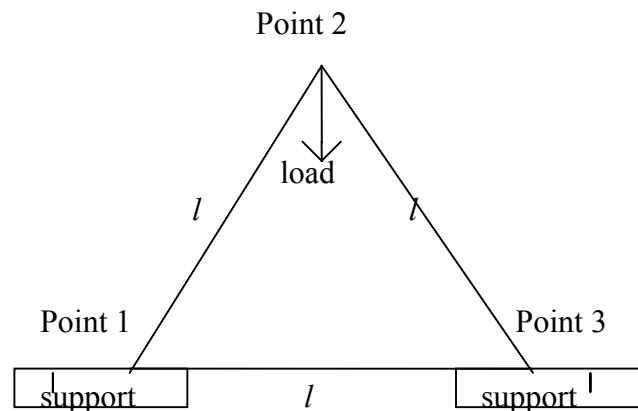


## DESIGN AND CONSTRUCTION OF A TRIANGULAR BRIDGE TRUSS

### TESTING IN LAB on TUES 29 OCT

#### Procedure:

You are to build a truss with sides of length  $l$  that will be supported at the bottom. A load will be applied downward from the top.



#### For each group....

1. Calculate all forces when a load of 1 pound ( $\sim 0.5$  kgf) is applied to the truss at Point 2.
2. Construct an equilateral trusses of spaghetti and glue (supplied) to withstand a load of 0.5 kg (1.1 lbf) using only three strands of spaghetti for each truss, one for each side of the triangles. The object is to build the largest possible truss that will support the load. (Of course, you will be in competition with the other groups.). Hint: this can be done without employing the trial and error method; refer to the Euler buckling equation and your data for the buckling/ tensile strength lab.
3. Construct an equilateral truss of spaghetti to withstand the same load as in part 2. This time each side of the triangle must be 20 cm ( $7 \frac{7}{8}$  in.) long, but there are no restrictions on the construction. Design the truss so that the least amount of spaghetti is used. Again, use the Euler buckling load equation and your data to design the structure.