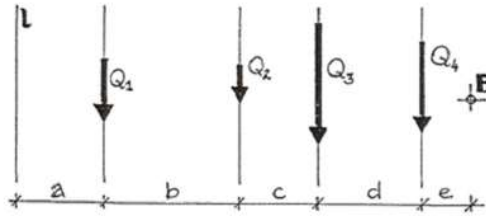


Statics: Force System: **Parallel Force System Equilibrium**  
 Solved Problem using **graphic method**

Please find the force  $R_1$  on line of action  $l$ , and force  $R_2$  passing through point  $B$  in such a way that the forces  $R_1$  and  $R_2$  balance the system of forces  $Q_1, Q_2, Q_3$  and  $Q_4$ .

$Q_1 = 10 \text{ kN}; Q_2 = 5 \text{ kN};$   
 $Q_3 = 20 \text{ kN}; Q_4 = 15 \text{ kN};$   
 $a = 5,0 \text{ m}; b = 8,0 \text{ m};$   
 $c = 4,0 \text{ m}; d = 6,0 \text{ m};$   
 $e = 2,0 \text{ m}.$



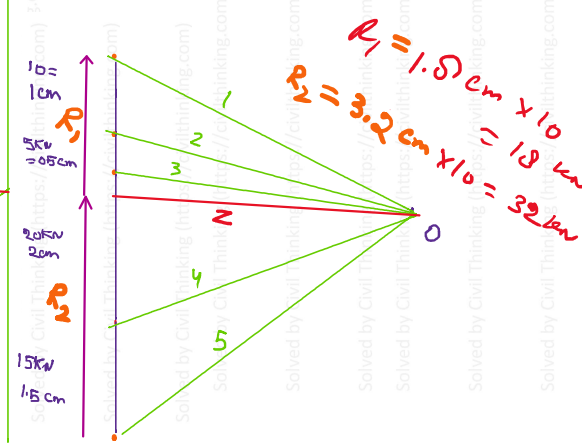
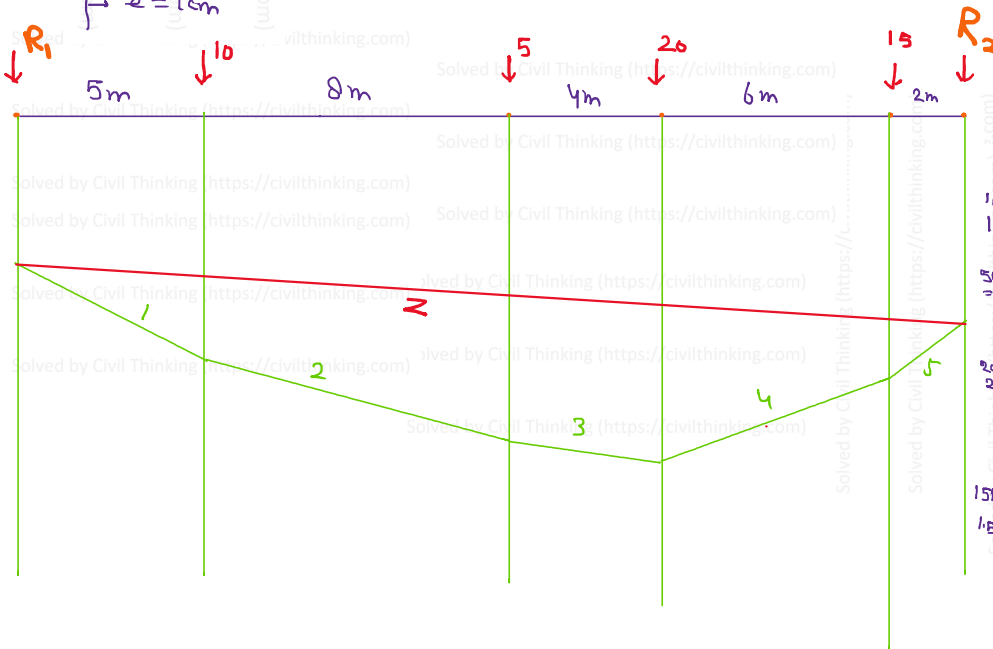
Solution using Graphic Method in Statics:

Space Diagram:  
 Scale:

$1 \text{ cm} = 2 \text{ m}$   
 $a = 5 \text{ m} = 2.5 \text{ cm}$   
 $b = 8 \text{ m} = 4 \text{ cm}$   
 $c = 4 \text{ m} = 2 \text{ cm}$   
 $d = 3 \text{ cm}$   
 $e = 1 \text{ cm}$


Force Polygon:

Scale:  
 $1 \text{ cm} = 10 \text{ kN} \Rightarrow 1 \text{ kN} = \frac{1}{10} \text{ cm}$   
 $Q_1 = 10 \text{ kN} = \frac{10}{10} = 1 \text{ cm}$   
 $Q_2 = 5 \text{ kN} = \frac{5}{10} = 0.5 \text{ cm}$   
 $Q_3 = 20 \text{ kN} = \frac{20}{10} = 2 \text{ cm}$   
 $Q_4 = 15 \text{ kN} = \frac{15}{10} = 1.5 \text{ cm}$



This problem was solved by Civil Thinking (<https://civilthinking.com>)  
 If you need **Online Tutoring** in Statics / Engineering Mechanics or any other **Civil Engineering** subjects, contact us at:  
[statics@civilthinking.com](mailto:statics@civilthinking.com)  
 Or let us know your tutoring requirement using the form below:  
<https://civilthinking.com/book-online-class/>

**NOTE:**  
 The solution provided in this document is the intellectual property of Civil Thinking (<https://civilthinking.com>) and is protected by copyright. Any reproduction, distribution, or

 We tutor students from all the countries globally, online.

**Other Subjects We Cover:**

- Structural Analysis
- Mechanics of Materials/ Strength of Materials
- Fluid Mechanics
- Design of Concrete and Steel Structures
- Geotechnical Engineering
- Transportation Engineering
- Construction Management
- Finite Element Analysis (FEA)
- Engineering Software (ANSYS WORKBENCH, ETABS, STAAD.Pro, Staad Foundation Advanced (SFA) & MATLAB)

publication of this content, in whole or in part, is strictly prohibited without prior written permission from <https://civilthinking.com>