

Solutions

Each answer shows the steps, then the **result**.

2.1

- They are equal

2.2

- Not necessarily — they are constant, but usually not equal

2.3

- Both the forward and reverse reactions continue at the molecular level

3.1 B

- constant over time

3.2

(a)

- The forward rate starts high and falls as reactants deplete; the reverse rate starts at zero and rises as products build, until they meet

(b)

- They are equal

3.3

- The forward and reverse reactions continue at equal rates, so molecules keep converting both ways; the concentrations stay constant only because the two rates cancel