ACED

May 2015

The Institution of Structural Engineers

Tim Ibell FREng

Welcome to the home of structural engineering

Technical guidance

Structural use of glass in buildings (Second edition) February 2014

Building for a sustainable future: An engineer's guide February 2014

Stability of buildings Parts 1 and 2: General philosophy and framed bracing May 2014

The Institution of Structural Engineers

The Institution of Structural Engineers

Research

‘Structures’ launched
Leroy Gardner (Imperial, Editor in Chief)
Mark Bradford (UNSW)
Jason Ingham (Auckland)
Lin-Hai Han (Tsinghua)
Tim Ibell (Bath)

Structural Futures committee formed

IStructE Conference in Singapore in 2015

International

Recognition of others' qualifications

Comparability test in China

Comparability test in Sinagpore

US SEI links strengthened

Education

Mandatory CPD

Education committee

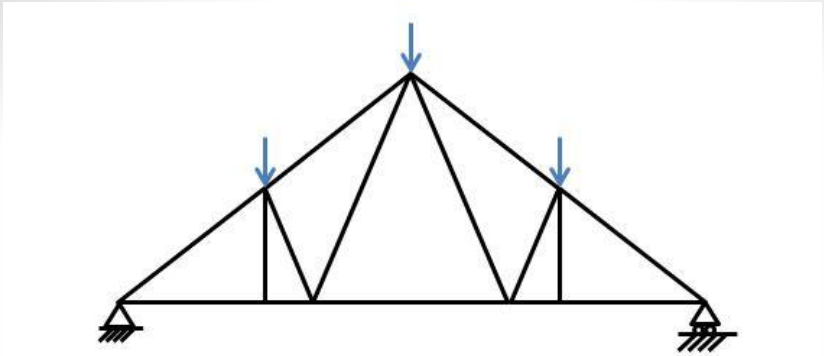
Education project
- **Essential knowledge texts**
- **Academics conference**
- **Teaching award**

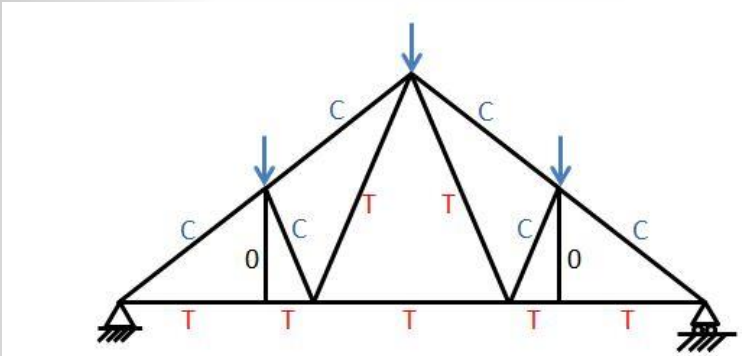
The structural behaviour course

Formative Assessment and Feedback

- Randomly-generated online test for any member of IStructE to practise
- Free to the academic and student bodies
- Reasons for wrong answers flagged
- Could be used by universities and companies
- Under testing presently
- **Allows students and graduates to learn through making mistakes**

