

Equilibrium Answers

- 1 (a) The yield decreases (there are fewer gas molecules on the left side of the reaction). Reaction rate increases.
- (b) The yield increases (there are fewer gas molecules on the right side of the reaction). Reaction rate increases.
- (c) No change in yield (there are the same number of gas molecules on each side of the reaction). The rate will increase.
- 2 (a) The yield increases (the forward reaction is exothermic). The reaction rate decreases.
- (b) The yield decreases (the backward reaction is exothermic). The reaction rate decreases.
- (c) No change in yield (the enthalpy is zero). The reaction rate decreases.
- 3 (a) (i) yield decreases
(ii) yield increases
(iii) no change in yield (though the yield is obtained more quickly)
- (b) (i) increased rate
(ii) increased rate
(iii) increased rate
- (c) High pressure, moderate temperature, and a catalyst. High pressure increases the yield and the rate. A catalyst increases the rate. High temperature would increase the rate, but decrease the yield. In contrast, low temperature would decrease the rate, but increase the yield. So a compromise temperature must be used.