



# Maths Points

Junior and Leaving Cert

# CONSTRUCTIONS

LEAVING CERT HIGHER LEVEL

**This PowerPoint is a Preview only. All solutions available as full member.**

# Leaving Certificate Higher Level – Constructions



1. Bisector of a given angle, using only compass and straight edge.

2. Perpendicular bisector of a segment, using only compass and straight edge.

3. Line perpendicular to a given line  $l$ , passing through a given point not on  $l$ .

4. Line perpendicular to a given line  $l$ , passing through a given point on  $l$ .

5. Line parallel to given line, through given point.

6. Division of a segment into 2, 3 equal segments, without measuring it.

7. Division of a segment into any number of equal segments, without measuring it.

8. Line segment of given length on a given ray.

9. Angle of given number of degrees with a given ray as one arm.

10. Triangle, given lengths of three sides.

11. Triangle, given SAS data. (Side Angle Side)

12. Triangle, given ASA data. (Angle Side Angle)

13. Right-angled triangle, given the length of the hypotenuse and one other side.

14. Right-angled triangle, given one side and one of the acute angles.

15. Rectangle, given side lengths.

16. Circumcentre and circumcircle of a given triangle, using only straight-edge and compass.

17. Incentre and incircle of a given triangle, using only straight-edge and compass.

18. Angle of  $60^\circ$ , without using a protractor or set square.

19. Tangent to a given circle at a given point on it.

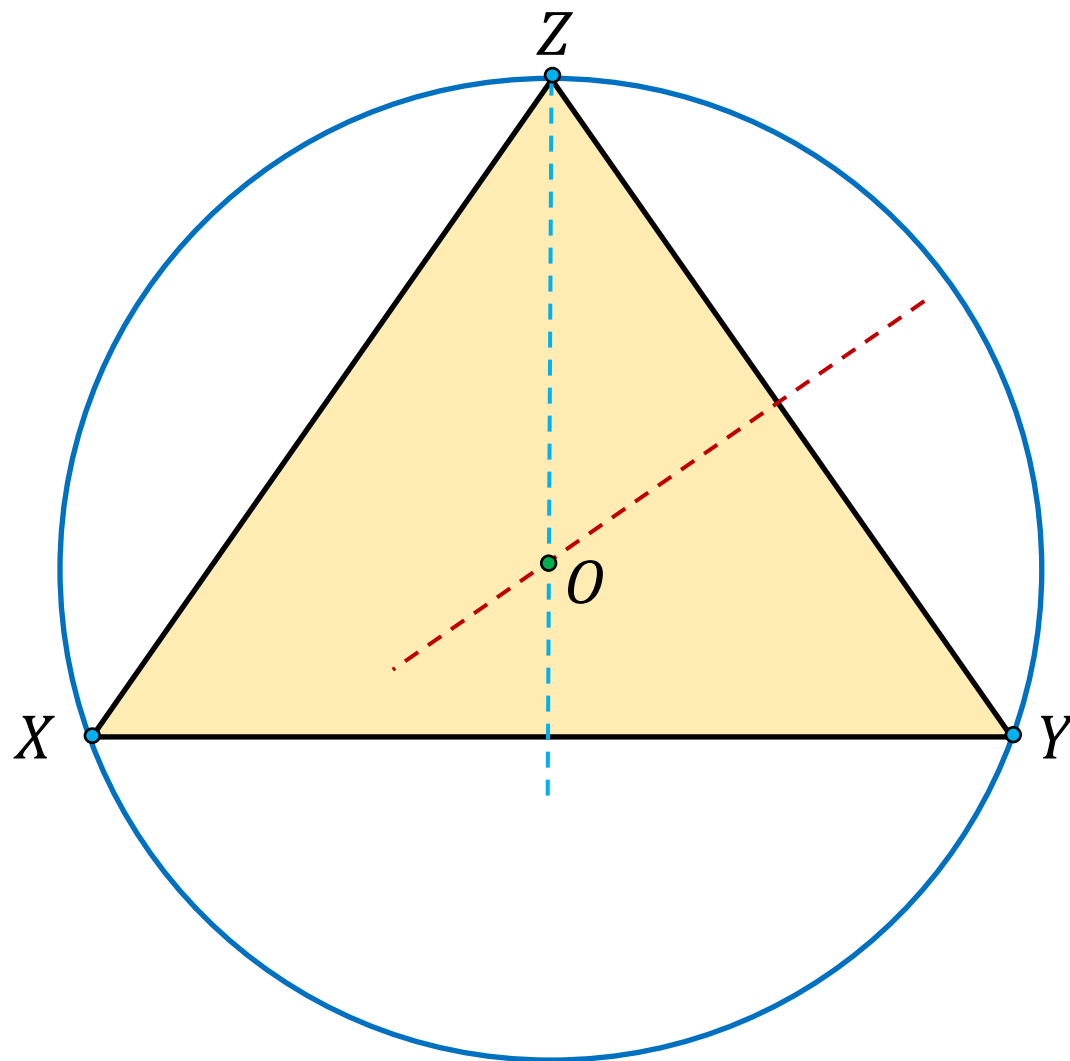
20. Parallelogram, given the length of the sides and the measure of the angles.