Examples

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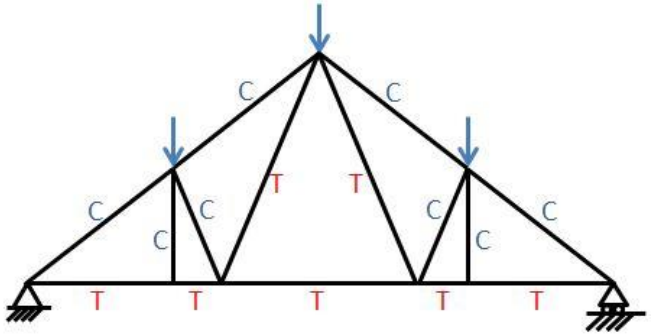
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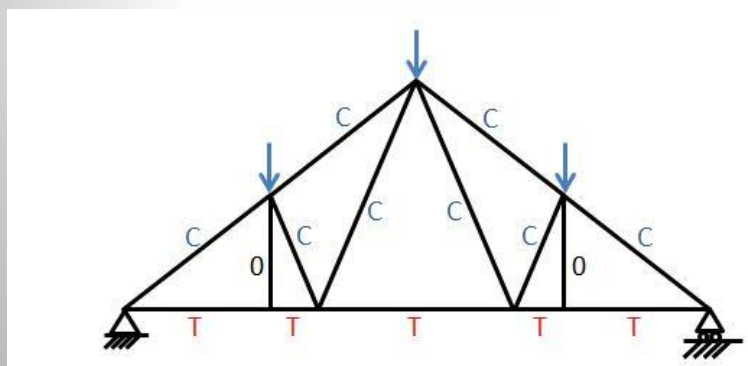
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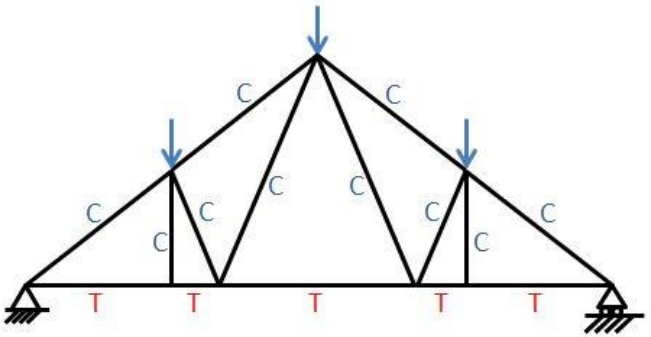
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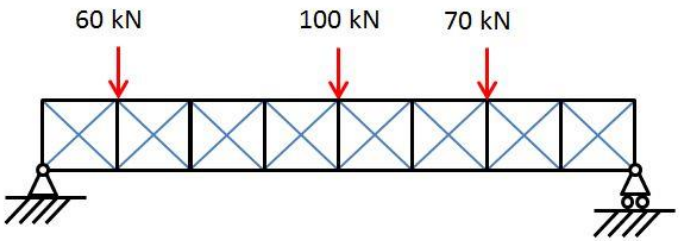
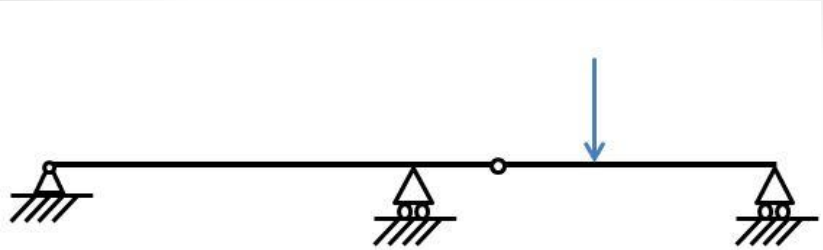
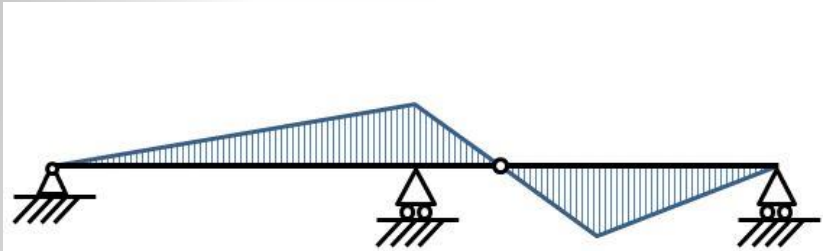
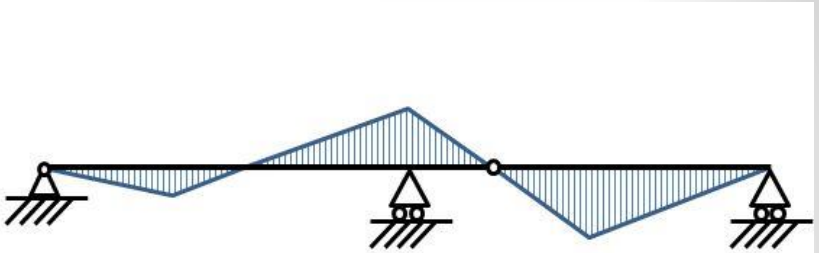
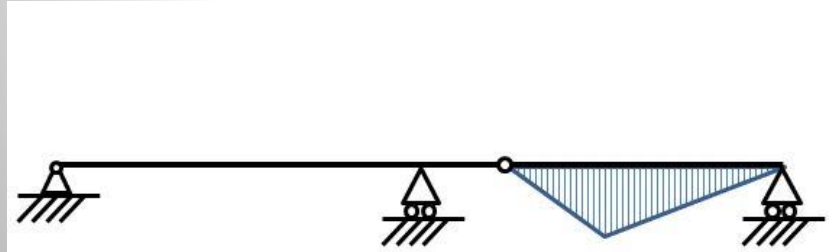


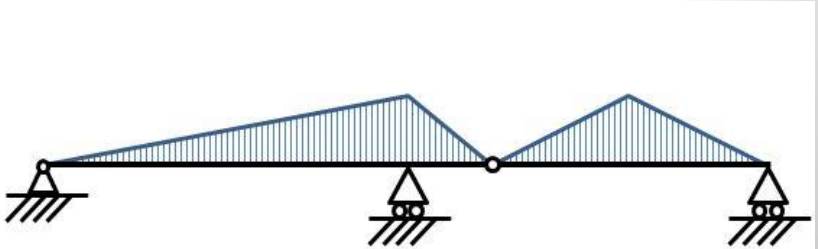
Maximum force in any member if diagonals are wires, unable to carry compression?

