Conceptual Question C7.1

Given: Four horizontal loads are applied to the truss structure shown below. Let T_1, T_2, T_3 and T_4 represent the magnitudes of the loads carried by members 1, 2, 3 and 4, respectively, in the truss as a result of these loads.

Find:

Circle the correct response below regarding the relative sizes of T_1 and T_2:

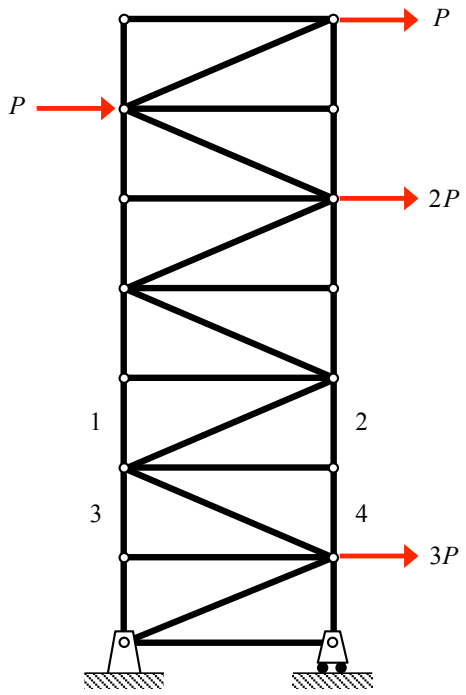
- $T_1 > T_2$
- $T_1 = T_2$
- $T_1 < T_2$

Circle the correct response below regarding the relative sizes of T_3 and T_4:

- $T_3 > T_4$
- $T_3 = T_4$
- $T_3 < T_4$

When you compare your answers for the two parts of this question, do the answers make sense?

Provide explanations for your answers.



Conceptual Question C7.2

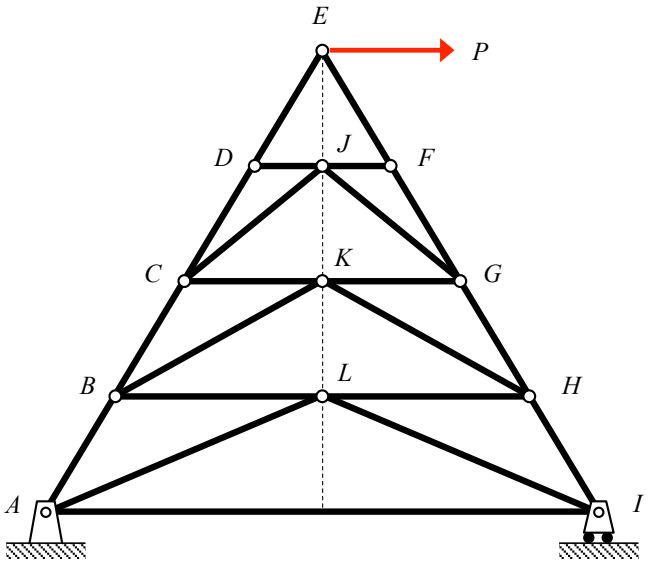
Given: A horizontal load P is applied to joint E of the truss shown below.

Find:

Determine the zero-force members in the truss for this loading.

With so many members of the truss carrying no load, what explanation can you provide for such truss to have as many members as it does? Why not build the truss with fewer members?

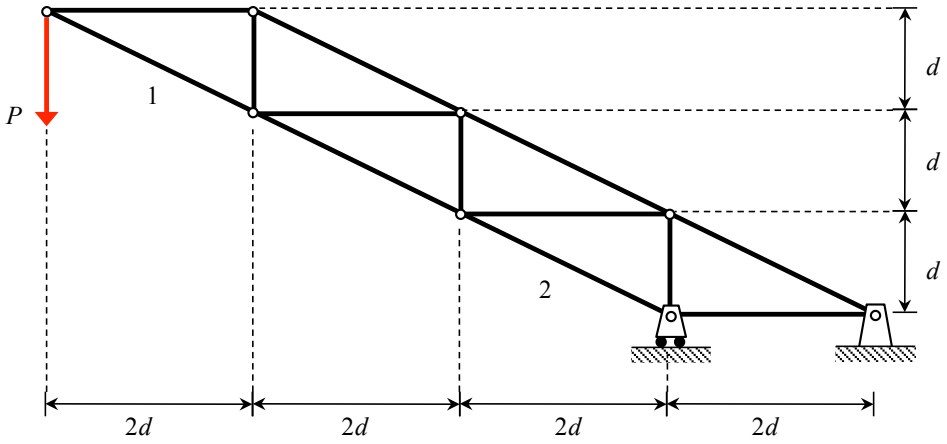
Provide explanations for your answers.