21. Centroid of a triangle.

22. Orthocentre of a Triangle

### Steps

1. Construct the perpendicular bisector of  $[XY]$ .
2. Construct the perpendicular bisector of  $[YZ]$ .
3. Mark the point of intersection of the 2 bisectors. Label it  $O$ . This is the circumcentre of the circle.
4. Using  $O$  as the centre and a compass of radius  $|OZ|$ , draw the circumcircle of the triangle.



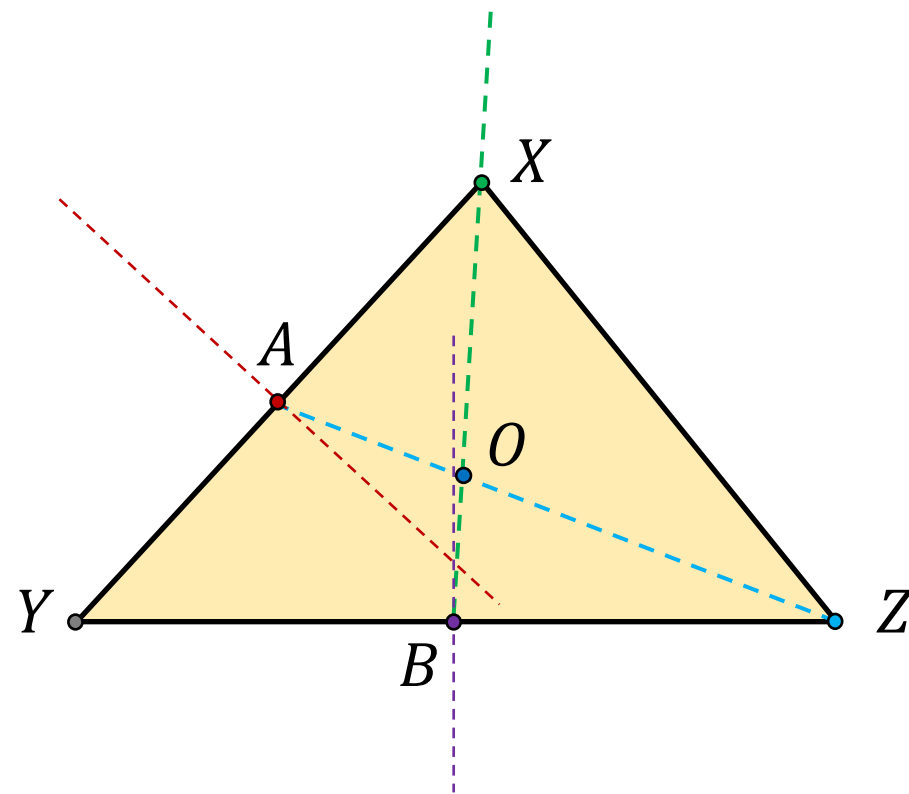
For 1 and 2 we need to bisect the line using the method outlined in Construction 2.

Asked in 2022 and 2010 NCCA Sample

## Steps

1. Construct the **midpoint**  $B$ , of  $[YZ]$
2. Construct the **median**  $[BX]$  by joining  $B$  to  $X$ .
3. Construct the **midpoint**  $A$ , of  $[XY]$
4. Construct the **median**  $[AZ]$  by joining  $A$  to  $Z$ .
5. The point where **these two medians meet** is the **centroid** of the triangle  $O$ .

For 1 and 3 we need to bisect the line using the method outlined in Construction 2 (this will find the midpoint).



Asked in 2015



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