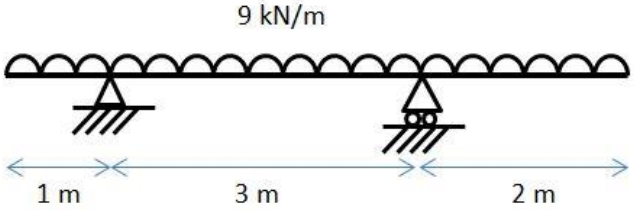


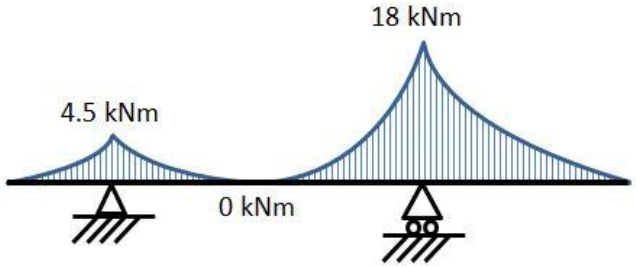


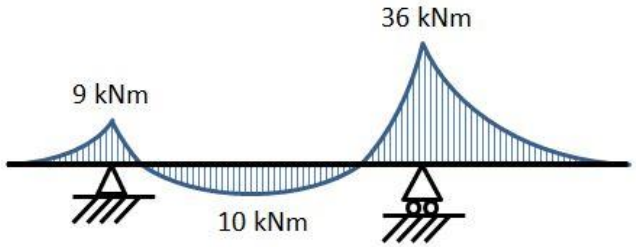


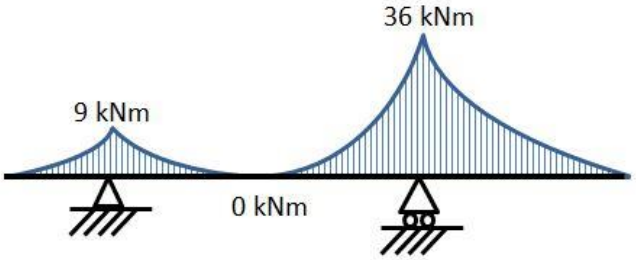


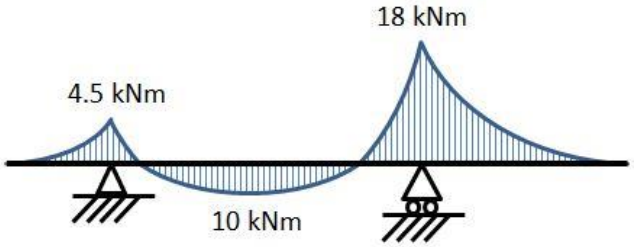


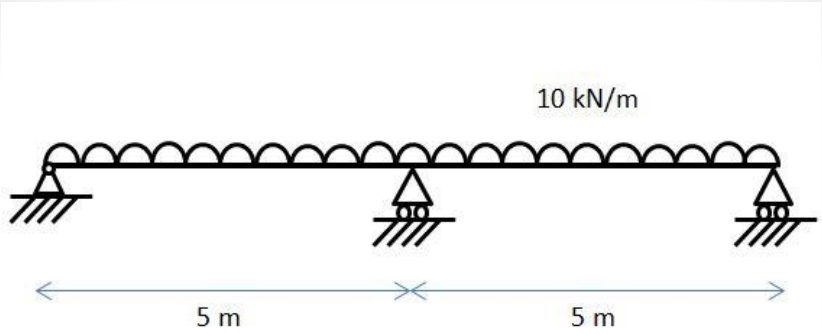

9 kN/m
1 m
3 m
2 m

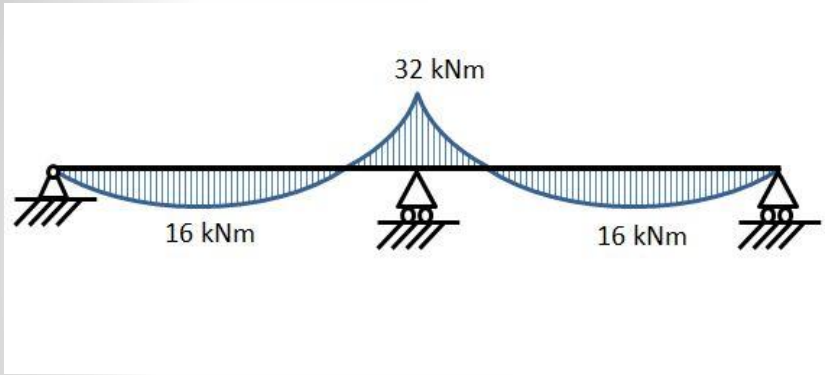

18 kNm
4.5 kNm
0 kNm

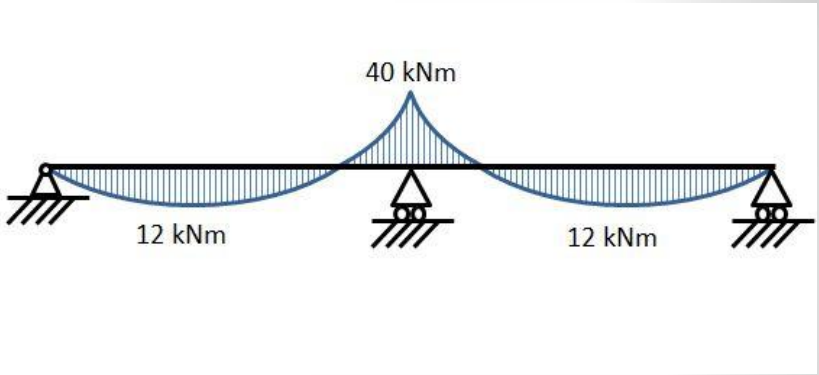

36 kNm
9 kNm
10 kNm

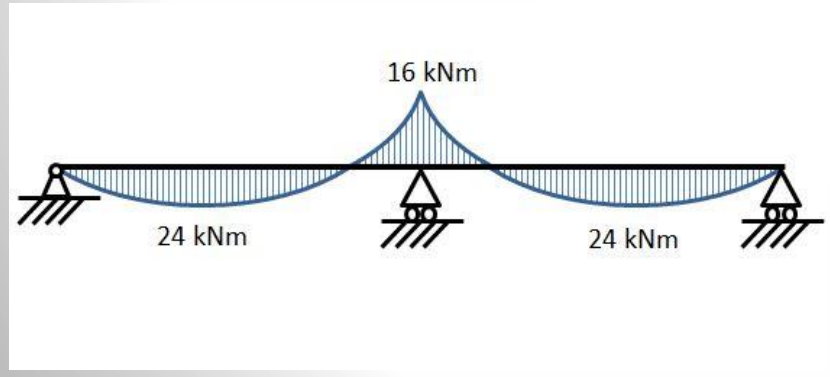

