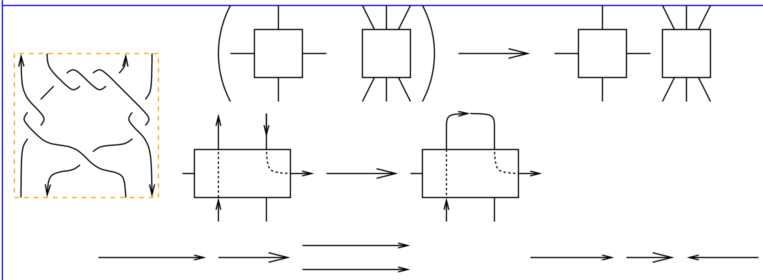
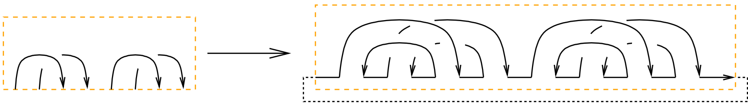
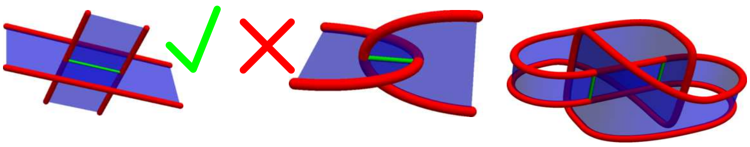
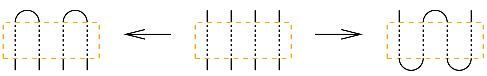
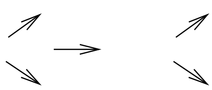
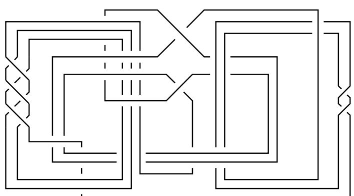












```
ΓCollect[Γ[ω_, λ_]] := Γ[Simplify[ω],
   Collect[λ, h_, Collect[#, t_, Factor] &]];
Format[Γ[ω_, λ_]] := Module[{S, M},
   S = Union@Cases[Γ[ω, λ], (h | t)a_ :→ a, ∞];
   M = Outer[Factor[∂h#1t#2 λ] &, S, S];
   M = Prepend[M, t# & /@ S] // Transpose;
   M = Prepend[M, Prepend[h# & /@ S, ω]];
   M // MatrixForm];
```

```
Γ /: Γ[ω1_, λ1_] Γ[ω2_, λ2_] := Γ[ω1 * ω2, λ1 + λ2];
ma_b_→c_[Γ[ω_, λ_]] := Module[{α, β, γ, δ, θ, ϵ, ϕ, ψ, Ξ, μ},
```

$$\begin{pmatrix} \alpha & \beta & \theta \\ \gamma & \delta & \epsilon \\ \phi & \psi & \Xi \end{pmatrix} = \begin{pmatrix} \partial_{t_a,h_a}\lambda & \partial_{t_a,h_b}\lambda & \partial_{t_a}\lambda \\ \partial_{t_b,h_a}\lambda & \partial_{t_b,h_b}\lambda & \partial_{t_b}\lambda \\ \partial_{h_a}\lambda & \partial_{h_b}\lambda & \lambda \end{pmatrix} \text{ /. } (t\mid h)_{a|b} \to 0;$$

$$\Gamma\left[(\mu = 1-\beta)\,\omega,\ \{t_c, 1\}.\begin{pmatrix} \gamma+\alpha\delta/\mu & \epsilon+\delta\theta/\mu \\ \phi+\alpha\psi/\mu & \Xi+\psi\theta/\mu \end{pmatrix}.\{h_c, 1\}\right.$$

$$\left.\text{ /. } \{T_a \to T_c,\ T_b \to T_c\} \text{ // ΓCollect}\right];$$

$$Rp_{a\_b\_} := \Gamma\left[1,\ \{t_a, t_b\}.\begin{pmatrix} 1 & 1-T_a \\ 0 & T_a \end{pmatrix}.\{h_a, h_b\}\right];$$

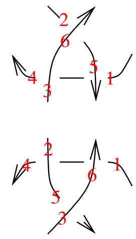
$$Rm_{a\_b\_} := Rp_{ab} \text{ /. } T_a \to 1/T_a;$$

$$\zeta = \Gamma\left[\omega,\ \{t_1, t_2, t_3, t_S\}.\begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \theta_1 \\ \alpha_{21} & \alpha_{22} & \alpha_{23} & \theta_2 \\ \alpha_{31} & \alpha_{32} & \alpha_{33} & \theta_3 \\ \phi_1 & \phi_2 & \phi_3 & \Xi \end{pmatrix}.\{h_1, h_2, h_3, h_S\}\right];$$

$$(\zeta \text{ // } m_{12\to1} \text{ // } m_{13\to1}) == (\zeta \text{ // } m_{23\to2} \text{ // } m_{12\to1})$$

True

$$\{Rm_{51}\, Rm_{62}\, Rp_{34} \text{ // } m_{14\to1} \text{ // } m_{25\to2} \text{ // } m_{36\to3},$$
$$Rp_{61}\, Rm_{24}\, Rm_{35} \text{ // } m_{14\to1} \text{ // } m_{25\to2} \text{ // } m_{36\to3}\}$$



$$\left\{\begin{pmatrix} 1 & h_1 & h_2 & h_3 \\ t_1 & \frac{T_3}{T_2} & 0 & 0 \\ t_2 & \frac{-1+T_2}{T_2} & \frac{1}{T_3} & 0 \\ t_3 & -\frac{-1+T_3}{T_2} & \frac{-1+T_3}{T_3} & 1 \end{pmatrix}, \begin{pmatrix} 1 & h_1 & h_2 & h_3 \\ t_1 & \frac{T_3}{T_2} & 0 & 0 \\ t_2 & \frac{-1+T_2}{T_2} & \frac{1}{T_3} & 0 \\ t_3 & -\frac{-1+T_3}{T_2} & \frac{-1+T_3}{T_3} & 1 \end{pmatrix}\right\}$$

$$z = Rm_{12,1}\, Rm_{27}\, Rm_{83}\, Rm_{4,11}\, Rp_{16,5}\, Rp_{6,13}\, Rp_{14,9}\, Rp_{10,15};$$

$$\text{Do}[z = z \text{ // } m_{1k\to1},\ \{k, 2, 16\}];$$

z

$$\begin{pmatrix} 11 - \frac{1}{T_1^3} + \frac{4}{T_1^2} - \frac{8}{T_1} - 8T_1 + 4T_1^2 - T_1^3 & h_1 \\ t_1 & 1 \end{pmatrix}$$