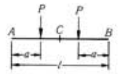
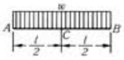
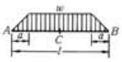
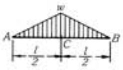
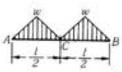
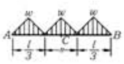
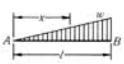
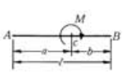
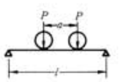
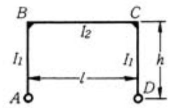
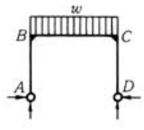
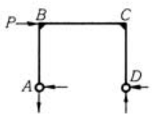
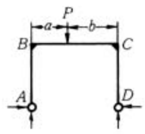
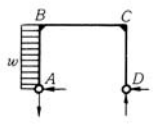
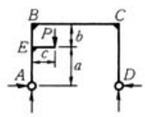
梁の反力，曲げモーメント及び撓み(2/2)

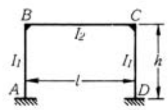
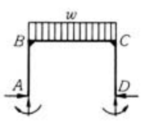
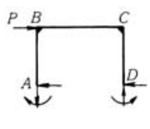
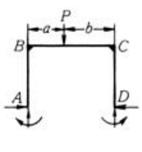
	P	Pa	$\frac{Pa}{l}(l-a)$	(支持) $f_c=\frac{Pl^3}{6EI}\left[\frac{3a}{4l}-\left(\frac{a}{l}\right)^3\right]$ (固定) $f_c=\frac{Pl^3}{6EI}\left[\frac{3}{4}\left(\frac{a}{l}\right)^2-\left(\frac{a}{l}\right)^3\right]$
	$\frac{wl}{2}$	$\frac{wl^2}{8}$	$\frac{wl^2}{12}$	(支持) $f_c=\frac{5wl^4}{384EI}$ (固定) $f_c=\frac{wl^4}{384EI}$
	$\frac{l-a}{2}w$	$\frac{wl^2}{24}\left[3-4\left(\frac{a}{l}\right)^2\right]$	$\frac{wl^2}{24}\left[1-2\left(\frac{a}{l}\right)^2-\left(\frac{a}{l}\right)^3\right]$	(支持) $f_c=\frac{wl^4}{1920EI}\left[25-40\left(\frac{a}{l}\right)^2+16\left(\frac{a}{l}\right)^4\right]$
	$\frac{wl}{4}$	$\frac{wl^2}{12}$	$\frac{5wl^2}{96}$	(支持) $f_c=\frac{wl^4}{120EI}$ (固定) $f_c=\frac{0.7wl^4}{384EI}$
	$\frac{wl}{4}$	$\frac{wl^2}{16}$	$\frac{17wl^2}{384}$	(支持) $f_c=\frac{7wl^4}{1024EI}$
	$\frac{wl}{4}$	$\frac{7wl^2}{108}$	$\frac{37wl^2}{864}$	(支持) $f_c=\frac{259wl^4}{38880EI}$
	(支持) $\frac{wl}{6}$，$\frac{2wl}{6}$ (固定) $\frac{3wl}{20}$，$\frac{7wl}{20}$	$M_x=\frac{wlx}{6}\left(1-\frac{x^2}{l^2}\right)$ $M_{max}=0.064wl^2$ $(x=0.5774l)$	(A端) $-\frac{wl^2}{30}$ (B端) $-\frac{wl^2}{20}$	(支持) $f_{max}=\frac{0.00652wl^4}{EI}$ $(x=0.5193l)$ (固定) $f_{max}=\frac{wl^4}{764EI}$ $(x=0.525l)$
	(支持) $\frac{W}{l}\left(\frac{b}{2}+c\right)$ $\frac{W}{l}\left(\frac{b}{2}+a\right)$	$M_{max}=\frac{W}{b}\left(\frac{x_1^2-a^2}{2}\right)$ $x_1=a+\frac{R_A\cdot b}{W}$	(A端) $\frac{-W}{12l^2b}[e^3(4l-3e)-c^3(4l-3c)]$ (B端) $\frac{W}{12l^2b}[d^3(4l-3d)-a^3(4l-3a)]$	(支持) $a=c$, $f_{max}=\frac{W}{384EI}(8l^3-4lb^2+b^3)$
	(支持) $-R_A=R_B=\frac{M}{l}$	$M_{CA}=\frac{Ma}{l}$ $M_{CB}=\frac{Mb}{l}$	(A端) $M\cdot\frac{b}{l^2}(3a-l)$ (B端) $M\cdot\frac{a}{l^2}(3b-l)$	(支持) $f_c=-\frac{Mab}{3EI}\left(\frac{a}{l}-\frac{b}{l}\right)$
	$R_{max}=\frac{P}{l}(2l-a)$	$M_{max}=\frac{P}{8l}(2l-a)^2$ $a>0.586l$のときは，$M_{max}=\frac{Pl}{4}$		