36 kNm
9 kNm
0 kNm

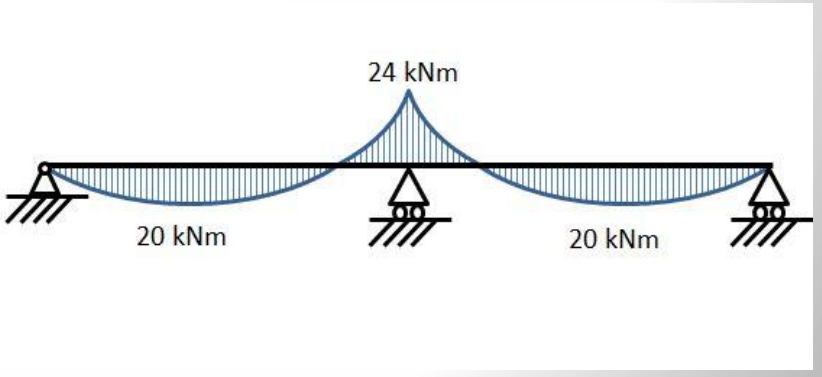

18 kNm
4.5 kNm
10 kNm


10 kN/m
5 m
5 m


32 kNm
16 kNm
16 kNm


40 kNm
12 kNm
12 kNm


16 kNm
24 kNm
24 kNm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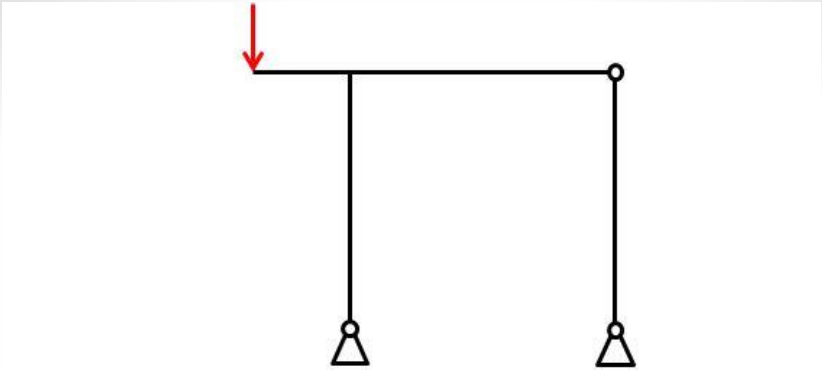
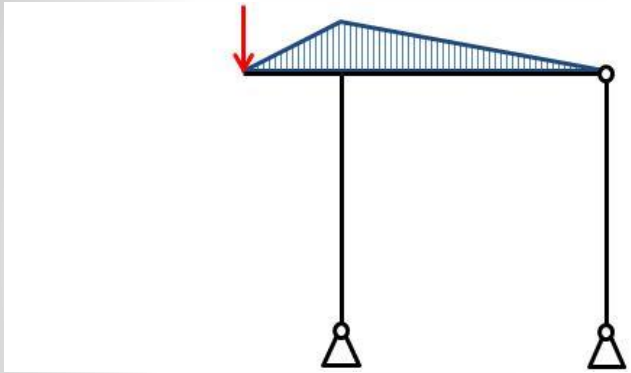
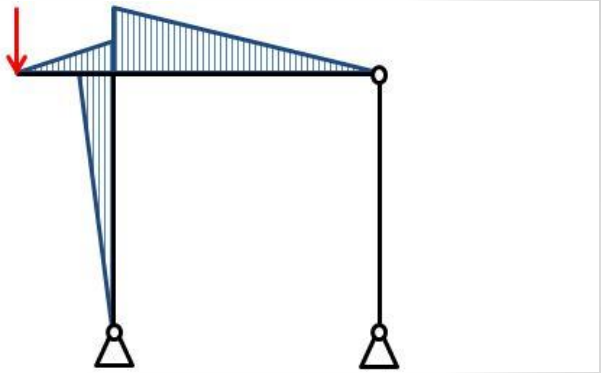
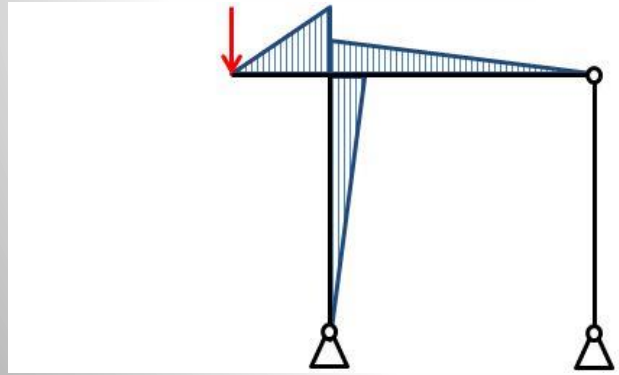
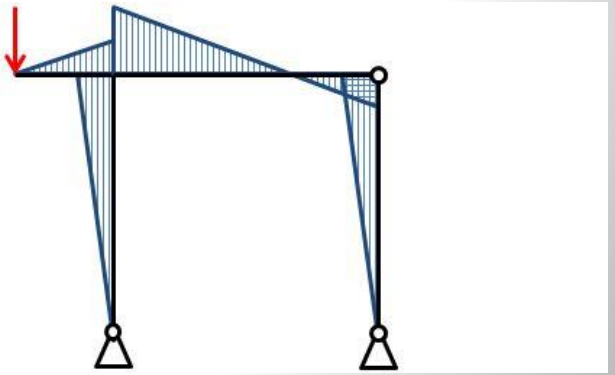
20 kNm
20 kNm

