1.1 p ∧ q and ¬q ∧¬p has a different truth table. False.

p ∧ q ⇔ ¬q ∧¬p

p	q	**¬q**	**¬p**	p ∧ q	**¬q ∧¬p**
T	T	F	F	T	F
T	F	T	F	F	F
F	T	F	T	F	F
F	F	T	T	F	T

1.2 p ∧ q and ¬q ∧¬p has a different truth table. False.

p ∨ q ⇔ ¬q ∨¬p

p	q	**¬q**	**¬p**	**p ∨ q**	**¬q ∨ ¬p**
T	T	F	F	T	F
T	F	T	F	T	T
F	T	F	T	T	T
F	F	T	T	F	T

2.1 **P ↔ q and (p ∧ q) ∧ (q ∧ p) have a different truth table. False.**

p ↔ q ⇔ (p ∧ q) ∧ (q ∧ p)

p	q	**q ∧ p**	**p ∧ q**	**P ↔ q**	**(p ∧ q) ∧ (q ∧ p)**
T	F	F	F	F	F
T	T	T	T	T	T
F	F	F	F	T	F
F	T	F	F	F	F

2.2 **P ↔ q and (p ∨ q) ∧ (q ∨ p) have a different truth table. False.**

p ↔ q ⇔ (p ∨ q) ∧ (q ∨ p)

p	q	**p ∨ q**	**q ∨ p**	**P ↔ q**	**(p ∨ q) ∧ (q ∨ p)**
T	F	T	T	F	T
T	T	T	T	T	T
F	F	F	F	T	F
F	T	T	T	F	T