

and vs. &

	Logical and	Bitwise &
	Checks if expression is 'truthy' or 'falsy' Short-circuit evaluation: return first 'falsy' or last 'truthy' value (if no 'falsy') Falsy include: False, 0, 0.0, [], {}	Bitwise & operation
Boolean	True and False = False True and True = True	True & False = False True & True = True
Integer	8 and 0 = 0 0b1101 and 0b1011 = 0b1011	8 & 0 = 0 (0b1000 & 0b0000 = 0b0000) 0b 11 01 & 0b 10 11 = 0b 10 01
String	'first' and "" and 'last' = "" 'first' and 'second' and ' third ' = ' third '	n.a.
List	[] and ['a', 'b', 'c'] = [] [True, False] and [False , True] = [False , True]	n.a.
Series	Not directly applicable (ambiguity)	Series([True, False, True]) & Series([False, True, True]) = Series([False, False, True])

or vs. |

	Logical or	Bitwise
	Checks if expression is 'truthy' or 'falsy' Short-circuit evaluation: return first 'truthy' or last 'falsy' value (if no 'truthy') Falsy include: False, 0, 0.0, [], {}	Bitwise operation
Boolean	False or False = False True or True = True	False False = False True True = True
Integer	8 or 0 = 8 0b1101 and 0b1011 = 0b1101	8 0 = 8 (0b1000 0b0000 = 0b1000) 0b 1101 0b 1011 = 0b 1111
String	' first ' or "" or 'last' = ' first ' ' first ' or 'second' or 'third' = ' first '	n.a.
List	[] or ['a', 'b', 'c'] = ['a', 'b', 'c'] [True , False] or [False, True] = [True , False]	n.a.
Series	Not directly applicable (ambiguity)	Series([True , False , True]) Series([False , True , True]) = Series([True , True , True])

Final Remarks

- You can combine logical operations of different types:

True	and	[]	and	'abc'	=	[]
True	and	['a', 'b']	and	'abc'	=	'abc'
False	or	[]	or	''	=	''
False	or	['a', 'b']	or	'abc'	=	['a', 'b']

- ...and different operations (and binds stronger than or):

True	and	[]	or	'abc'	=	'abc'
True	and	['a', 'b']	or	'abc'	=	['a', 'b']
False	or	['a', 'b']	and	''	=	''
True	or	['a', 'b']	and	''	=	True