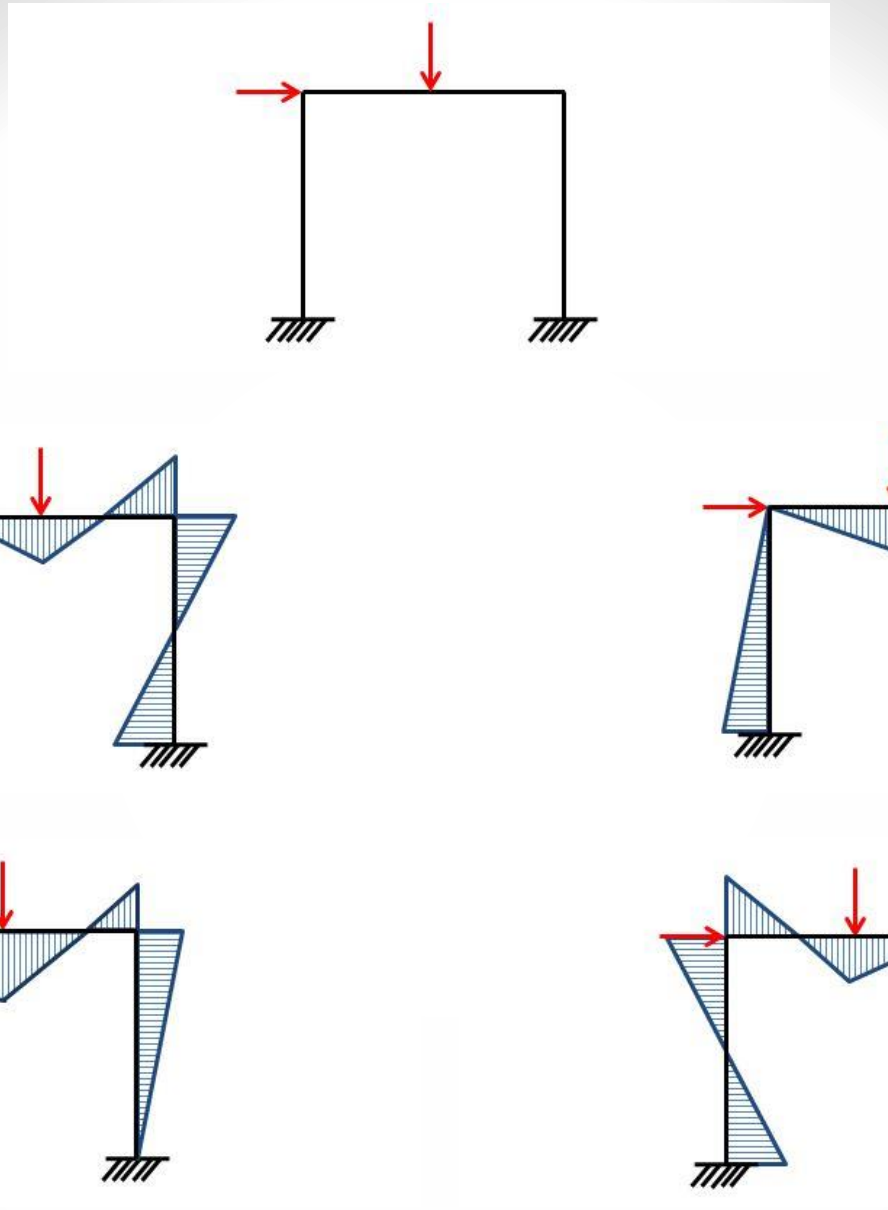


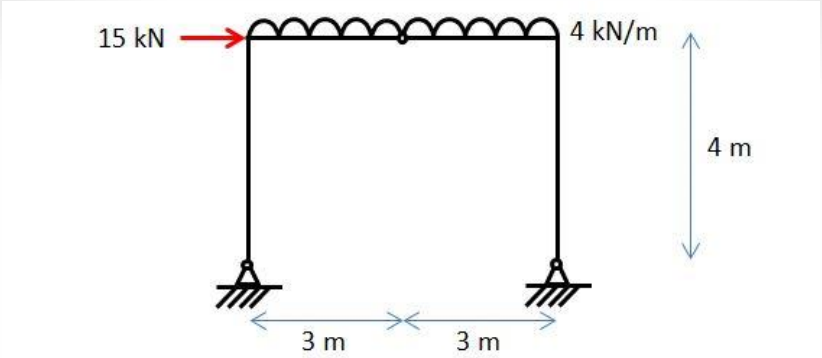


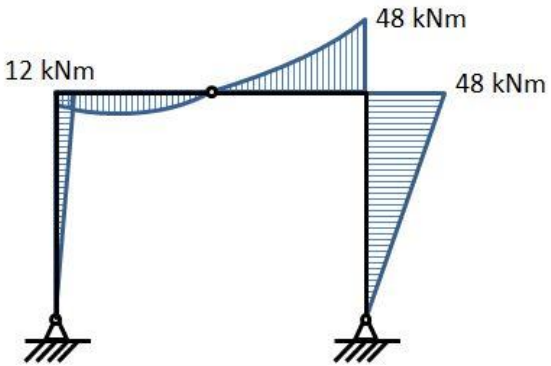


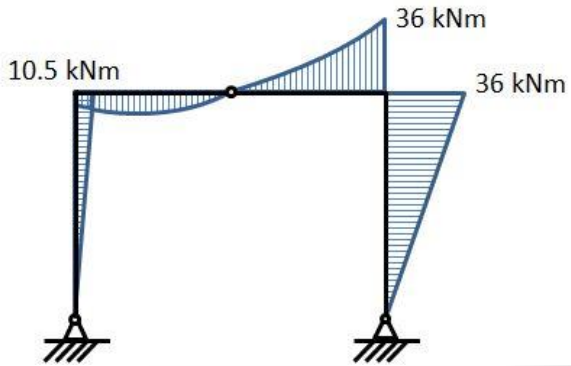


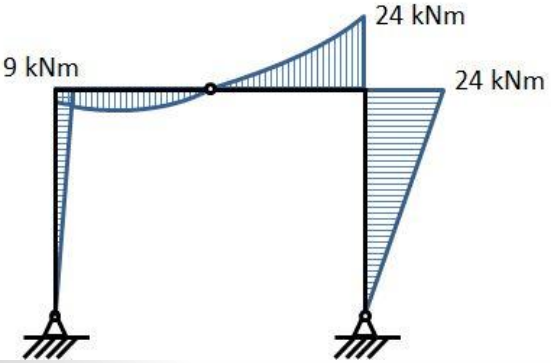


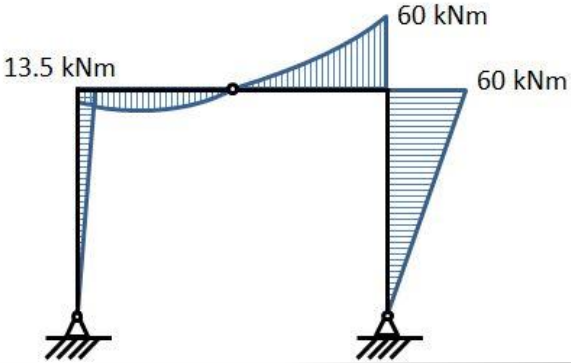


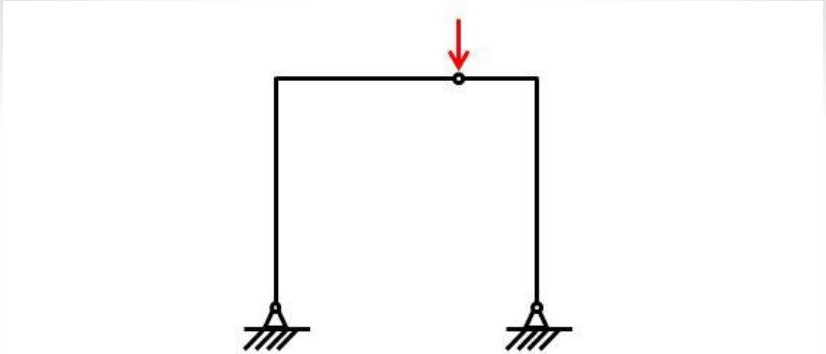

15 kN
4 kN/m
4 m
3 m
3 m

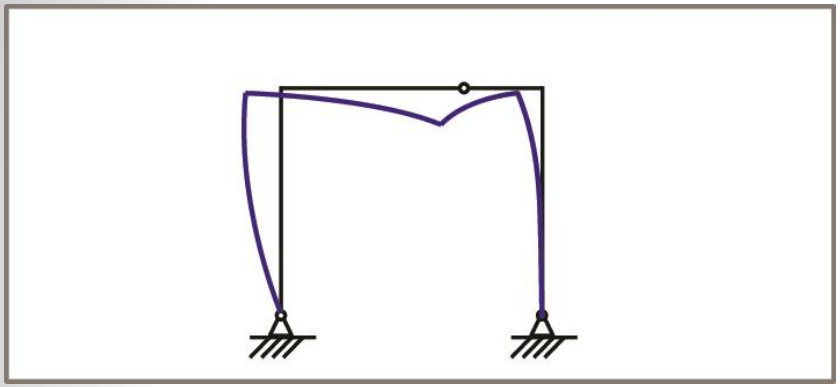

