

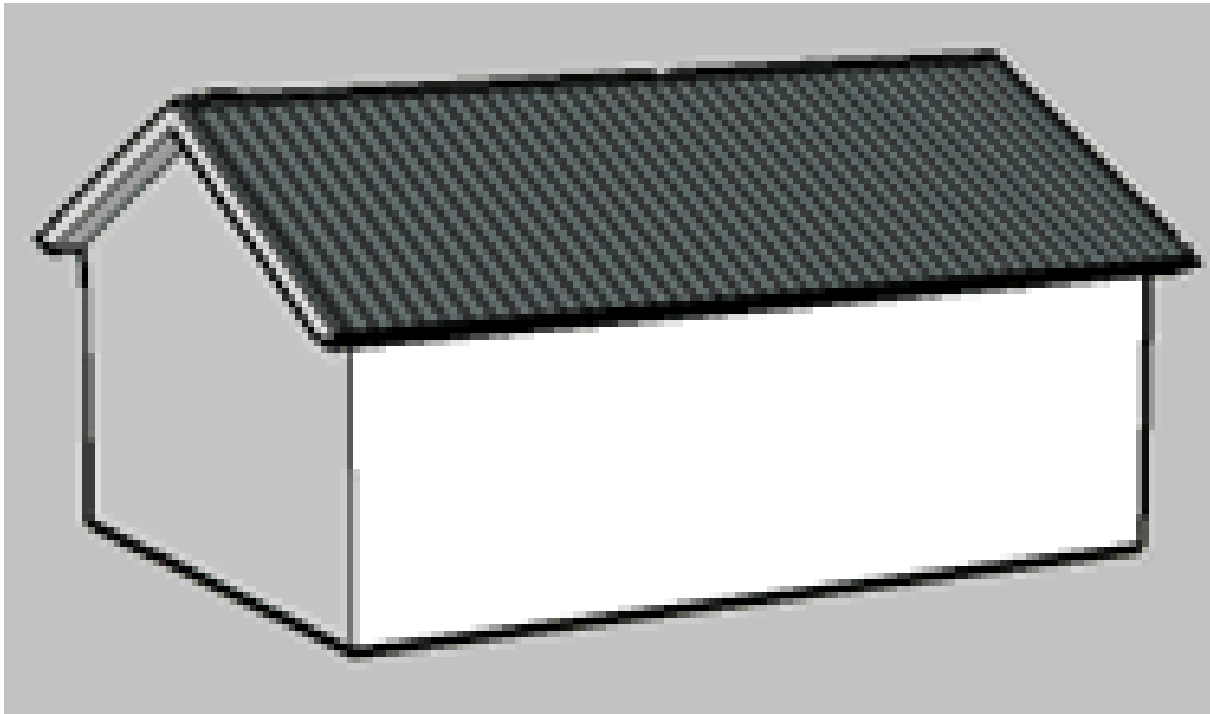
General Technology

Intro to Roof Systems

Unit on Construction

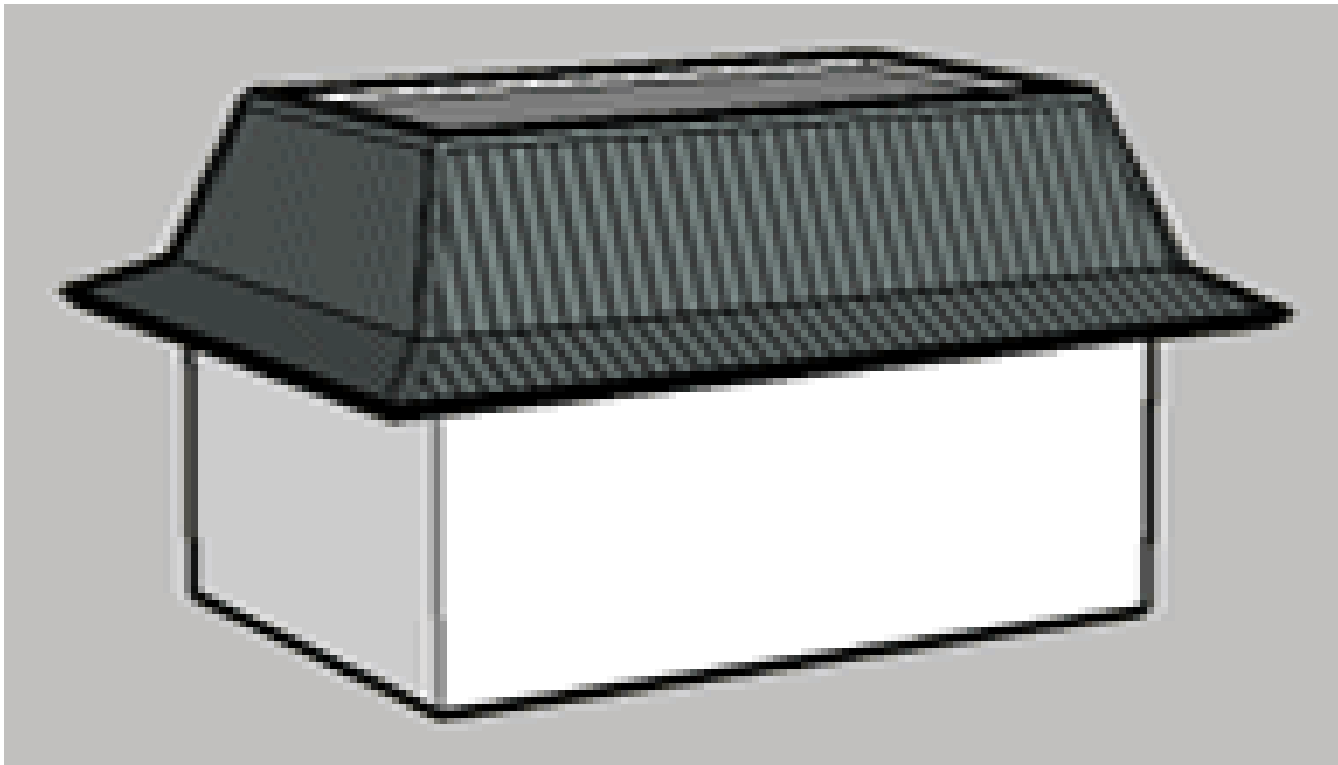
Types of roofs

Gable



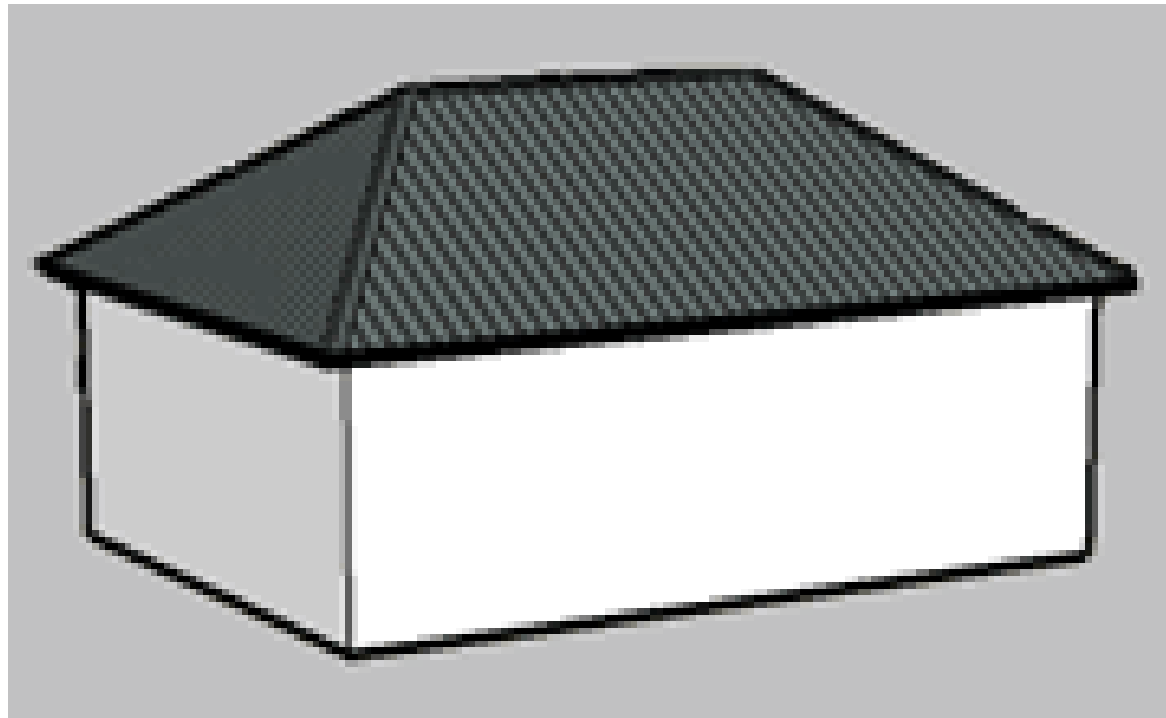
Types of roofs

Mansard



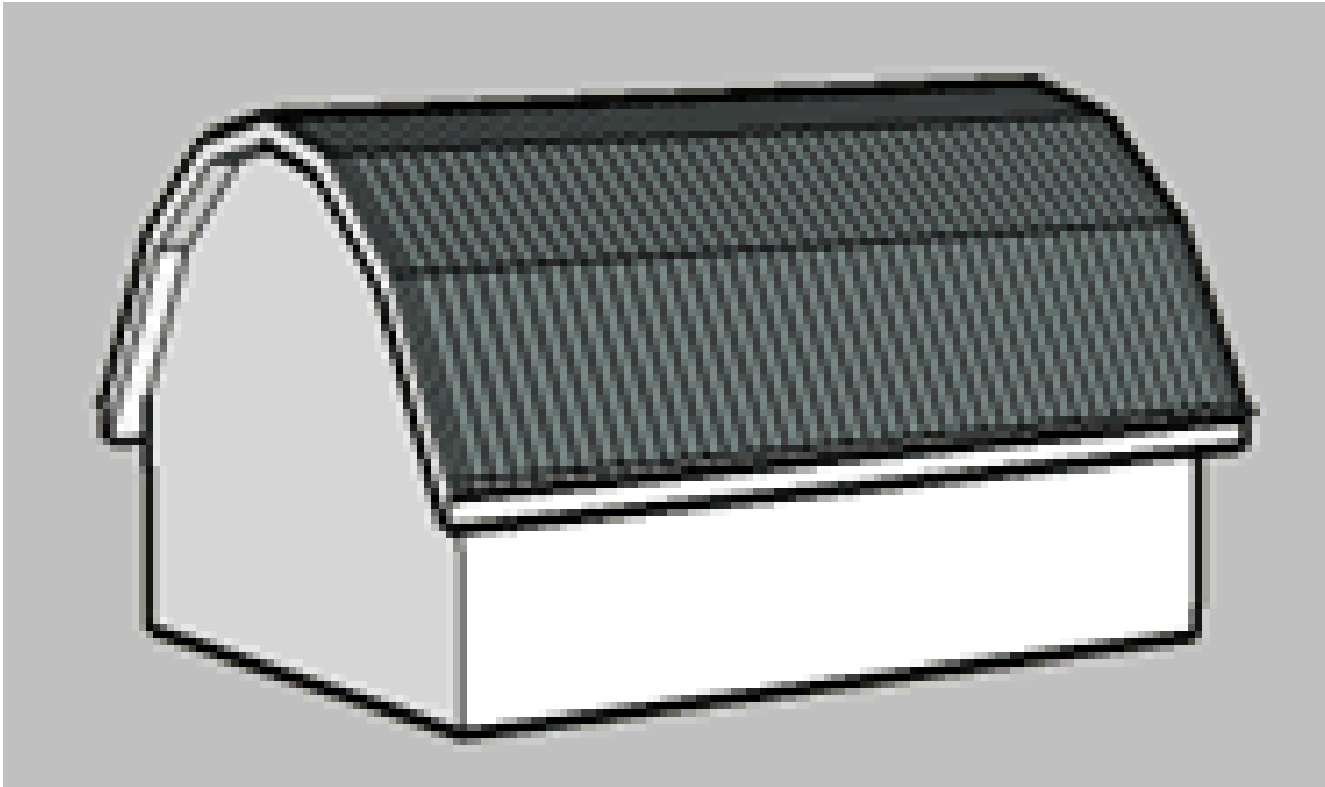
Types of roofs

