Name _____

Period _____

Truss Design (100 Points)

The purpose of this unit is to give students a chance to design and build a wooden roof truss that will be tested for strength using a compression test. Students will work individually to create a truss that they feel is strong and will withstand the most weight. A ratio of the truss weight to the weight it holds will determine which truss in the class is the strongest.

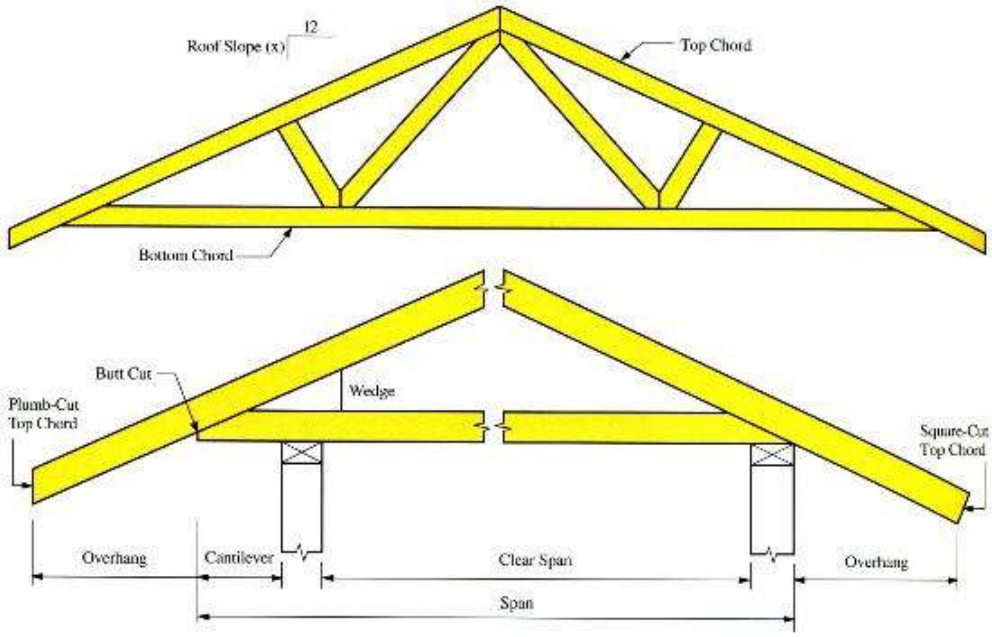
Students will use wood strips, a paper note card, and wood glue supplied by the teacher in order to build their truss. The trusses can not be built with any other supplies than the wood strips, note card, and wood glue provided. Each truss must span a distance of 12 inches and carry the weight of at least 10 times its own weight.

Time given to complete: Students will be given four (4) class periods in which to complete the design and construction of their truss. Each student will have to prepare a set of 3 different truss designs with all of the parts labeled before they will be allowed to start construction of their truss.

Students are free to design their truss in a way that they believe will carry the heaviest load. All trusses are to be designed using the common truss style. Students will be able to change only the placement and design of the webs for their truss.

Each student is to turn in their completed truss along with their design sketches. All bridges will then be weighed in order to find the ratio of truss weight to load carried. After all trusses have been weighed there will be a class period in which they will all be loaded until they break. The one that has the best ratio will be considered the strongest in the class.

Truss Vocabulary



Compression- A force that acts by pushing together from both ends

Tension- A force that acts by pulling apart from both ends

Live Load- Any weight that is put on the structure after the construction is complete- example: wind, snow, rain

Dead Load- Any weight that is part of the construction of a structure- example: truss, plywood, shingles

Cantilever- The distance that a framing member projects past the support below

Span- The distance the bottom chord of the truss goes across

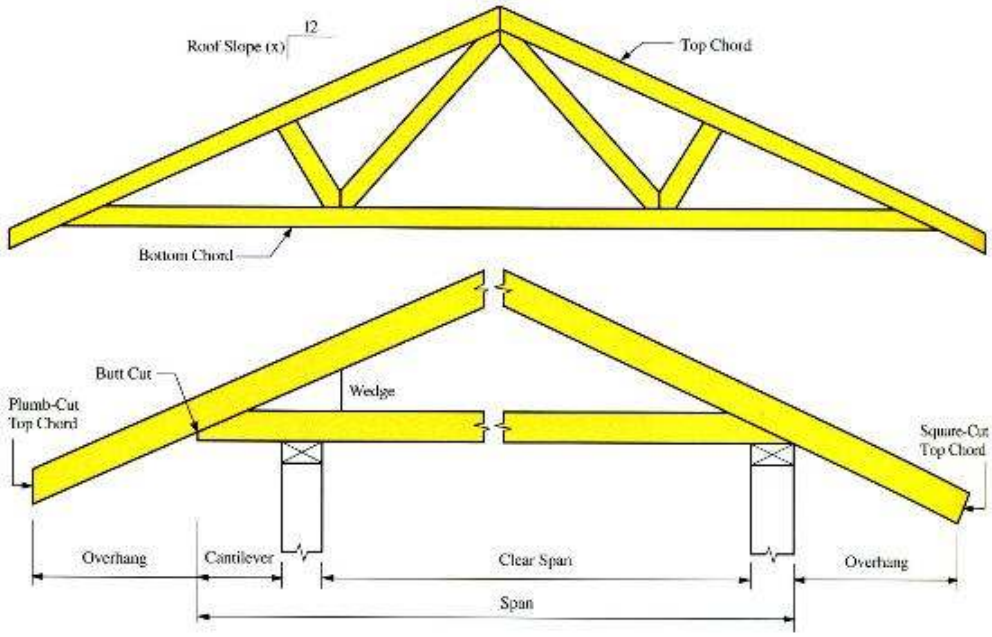
Clear Span- The distance between the supports that the truss must go across