48 kNm
12 kNm
48 kNm

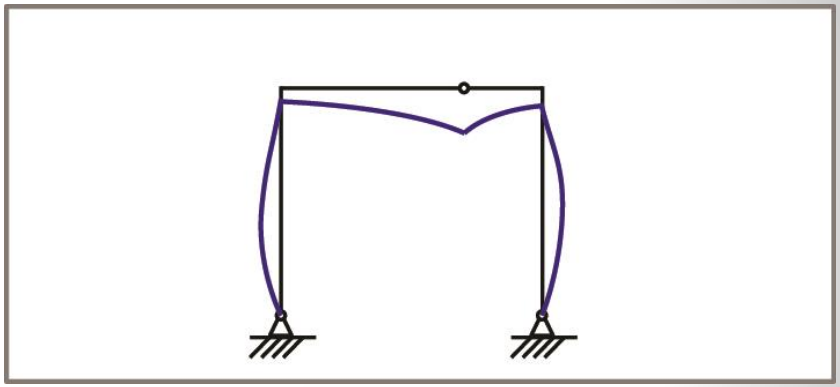

36 kNm
10.5 kNm
36 kNm

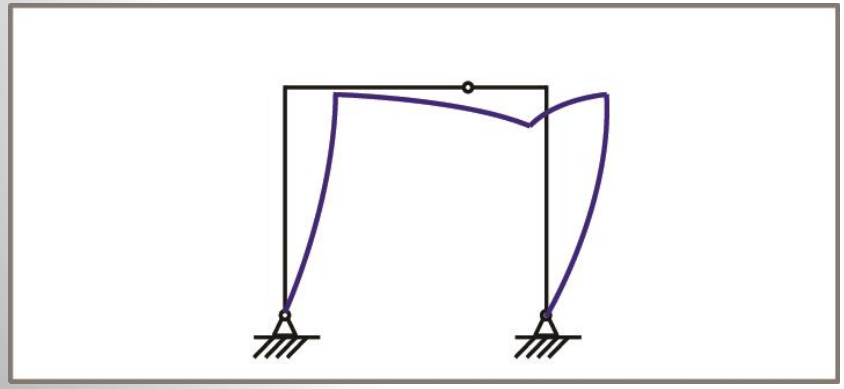

24 kNm
9 kNm
24 kNm

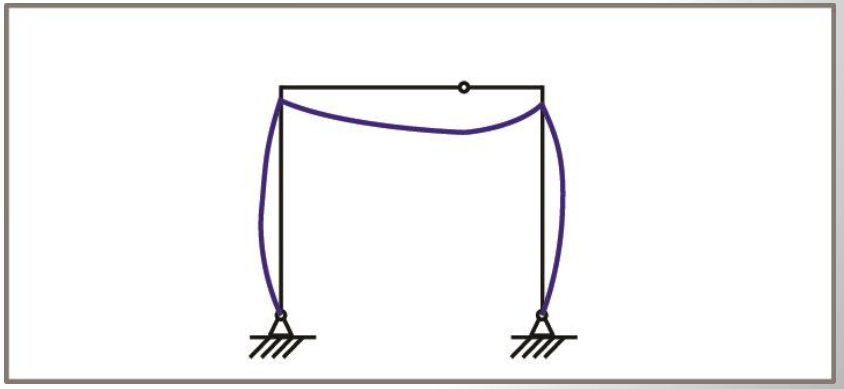

60 kNm
13.5 kNm
60 kNm

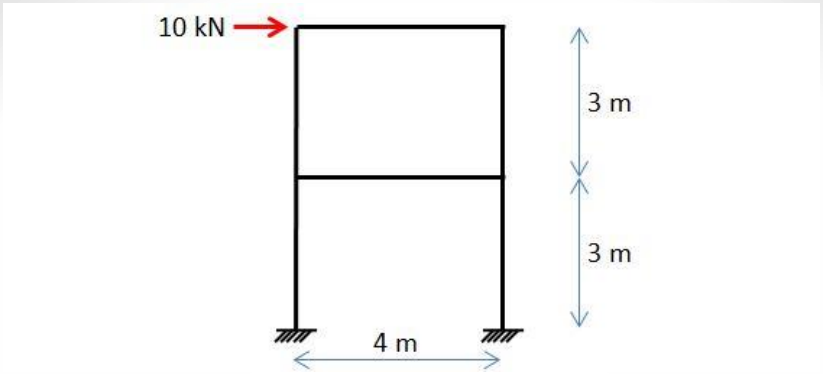


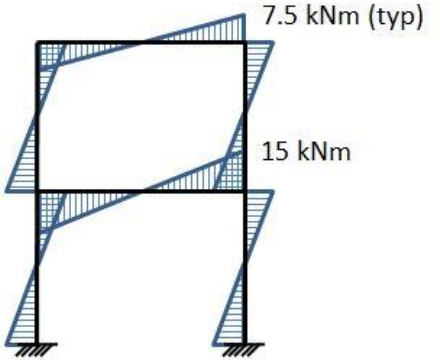


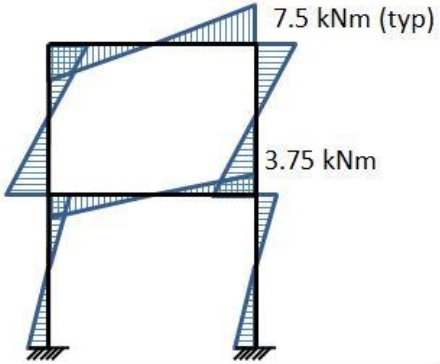


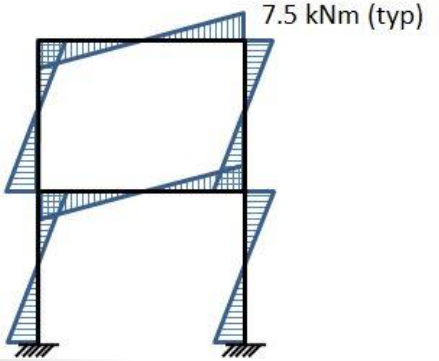