Hip



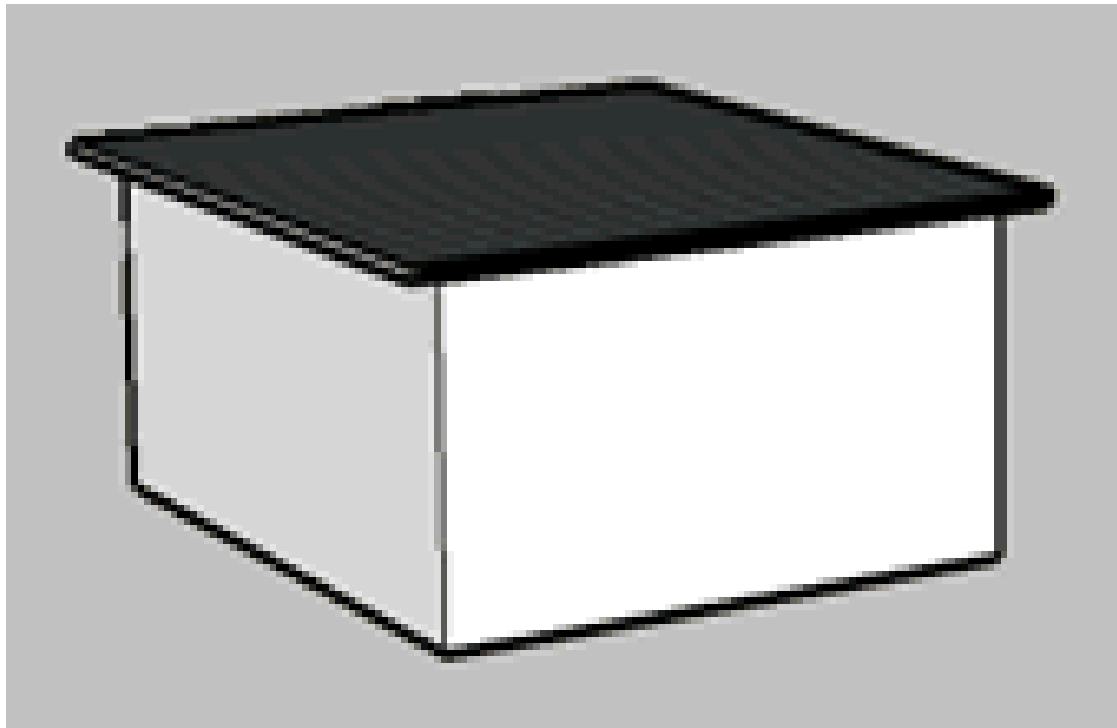
Types of roofs

Gambrel



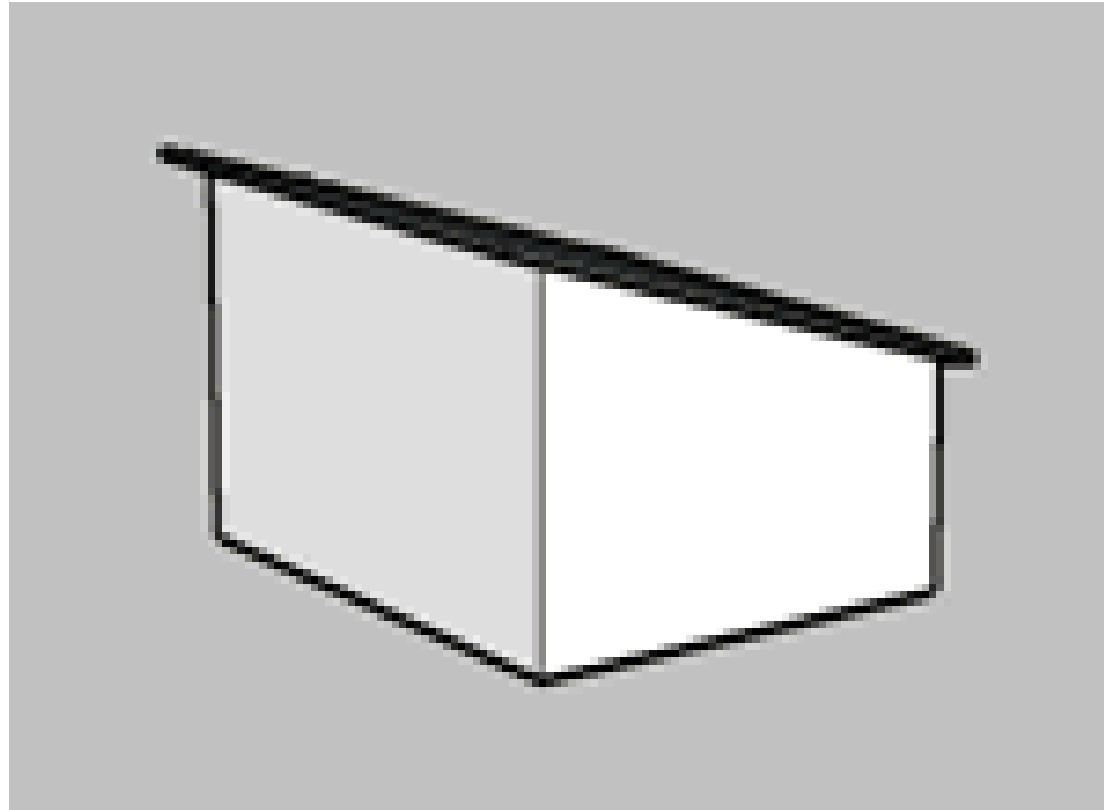
Types of roofs

Flat

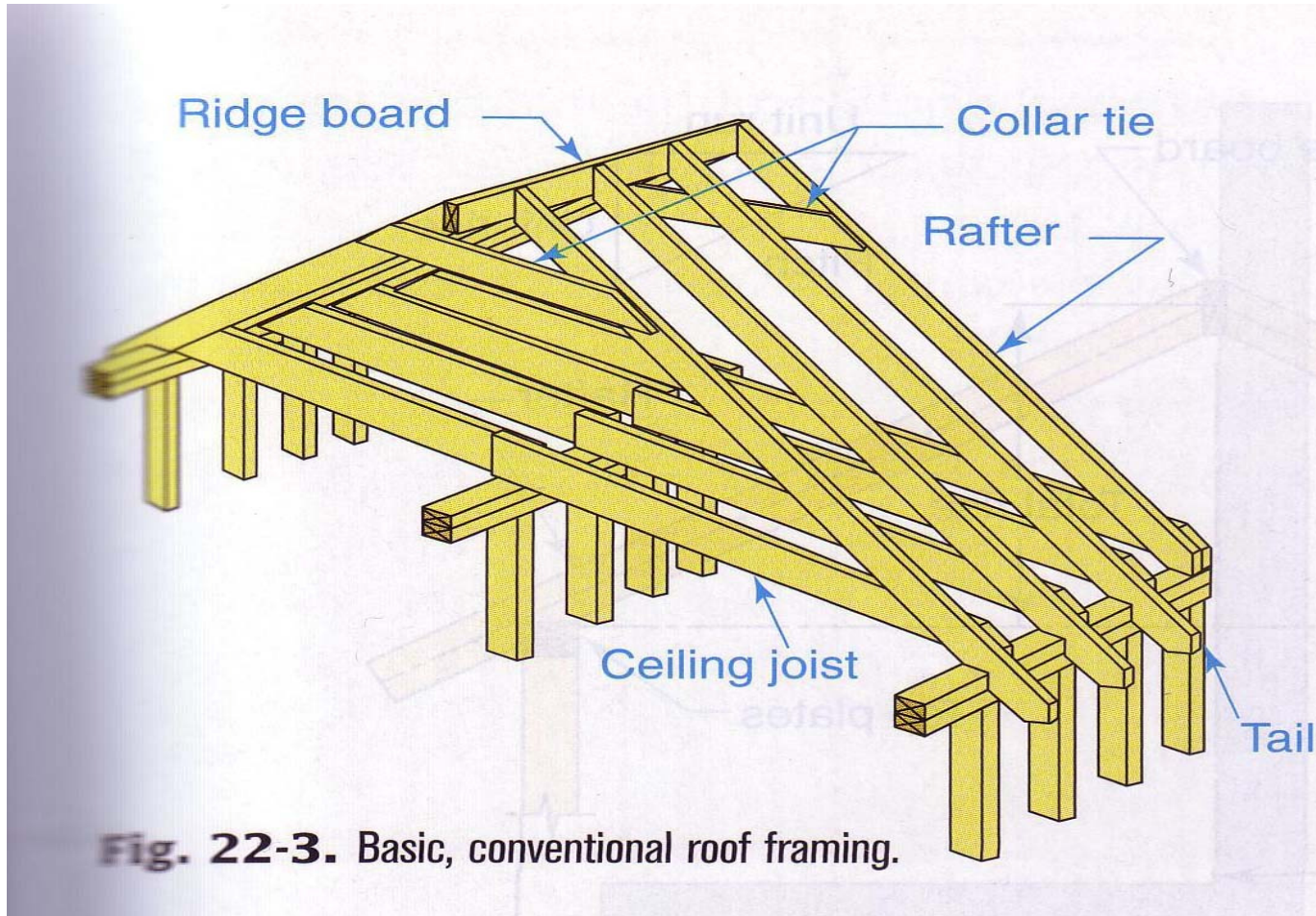


Types of roofs

Shed or Lean-to



Parts of a Standard Roof



Definition of parts