Conceptual Question C7.3

Given: A vertical load P is applied to the truss, as shown below.

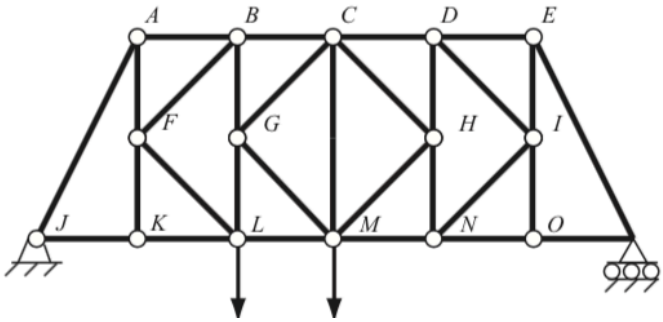
Find: Compare the loads carried by members 1 and 2 in the truss due to this applied load.



Conceptual Question C7.4

Given: A truss is loaded as shown below.

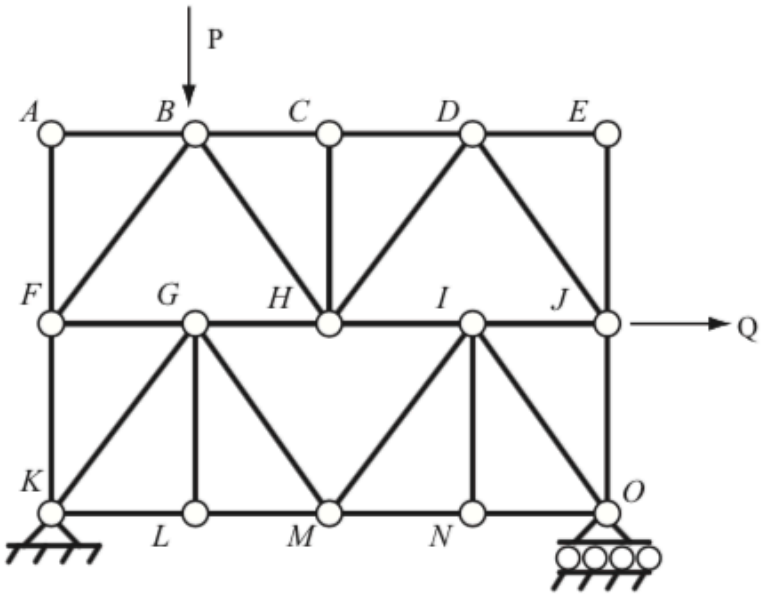
Find: Determine all zero-force members in the truss. Provide an explanation for each choice of zero-force member.



Conceptual Question C7.5

Given: A truss is loaded as shown below.

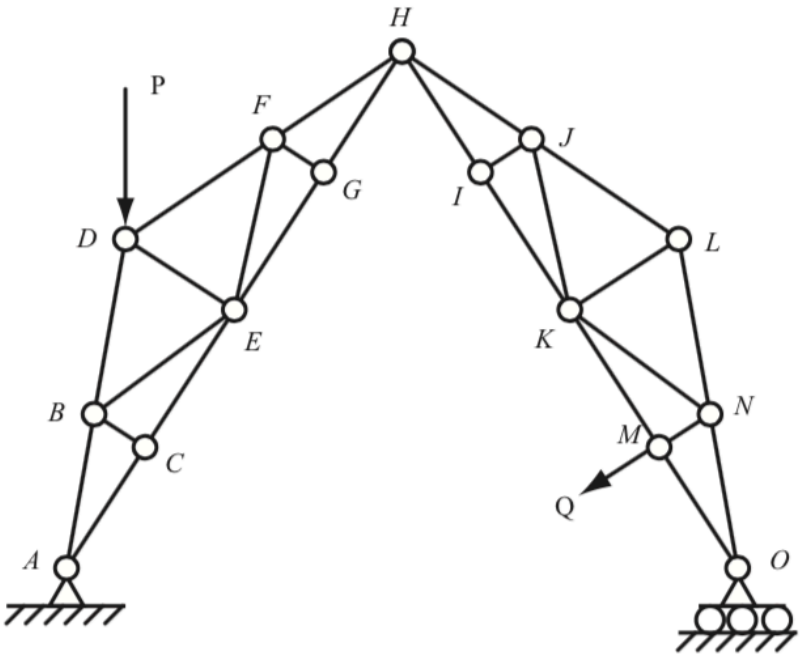
Find: Determine all zero-force members in the truss. Provide an explanation for each choice of zero-force member.



