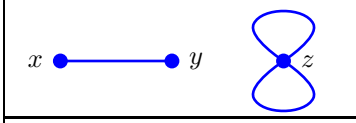
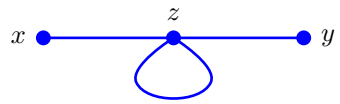
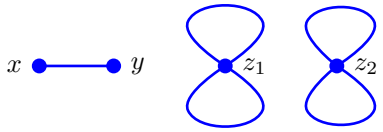
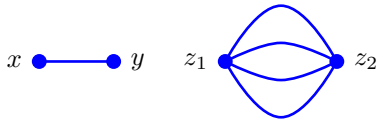
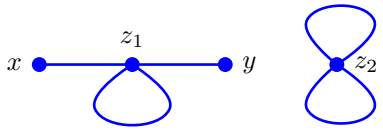
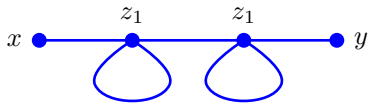
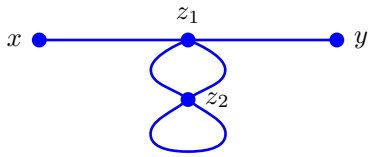
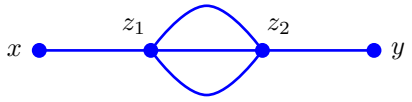
$$\langle 0|\,\mathbf{T}\hat{\Phi}(x)\hat{\Phi}(y)\hat{\Phi}^4(z)\,|0\rangle\,, \qquad \frac{6!}{2^3\times 3!} = 15 \text{ pairings}$$

	3 terms	8 symmetries
	12 terms	2 symmetries

For each diagram, #terms × #symmetries = 4!.

$$\langle 0|\,\mathbf{T}\hat{\Phi}(x)\hat{\Phi}(y)\hat{\Phi}^4(z_1)\hat{\Phi}^4(z_2)\,|0\rangle\,, \qquad \frac{10!}{2^5\times 5!} = 945 \text{ pairings}$$

	9 terms	2×8^2 symmetries
	72 terms	16 symmetries
	24 terms	2×24 symmetries
	2×36 terms	16 symmetries
	2×12^2 terms	4 symmetries
	2×12^2 terms	4 symmetries
	2×96 terms	6 symmetries

For each diagram, #terms × #symmetries = $2\times(4!)^2$.