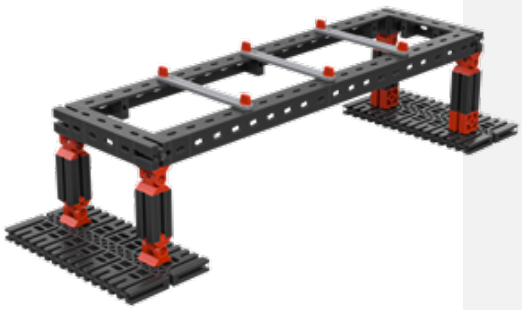
Model 12
Bridge, beam bridge



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THEMATIC TASK

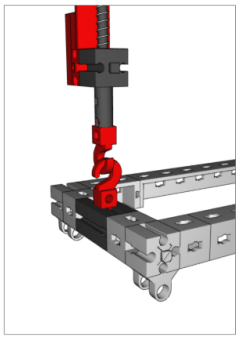
External static determinacy

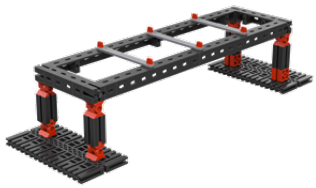
Determine whether the bridge is externally statically determined. Tip: refer to the 2-dimensional schematic model of the bridge. Sketch and enter the relevant forces in your sketch.

Sketch of the static system of a beam bridge:

EXPERIMENTAL TASK

1. For the following experiment, replace the single-value bearing (floating bearing/sliding bearing) with the spring balance and apply a load to the bridge at various points.





Enter the measured values of the spring balance as a function of the distance s_n in the following table.

Perform this experiment with 3 different weights. Note that the spring balance not only displays the force resulting from the weight of the load (FL), but also half of the bridge's own weight (130 g / 2 = 65 g).

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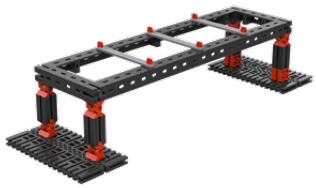
Distance s_n	Bearing force F_n	Weight force F_L
s_1 = 75 mm		1 N
s_2 = 150 mm		1 N
s_3 = 300 mm		1 N
s_1 = 75 mm		2 N
s_2 = 150 mm		2 N
s_3 = 300 mm		2 N
s_1 = 75 mm		3 N
s_2 = 150 mm		3 N
s_3 = 300 mm		3 N

Tip: To determine the weight of the respective loads, you can weigh them with the spring balance and enter them directly into the table without having to determine the exact weight.



2. Now attach the upper and lower trusses to the beam bridge one after the other according to the assembly instructions.
   Determine whether the upper longitudinal beam of the upper chord is subjected to tension or compression. What about the lower chord?

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3. What is decisive in determining whether a bridge is constructed as a beam bridge?