

$$1. a) 1_0 = 1$$

$$2_0 = \binom{4}{3} = 4$$

$$3_0 = \binom{4}{2} = 6$$

$$= 11$$

$$b) 1_0 = 5! = 120$$

$$2_0 = \binom{4}{3} \cdot \frac{5!}{2!} = 240$$

$$3_0 = 6 \cdot \frac{5!}{3!} = 120$$

$$= 480$$

$$2 \cdot \binom{13}{2} \cdot \binom{4}{2} \binom{4}{2} \cdot 4 \cdot 11 = 123552$$

$$3. \text{ case 0 songs } \binom{21}{5}$$

$$\text{case 1 song } \binom{20}{5}$$

$$= 35853.$$

$$4. 3 \cdot 2 \cdot 1$$

5. no break

$$(7, 1, 1, 1)$$

$$(6, 2, 1, 1)$$

$$(5, 2, 2, 1)$$

$$(5, 3, 1, 1)$$

$$(4, 4, 1, 1)$$

$$(4, 3, 2, 1)$$

$$(3, 3, 3, 1)$$

$$(4, 2, 2, 2)$$

$$(3, 3, 2, 2)$$

$$(8, 1, 1)$$

$$(7, 2, 1)$$

$$(6, 3, 1)$$

$$(5, 4, 1)$$

$$(6, 2, 2)$$

$$(5, 3, 2)$$

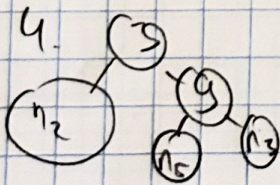
$$(4, 4, 2)$$

$$(4, 3, 3)$$

ways

ways

= 17 ways



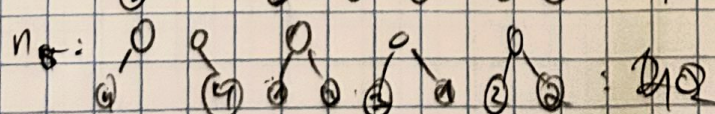
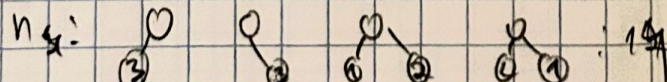
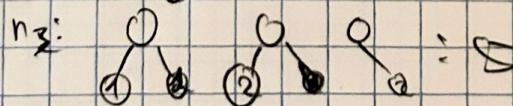
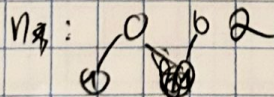
$$= n_2 + n_3 + n_5$$

$$= 2 + 4 + 42$$

$$= 48$$

$$= 2 \cdot 5 \cdot 42$$

$$= 420$$



ways