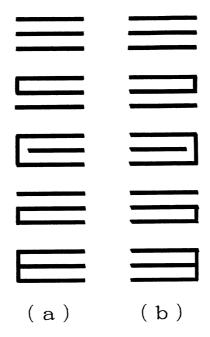Fig. 2. Schematic illustrations for the five patterns of rhyming. The method follows that of KOUZU (GENJIKOU). (a) For head rhyme; (b) For end rhyme.

$$P(\text{AAA}) = p_a^3 + p_i^3 + p_u^3 + p_e^3 + p_o^3 + p_n^3, \tag{4c}$$

where p_x (x = a, i, u, e, o, n) stands for the statistical probability of finding the letter x in the series of rhyming patterns. Derivation of Eq. (4) is described in Appendix B. In the sample shown in Fig. 1 they become

$$(p_a, p_i, p_u, p_e, p_o, p_n) = (78/189, 34/189, 44/189, 10/189, 23/189, 0) \tag{5a}$$

for the analysis of head rhyme (Fig. 1(a)) and

$$(p_a, p_i, p_u, p_e, p_o, p_n) = (54/189, 41/189, 27/189, 25/189, 38/189, 4/189) \tag{5b}$$

for the analysis of end rhyme (Fig. 1(b)).

2.4. Hypothesis test

In order to examine if the observed distribution of rhyme patterns is determined stochastically we will perform a test with the khi-square statistics (e.g., MUTO, 1995). First we set a null hypothesis

$$H: \text{The rhyme distribution is determined stochastically.} \tag{6}$$