Top Chord- The top member of a truss in which the roof materials are fastened

Bottom Chord- The bottom member of a truss

Web- The members of a truss that connect the top and bottom chords

Truss Vocabulary



Compression-

Tension-

Live Load-

Dead Load-

Cantilever-

Span-

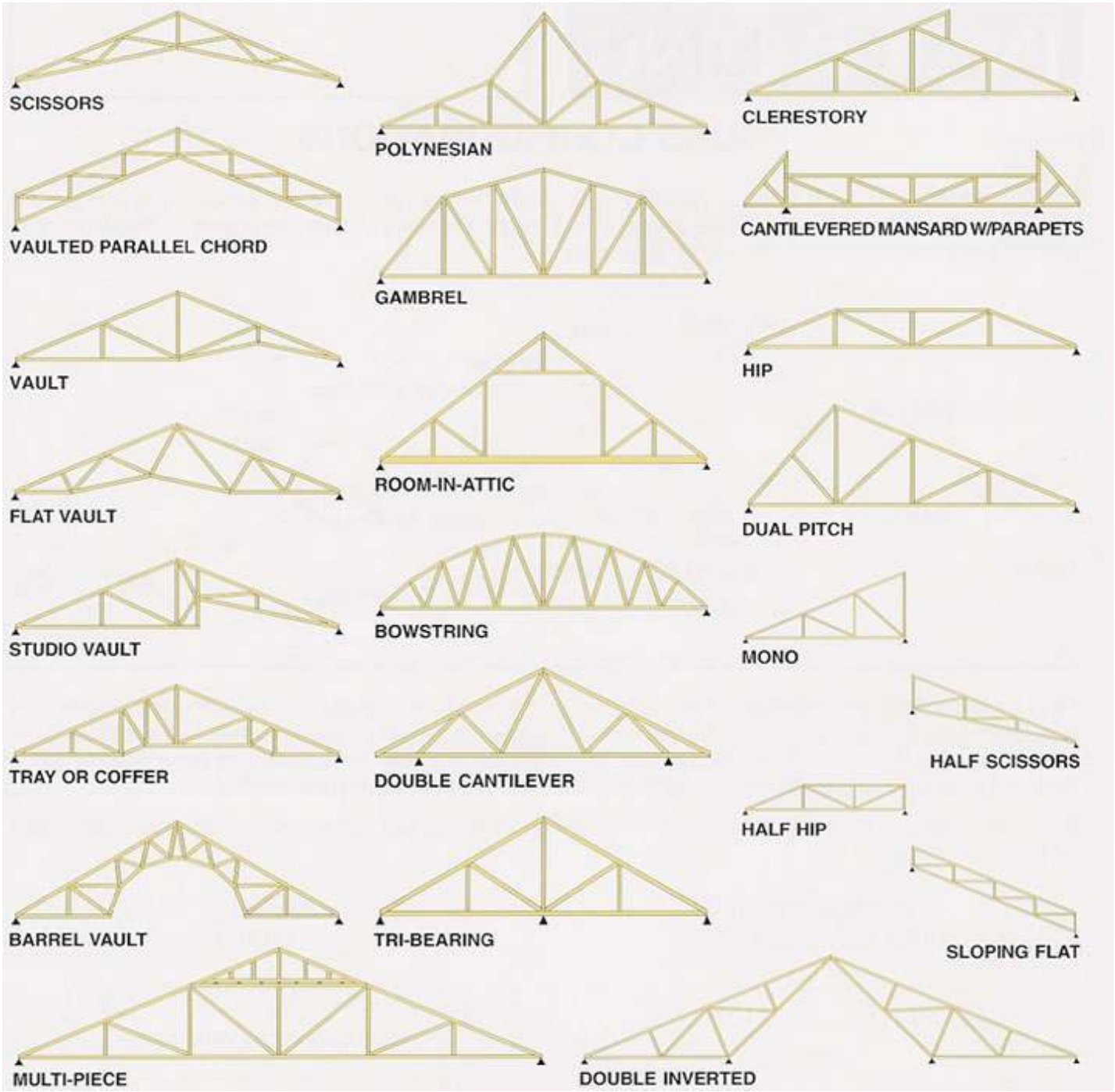
Clear Span-

Top Chord-

Bottom Chord-

Web-

Other Truss Configurations



Name_____
Class Period_____

Truss Design Sketches

Name_____
Class Period_____

Truss Design Grading Rubric

_____ Were the truss sketches well designed and show careful planning? (25 Points)

_____ Did the truss span the 12 inch distance? (10 Points)

_____ Did the truss hold at least 10 times its own weight? (50 Points)

_____ Was the truss assembled with only the materials supplied by the teacher? (15 Points)

_____ **TOTAL (100 points possible)**