

Mathematics and Art Activity

Worksheet: Exploring Geometry and Angles of Standard Timber Roof Truss Structures with GeoGebra

Goal: To enable Maths educators to construct and explore standard timber roof truss structures in relation to geometry results in the CAPS mathematics curriculum .

Relevant Maths Keywords and Concepts:

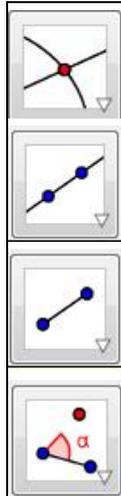
Right triangle, Isosceles Triangle, Equilateral Triangle, Symmetry Axis, Complimentary Angle.

Activity Instructions

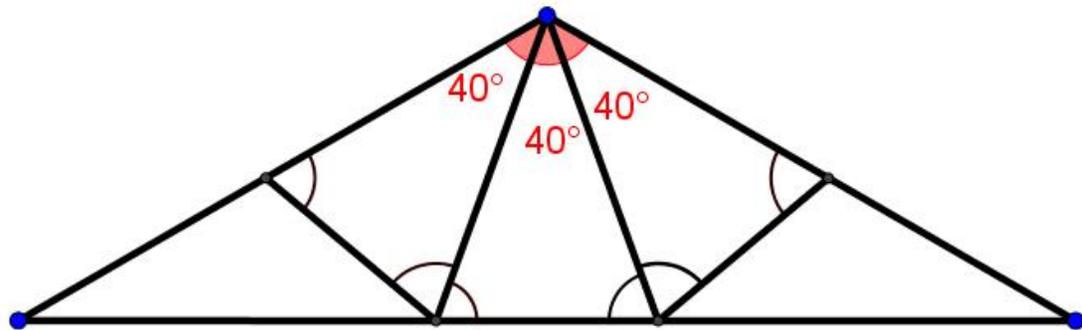
All timber truss structures below have a total top peak angle of 120 degrees and are symmetric w.r.t. a vertical line through the top peak. Equal angles are also indicated.

For each Truss structure:

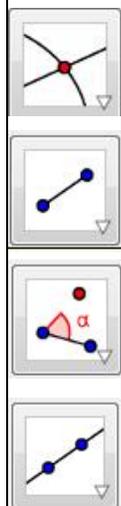
- Complete each diagram by filling in all internal angles
- Construct each of the truss structures with GeoGebra and confirm the values of all internal angles by using the GeoGebra angle measuring tool



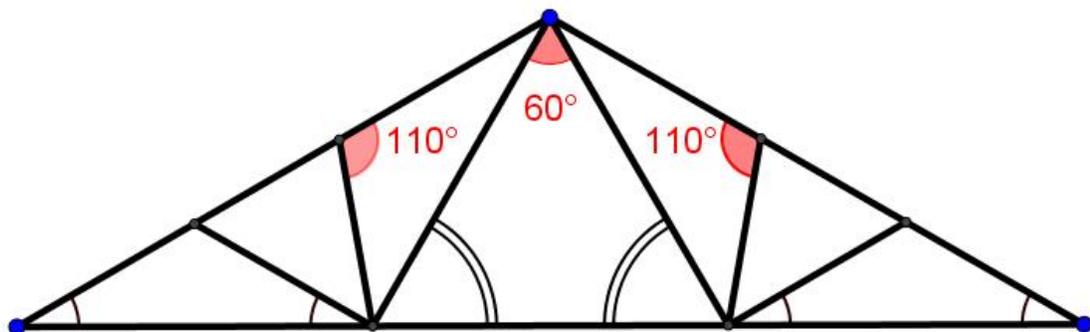
1. Identify all the internal angles for the **Fink Truss Timber Roof Structure**. Use the tools showed in the column on the left to construct this structure in GeoGebra.

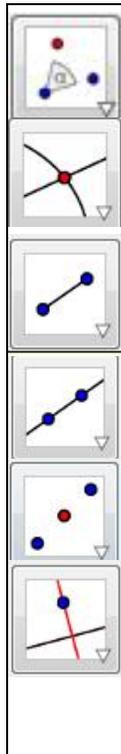


Note: There are different ways to construct this Truss in GeoGebra with combinations of different Tools!!!

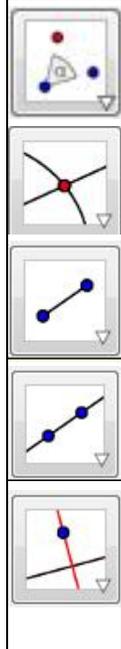
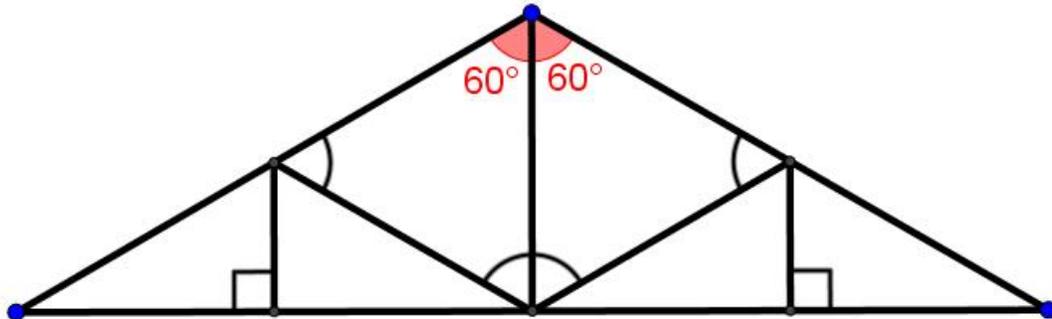


2. Identify all the internal angles for the **Fan Timber Truss Roof Structure**. Use the tools showed in the column on the left to construct this structure in GeoGebra.





3. Identify all the internal angles for the **Howe Timber Roof Truss Structure**. Use the tools showed in the column on the left to construct this structure in GeoGebra.



4. Identify all the internal angles for the **Double W Timber Roof Truss Structure**. Use the tools showed in the column on the left to construct this structure in GeoGebra