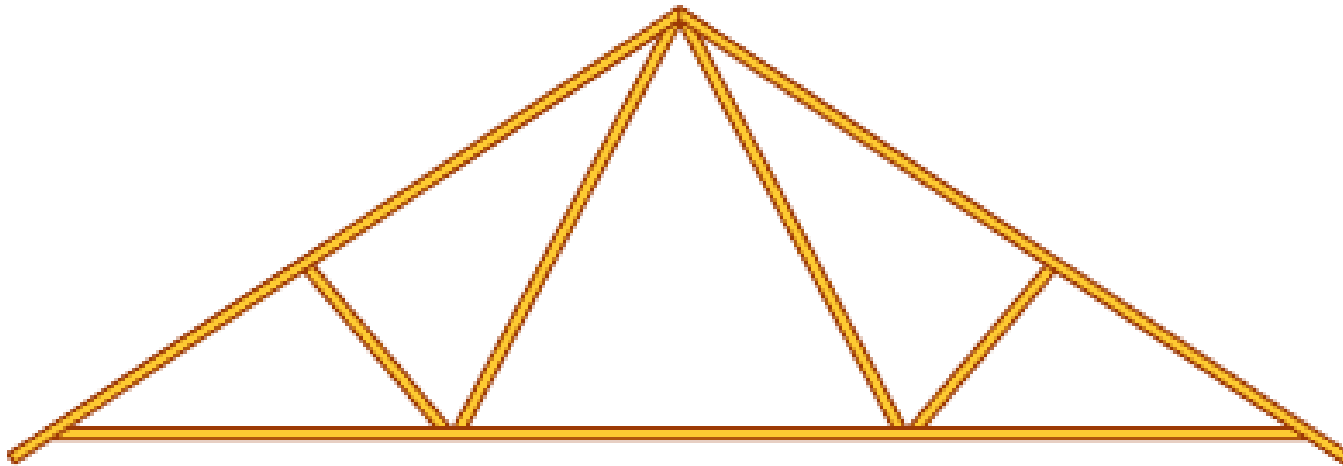
- Rafter- Incline member of roof extending from wall plate to ridge board
- Collar tie- Connects opposite pairs of rafters to strengthen the roof
- Ridge- Horizontal piece that connects the top end of the rafters
- Ceiling Joist- Creates a standard ceiling inside
- Tail- Creates the overhang (part of rafter extending past the wall)

Roof Terminology

- **Span-** Distance between outside of walls
- **Total Rise-** Top of wall to top of roof ridge
- **Total Run-** One half the total span
- **Unit Rise** – Number of inches a roof rises for every 12” of run
- **Unit Run-** Set horizontal length (always 12”)
- **Slope** – Ratio of unit rise to unit run (ex. 6:12)
- **Pitch** – Ratio of total rise to span
- **Bearing** – Resting point on the wall
- **Overhang-** Extension of roof past the wall
- **Rake-** Length of the total pitch of a gable roof

