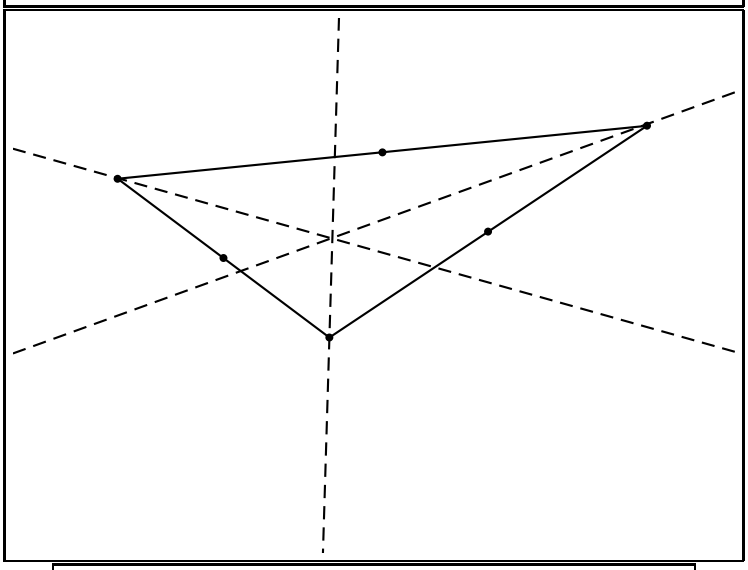
Document 1 Matching cards

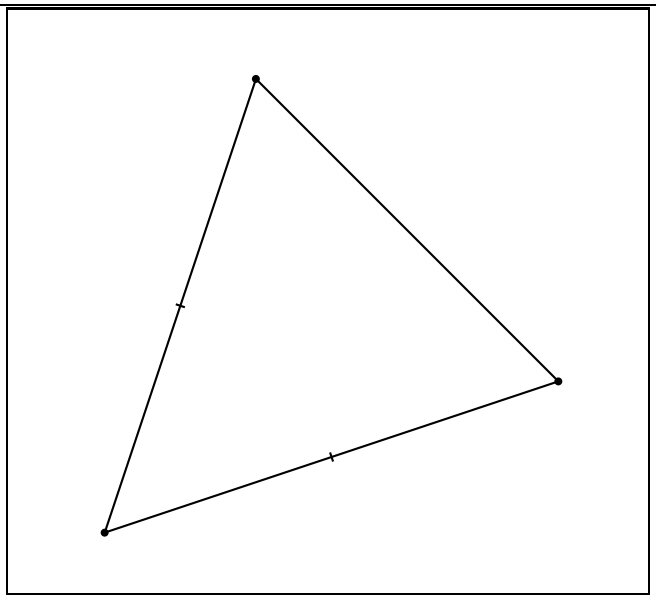
Perpendicular bisector
Altitude
Median
Angular bisector
Center of the circumcircle
Orthocenter
Center of gravity
Center of the inside circle
Isosceles triangle
Right-angled triangle