ラーメンの曲げモーメント公式集(1/2)

両脚鉸端矩形ラーメン

	$k=\frac{I_2}{I_1}\cdot\frac{h}{l}$， $N=2k+3$ 〔註〕 下式のMの正負は内側引張のときを正としてある。
	$M_B=M_C=-\frac{wl^2}{4N}$， $V_A=V_D=\frac{wl}{2}$， $H_A=H_D=\frac{M_B}{h}$
	$M_B=-M_C=\frac{Ph}{2}$， $V_A=V_D=\frac{Ph}{l}$， $H_A=H_D=\frac{P}{2}$
	$M_B=M_C=-\frac{Pab}{l}\cdot\frac{3}{2N}$ $V_A=\frac{Pb}{l}$， $V_D=\frac{Pa}{l}$， $H_A=H_D=-\frac{M_B}{h}$
	$M_B=\frac{wh^2}{4}\left(-\frac{k}{2N}+1\right)$， $H_D=-\frac{M_C}{h}$ $M_C=\frac{wh^2}{4}\left(-\frac{k}{2N}-1\right)$， $H_A=(wh-H_D)$ $V_A=V_B=\frac{wh^2}{2l}$
	$M_B=\frac{P\cdot c}{2}\left(\frac{(3a_1^2-1)k}{N}+1\right)$， $a_1=\frac{a}{h}$ $M_C=\frac{P\cdot c}{2}\left(\frac{(3a_1^2-1)k}{N}-1\right)$， $H_A=H_D=-M_C/h$， $V_D=\frac{P\cdot c}{l}$， $V_A=P-V_D$ $M_{EA}=-H_A\cdot a$， $M_{EB}=P\cdot c-H_A\cdot a$

両脚固定矩形ラーメン

	$k=\frac{I_2}{I_1}\cdot\frac{h}{l}$， $N_1=k+2$， $N_2=6k+1$ 〔註〕 下式のMの正負は内側引張のときを正としてある。
	$M_A=M_D=\frac{wl^2}{12N_1}$， $M_B=M_C=-\frac{wl^2}{6N_1}=-2M_A$ $V_A=V_D=\frac{wl}{2}$， $H_A=H_D=\frac{3M_A}{h}$
	$M_A=-\frac{Ph}{2}\cdot\frac{3k+1}{N_2}$， $M_B=\frac{Ph}{2}\cdot\frac{3k}{N_2}$ $M_D=\frac{Ph}{2}\cdot\frac{3k+1}{N_2}$， $M_C=\frac{Ph}{2}\cdot\frac{3k}{N_2}$ $H_A=H_D=\frac{P}{2}$， $V_A=V_D=\frac{2M_B}{l}$
	$a_1=a/l$， $b_1=b/l$ $M_A=\frac{Pab}{l}\left(\frac{1}{2N_1}-\frac{b_1-a_1}{2N_2}\right)$ $M_B=\frac{Pab}{l}\left(\frac{1}{N_1}+\frac{b_1-a_1}{2N_2}\right)$ $M_D=\frac{Pab}{l}\left(\frac{1}{2N_1}+\frac{b_1-a_1}{2N_2}\right)$

15 建築