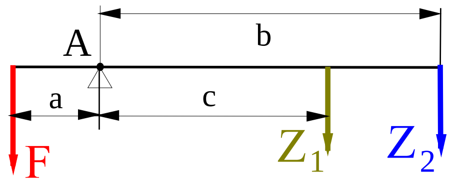
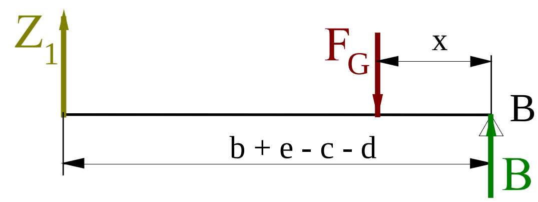
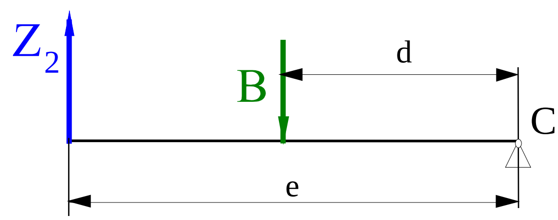
Balken I:



Balken II:



Balken III:



Balken I: $\sum_i M_{i,\ A} = 0$: $\quad F \cdot a = Z_1 \cdot c + Z_2 \cdot b \qquad (1)$

Balken II: $\sum_i F_{i,\ Y} = 0$: $\quad B = F_G - Z_1 \ (2); \quad \sum_i M_{i,B} = 0 : Z_1(b+e-c-d) = F_G \cdot x \ (3)$

Balken III: $\sum_i M_{i,\ C} = 0$: $\quad Z_2 \cdot e = B \cdot d \quad \rightarrow \quad B = Z_2 \cdot \frac{e}{d}$

in (2): $\quad Z_2 \cdot \frac{e}{d} = F_G - Z_1 \quad \rightarrow \quad Z_2 = F_G \cdot \frac{d}{e} - Z_1 \cdot \frac{d}{e} \qquad (4)$

(4) in (1): $\quad F \cdot a = Z_1 \cdot c + F_G \cdot b \cdot \frac{d}{e} - Z_1 \cdot d \cdot \frac{b}{e} \qquad (5)$

aus (3): $\quad Z_1 = \frac{F_G \cdot x}{b + e - c - d}$; in (5): $\quad F = \frac{F_G \cdot x}{b+e-c-d} \cdot \left(c - d \cdot \frac{b}{e}\right) \cdot \frac{1}{a} + F_G \cdot d \cdot \frac{b}{e \cdot a}$

Funktion von x unabhängig, wenn $c - d \cdot \frac{b}{e} = 0$, d.h., es muß gelten: $\frac{c}{b} = \frac{d}{e}$

b) $\quad F = F_G \cdot d \cdot \frac{b}{e \cdot a} = F_G \cdot c \cdot \frac{b}{b \cdot a} \quad \rightarrow \quad \frac{F}{F_G} = \frac{c}{a} = \frac{1}{10}$