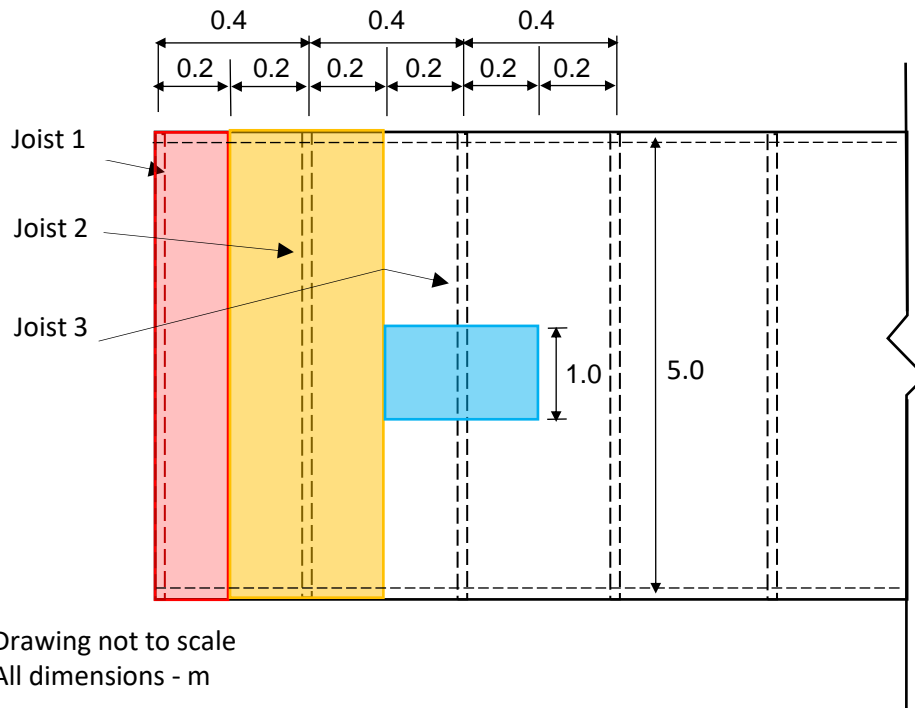




## UD Load Distribution to Floor Joists

This is a more in-depth explanation based on the [uniform loads](#) key example.



The load on the floor is  $1.8 \text{ kN/m}^2$

Each joist carries a part of the uniformly distributed load on the flooring. The load from the flooring over the span of 400mm between the centres of the joists is assumed to distribute half to each joist.

The joists are therefore assumed to take load as follows:

- **Joist 1, an end joist.** The area of floor that contributes to the total load (pink in the diagram) on this joist is:  
 $5.0 \times 0.2 = 1.0 \text{ m}^2$ . This is the *tributary area* for the load (pink in the diagram) on the joist.  
 The total load on this joist is therefore:  $\text{load/sqm} \times \text{area} = 1.8 \times 1.0 = 1.8 \text{ kN}$
- **Joist 2, an interior joist.** The tributary area (orange) is  $(0.2+0.2) \times 5.0 = 2.0 \text{ m}^2$ .  
 The total load =  $1.8 \times 2.0 = 3.6 \text{ kN}$
- **Joist 3.** The diagram shows the tributary area (blue) for a 1 metre length of the beam. This area is:  $(0.2+0.2) \times 1.0 = 0.4 \text{ m}^2$ . The load over this metre length is  $1.8 \times 0.4 = 0.72 \text{ kN/m}$   
 It is common to specify a uniformly distributed load for a beam as a load/metre length. The total load on Joist 3 is:  $\text{load/m} \times \text{span} = 0.72 \times 5.0 = 3.6 \text{ kN}$  - as for Joist 2, and for all interior joists.

It common to use the name  $W$  to represent the total load and  $w$  to represent the load per metre.

Although an end joist only takes half the load of an interior joist all joists are normally specified as the same size.

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