Types of Trusses

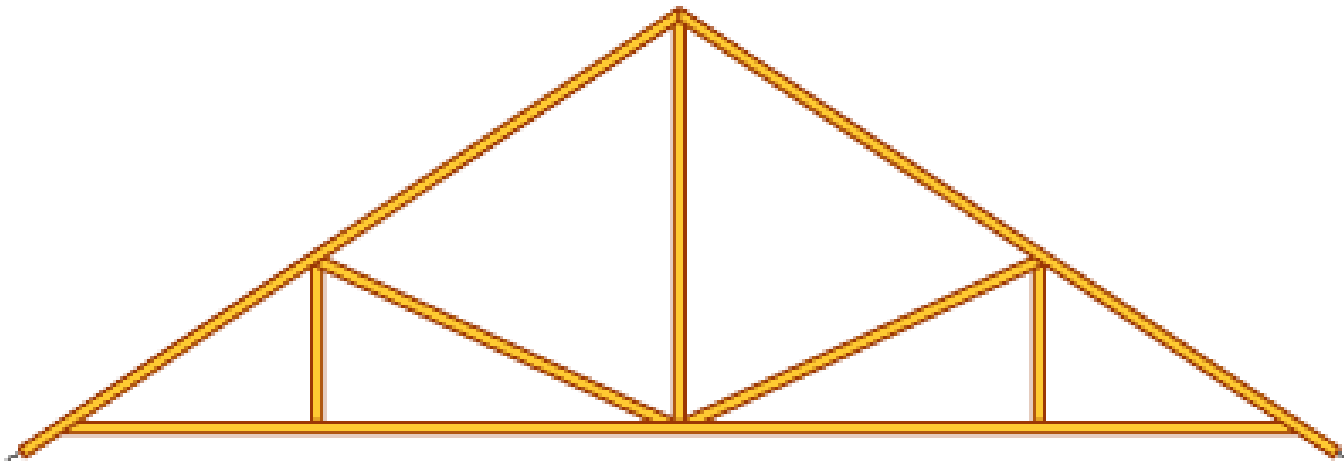
“W” Common



©2001 HowStuffWorks

Types of Trusses

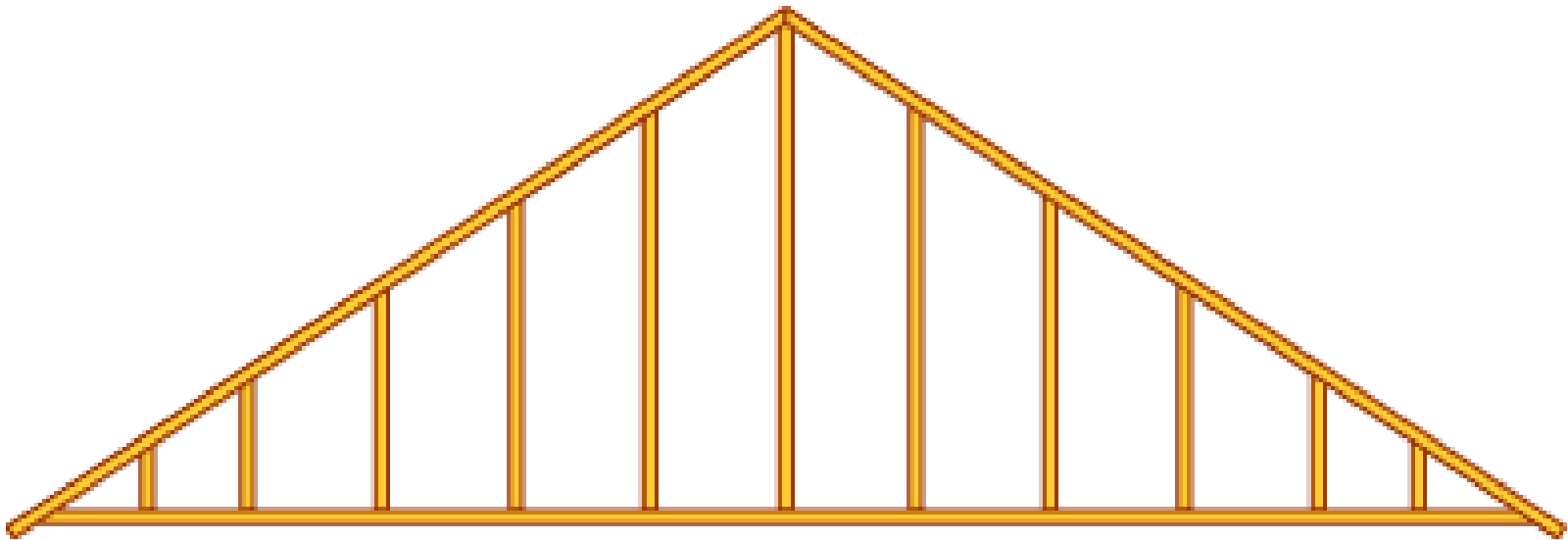
“M” Common



©2001 HowStuffWorks

Types of Trusses

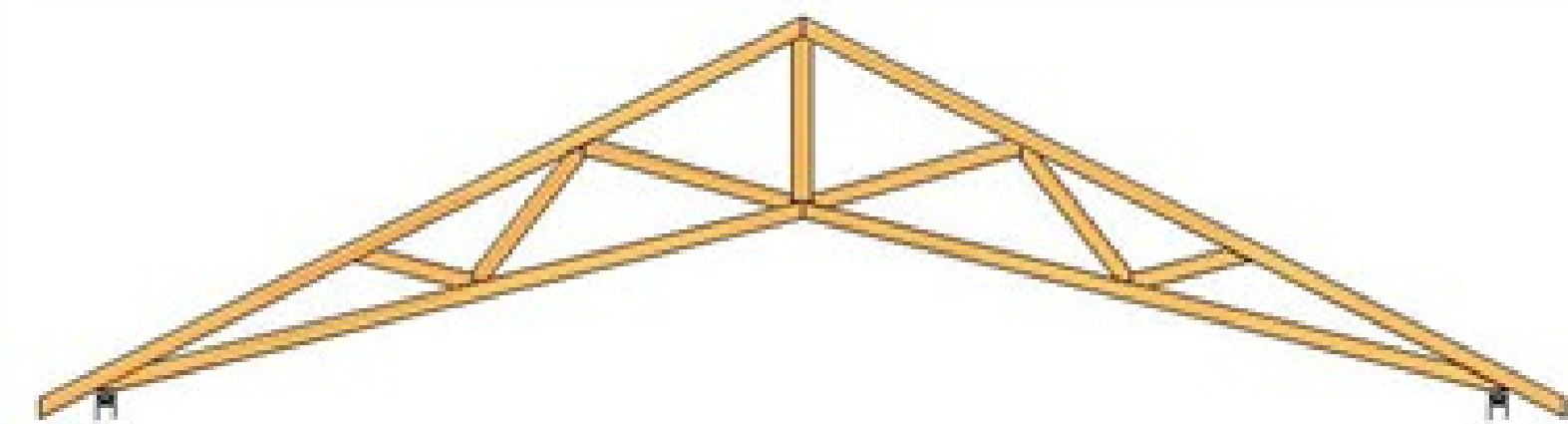
Gable End



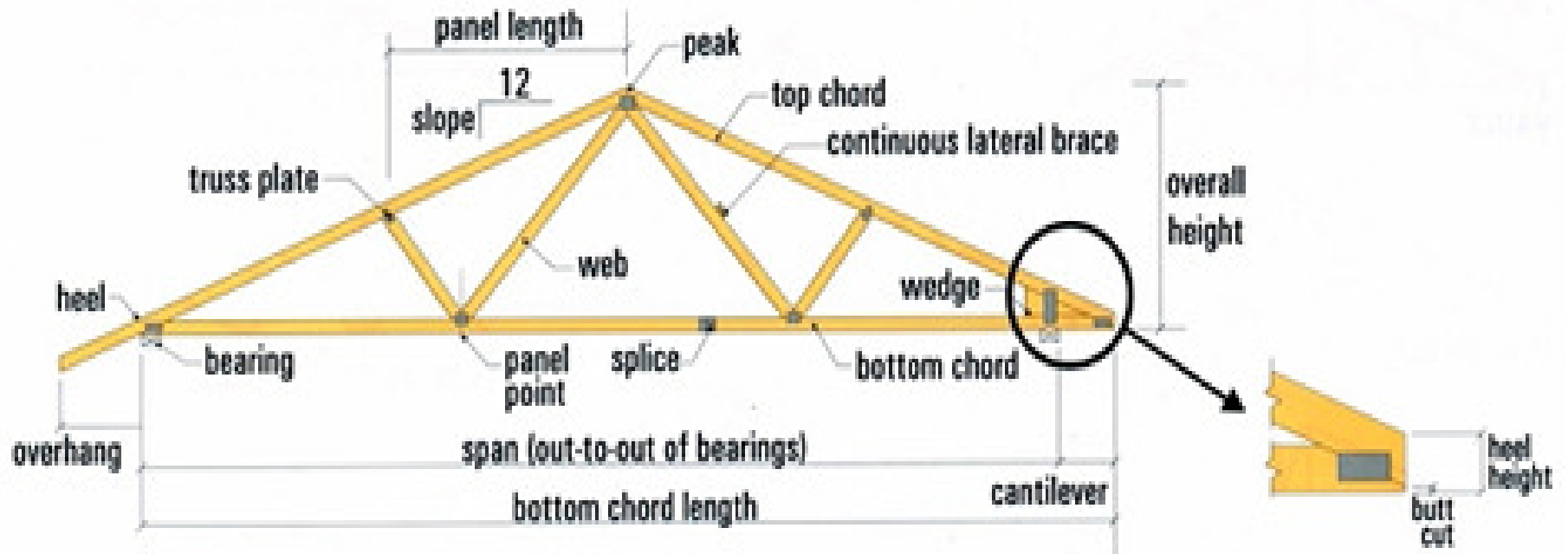
©2001 HowStuffWorks

Types of Trusses

Scissors



Parts of a Truss



Parts of a Truss

- **Top cord-** Outer member of the truss on the top that creates the pitch of the truss
- **Bottom cord-** Outer member on the bottom of the truss that rests on the bearing point
- **Webs-** Placed between the cords to create a rigid assembly
- **Connector plate-** Pre-punched metal plate used to connect joints in truss
- **Truss Bracing-** Used to secure all trusses together.

Loads on Roofs

- **Dead Load-** The weight of all building materials on the roof
 - Trusses or rafters
 - Sheeting
 - Roof covering (Shingles)
- **Live Load-** The weight of any external factor
 - Wind
 - Snow
 - Water
 - People

Snow Zones of Wisconsin

- **Northern Zone-** Roofs need to be rated at 40 PSF (pounds per square foot)
- **Southern Zone-** Roofs need to be rated at 30 PSF (pounds per square foot)
 - Poynette is in the southern zone

How much weight can a roof hold?

- Calculate the total square footage
 - The building is 30' x 50' with a 6:12 pitch
 - $A^2 + B^2 = C^2$
 - $16.75^2 + 15^2 = 251.25^2$ (two sides) = 502.5
 - $502.5 \times 30 \text{ psf} = 15075$
- How much does snow weigh?
 - 15-20 pounds per cubic foot
 - 2 feet of snow = 40 psf