

Method of Joints

Mechanical Engineering

Solving a pin-jointed truss one joint at a time.

Two equations per joint, so never start with three unknowns.

1

Find the reactions first

Treat the whole truss as one rigid body.

2

Pick a joint with two unknowns

Usually a support, or the free end of the truss.

3

Assume every member pulls

Arrows away from the joint. Tension then comes out positive.

4

Apply $\Sigma F_x = 0$ and $\Sigma F_y = 0$

Resolve each inclined member on its own real geometry.

5

Move to the next joint

Carry solved forces across; they keep their sign.

Assumes frictionless pins, straight two-force members and loads applied only at the joints.