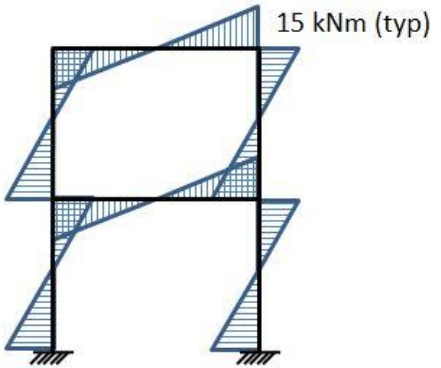


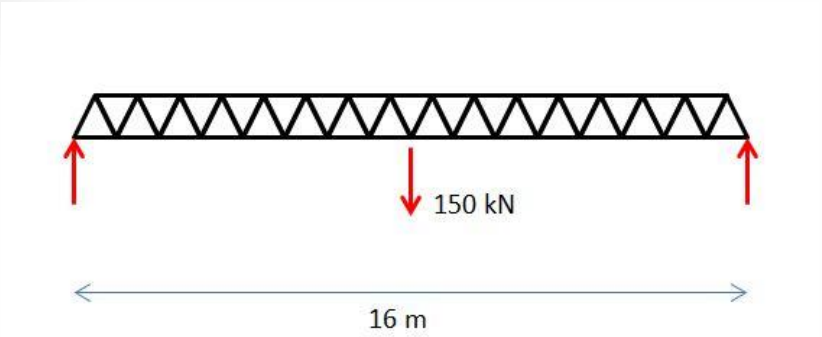

10 kN
3 m
3 m
4 m


7.5 kNm (typ)
15 kNm

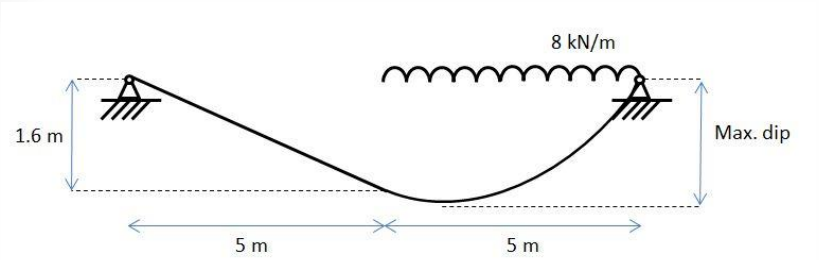

7.5 kNm (typ)
3.75 kNm


7.5 kNm (typ)

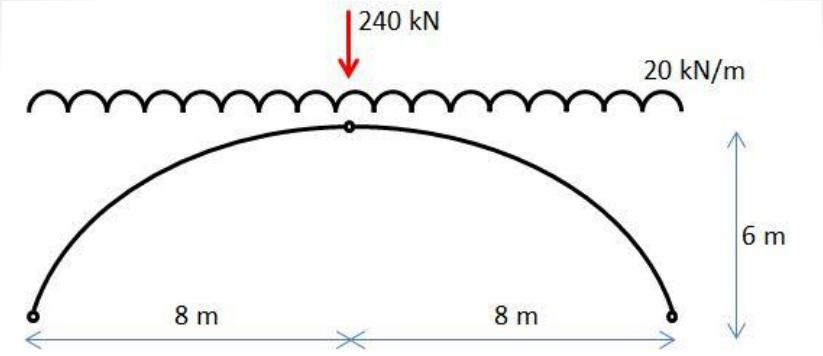

15 kNm (typ)



The top and bottom chords of this long truss are CHS sections, and each has I = 31x10^6 mm4 and A = 6300 mm2. Take E_{steel} = 200 GPa. All members have the same length of 1m. What is the approximate vertical deflection at midspan?



The weightless cable is loaded on one half only and sags as shown. If the dip at midspan is 1.6m, what is the maximum dip in the cable?



In this parabolic three-pin arch, what is the bending moment at the quarter points?