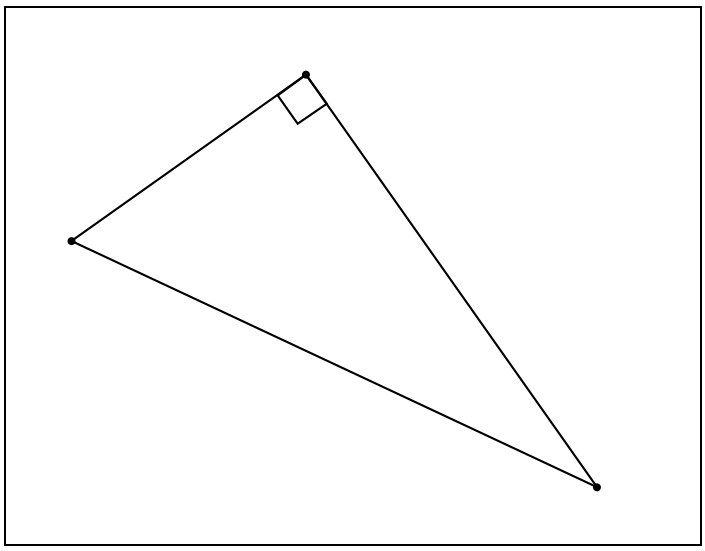










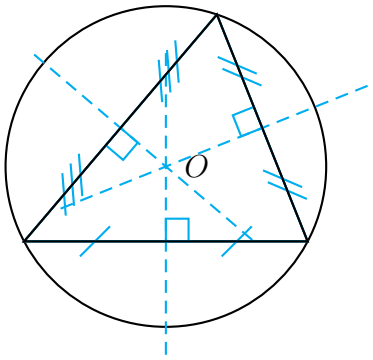


Special lines in a triangle	Season	1
	Episode	03
	Document	Glossary

All of this definitions come from http://en.wikipedia.org/wiki/Triangle

Perpendicular bisector

A perpendicular bisector of a side of a triangle is a straight line passing through the midpoint of the side and being perpendicular to it.
The perpendicular bisector of a segment also has the property that each of its points is equidistant from the endpoints of the segment.

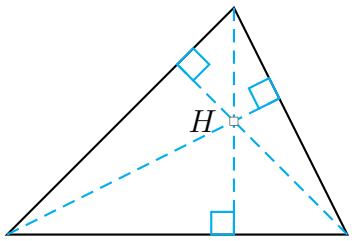


Center of the circumcircle

The three perpendicular bisectors meet in a single point, the triangle's circumcenter; this point is the center of the circumcircle, the circle passing through all three vertices.

Altitude

An altitude of a triangle is a straight line passing through a vertex and perpendicular to (i.e. forming a right angle with) the opposite side or an extension of the opposite side.

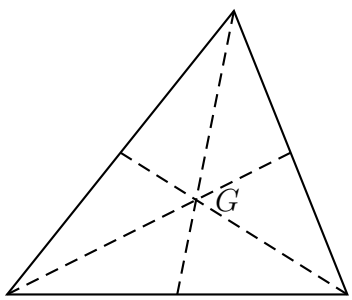


Orthocenter

The three altitudes intersect in a single point, called the orthocenter of the triangle.

Median

A median of a triangle is a straight line passing through a vertex and the midpoint of the opposite side, and divides the triangle into two equal areas.

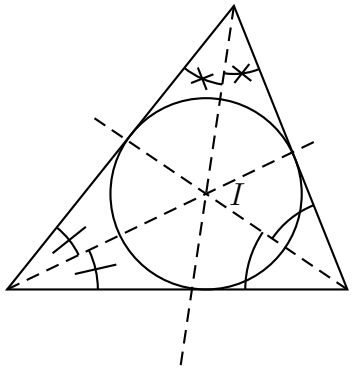


Center of gravity

The three medians intersect in a single point, the center of gravity of the triangle.

Angular bisector

An angular bisector of a triangle is a straight line through a vertex which cuts the corresponding angle in half.

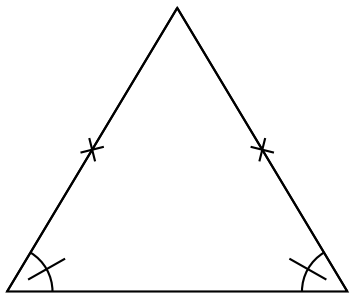


Center of the inside circle

The three angular bisectors intersect in a single point, the incenter, the center of the triangle's incircle.

Isosceles triangle

In an isosceles triangle, two sides are equal in length. An isosceles triangle also has two angles of the same measure.



Right-angled triangle

A right triangle (or right-angled triangle, formerly called a rectangled triangle) has one of its interior angles measuring 90^o (a right angle).
The side opposite to the right angle is the hypotenuse ; it is the longest side of the right triangle. The other two sides are called the legs of the triangle.