

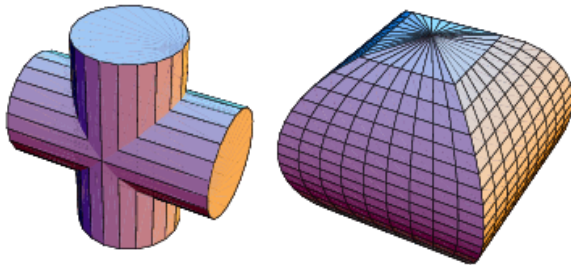
What shape is created when 2 cylinders intersect? - Teachers' Notes

Curriculum Links

This investigation supports Geometry achievement objectives at levels 4 ("Relate three-dimensional models to two-dimensional representations, and vice versa.") and 5 ("Create accurate nets for simple polyhedra and connect three-dimensional solids with different two-dimensional representations.")

Background

This investigation requires the student to create and then dissect a model in order to find out what is created by two identical intersecting cylinders. This shape is referred to as a Steinmetz solid or mouhefanggai (Chinese for "two square umbrellas").



<http://mathworld.wolfram.com/SteinmetzSolid.html>

A simple model for demonstration can be made with 2 square food umbrellas. Each half of the solid is referred to as a vault.



Suggestions

This investigation is enhanced when students have access to the internet to watch animated demonstrations or have access to digital drawing tools.

Once the first shape is investigated students should be encouraged to think of the practical applications and the structural properties of the shape.

Further investigation can be done by looking at the shapes created by 3 cylinders intersecting, or intersection at different angles, or even the intersection of different prisms.