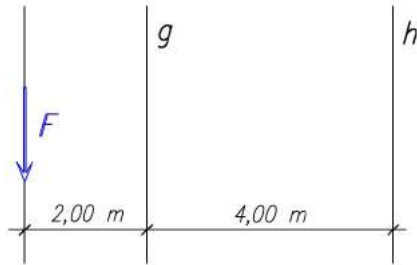


Statics: Force System: **Parallel Force System** Solved Problem using **graphic method and analytical method**

Please divide the force $F = 80 \text{ kN}$ into two forces located on the straights g and h parallel to the straight of force F .



Please use the ruler and set-square in the graphic method.

Solution:

Solved by Civil Thinking (<https://civilthinking.com>)

$$M_{R,h} = \sum M_{comp.,h} \quad (+)$$

Solved by Civil Thinking (<https://civilthinking.com>)

$$-(F \times 6 \text{ m}) = -(F_g \times 4)$$

Solved by Civil Thinking (<https://civilthinking.com>)

$$F_g = (80 \times 6) / 4 = 120 \text{ kN}$$

Solved by Civil Thinking (<https://civilthinking.com>)

$$M_{R,g} = \sum M_{comp.,g} \quad (+)$$

Solved by Civil Thinking (<https://civilthinking.com>)

$$-(80 \times 2 \text{ m}) = F_h \times 4$$

Solved by Civil Thinking (<https://civilthinking.com>)

$$F_h = -(80 \times 2) / 4 = -40 \text{ kN} \quad (\text{upward})$$

Solved by Civil Thinking (<https://civilthinking.com>)

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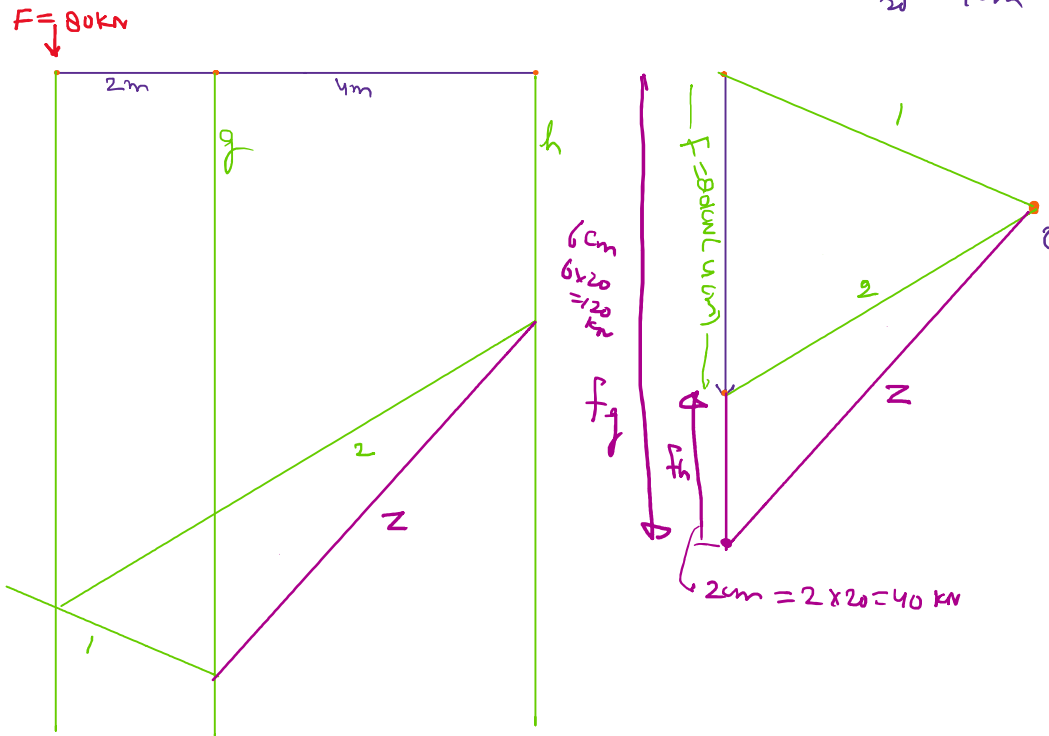
Graphic method:

Space Diagram

1cm = 1m

Force polygon

$$1\text{cm} = 20\text{kN} \Rightarrow 1\text{kN} = \frac{1}{20}\text{cm}$$
$$80\text{kN} = \frac{80}{20} = 4\text{cm}$$



This problem was solved by Civil Thinking (<https://civilthinking.com>)

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