2.1.xa. Exercise answers

1. **a.** *Mike visited London* ∧ *Mike visited Paris*

    L ∧ P

    both L and P

    [L: *Mike visited London*; P: *Mike visited Paris*]

    b. *Ann wanted white wine* ∧ *Bill and Carol wanted red wine*
    Ann wanted white wine ∧ (*Bill wanted red wine* ∧ *Carol wanted red wine*)

    A ∧ (B ∧ C)

    both A and both B and C

    [A: *Ann wanted white wine*; B: *Bill wanted red wine*; C: *Carol wanted red wine*]

    c. *It will rain and clear off* ∧ *it will rain*
    (*it will rain* ∧ *it will clear off*) ∧ *it will rain*

    (R ∧ C) ∧ R

    both both R and C and R

    [C: *it will clear off*; R: *it will rain*]

    d. *That is a market* ∧ *that is new relative to other markets but growing*
    That is a market ∧ (*that is new relative to other markets* ∧ *that is growing*)

    M ∧ (N ∧ G)

    both M and both N and G

    [G: *that is growing*; M: *that is a market*; N: *that is new relative to other markets*]

    e. *Confucius is affable but dignified* ∧ *Confucius is austere but not harsh* ∧ *Confucius is polite but completely at ease*
    (*Confucius is affable* ∧ *Confucius is dignified*) ∧ (*Confucius is austere* ∧ *Confucius is not harsh*) ∧ (*Confucius is polite* ∧ *Confucius is completely at ease*)

    (A ∧ D) ∧ (S ∧ H) ∧ (P ∧ E)

    (both A and D) and (both S and H) and (both P and E)

    [A: *Confucius is affable*; D: *Confucius is dignified*; E: *Confucius is completely at ease*; H: *Confucius is not harsh*; P: *Confucius is polite*; S: *Confucius is austere*]

    f. *Tim lost his glasses and his wallet* ∧ *Tim's glasses and wallet were each returned*
    (*Tim lost his glasses* ∧ *Tim lost his wallet*) ∧ (*Tim's glasses were returned* ∧ *Tim's wallet was returned*)

    (G ∧ W) ∧ (R ∧ T)

    both both G and W and both R and T

    [G: *Tim lost his glasses*; R: *Tim's glasses were returned*;

T: *Tim's wallet was returned*; W: *Tim lost his wallet*]

g. *Tim lost his glasses and his wallet ∧ one person found both Tim's glasses and his wallet*
(*Tim lost his glasses ∧ Tim lost his wallet*) ∧ *one person found both Tim's glasses and his wallet*

$$(G ∧ W) ∧ O$$

both both G and W and O

[G: *Tim lost his glasses*; O: *one person found both Tim's glasses and his wallet*; W: *Tim lost his wallet*]

Note: *One person found both Tim's glasses and his wallet* cannot be analyzed further because *One person found Tim's glasses ∧ one person found Tim's wallet* does not imply that the same person found both.

2. **a.** A ∧ (B ∧ C)

b. (A ∧ B) ∧ C

c. both both A and B and both C and D

d. both A and both both B and C and D

e. both both A and both B and C and D

f. ((A ∧ B) ∧ C) ∧ D

3. **a.** (*Fred visited Venice ∧ Fred visited Florence*) ∧ *Fred spent a week in Rome*
Fred visited Venice and Florence ∧ Fred spent a week in Rome
Fred visited Venice and Florence, and he spent a week in Rome

b. (*he was a judge ∧ (he was stern ∧ he was fair*)) ∧ *he had an excellent knowledge of the law*
(*he was a judge ∧ he was stern but fair*) ∧ *he had an excellent knowledge of the law*
He was a stern but fair judge who had an excellent knowledge of the law

c. (*we arrived cold* ∧ *we arrived tired* ∧ *we arrived hungry*) ∧
(*we left warm* ∧ *we left stuffed* ∧ *we left sleepy*)
We arrived cold, tired, and hungry ∧ *we left warm, stuffed,*
and sleepy
We arrived cold, tired, and hungry; and we left warm, stuffed,
and sleepy

d. *Old King Cole was a merry old soul* ∧ *Old King Cole was a*
merry old soul
Old King Cole was a merry old soul, and a merry old soul was
he

4. Numbers below the tables indicate the order in which values were
computed

a.

A	B	C	A ∧ (B ∧ C)
T	T	F	Ⓕ F

 2   1

b.

A	B	C	D	((A ∧ D) ∧ C) ∧ (B ∧ A)
T	T	F	T	T F Ⓕ T

 1   2   3   1