Conceptual Question C7.6

Given: A truss is loaded as shown below.

Find: Identify all zero-force members in the truss. Circle the names of the zero-force members in the list to the right.

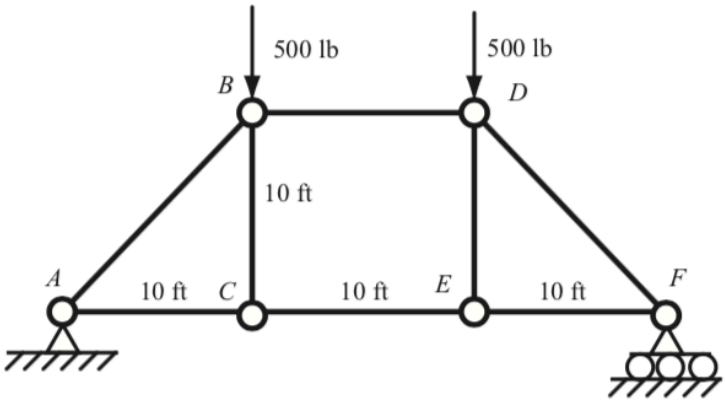


AB	*HI*
AC	*HJ*
BC	*IJ*
BE	*IK*
BD	*JK*
CE	*JL*
DE	*KL*
DF	*KM*
EF	*KN*
EF	*LN*
FG	*MN*
FH	*MO*
GH	*NO*

Conceptual Question C7.7

Given: A truss is loaded as shown below.

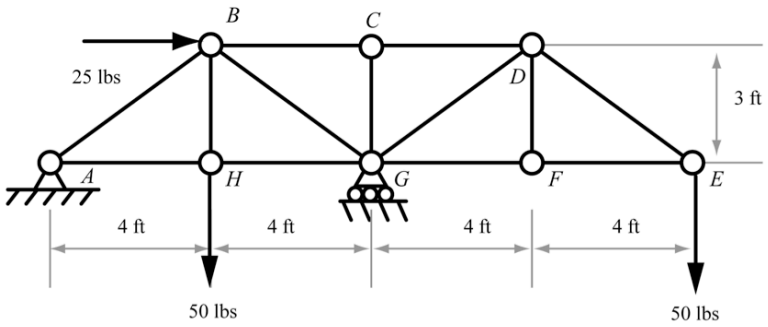
Find: Use the method of joints to determine the load carried by each member in the truss. For each member, state whether the member is in tension, in compression or carries zero load.

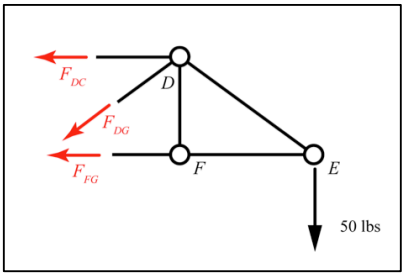


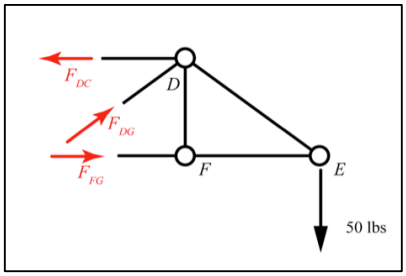
Conceptual Question C7.8

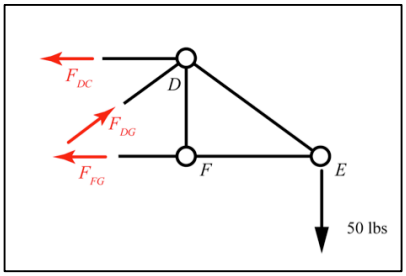
Given: Consider the loading on the truss shown below. The method of sections has been used to determine the loads carried by members DG, DF and DC.

Find: Circle the FBD below that correctly represents the loading state (*tension* or *compression*) of members DG, DF and DC. Provide a justification for your choice.









Conceptual Question C7.9

Given: A truss shown below is loaded with forces P, Q and R at joints B, H and E, respectively.

Find: Answer the following TRUE/FALSE questions:

- TRUE/FALSE: The loads carried by members CD, GD and GF depend on the value of the force P.
- TRUE/FALSE: The loads carried by members CD, GD and GF depend on the value of the force Q.
- TRUE/FALSE: The loads carried by members CD, GD and GF depend on the value of the force R.

Provide explanations for your answers.