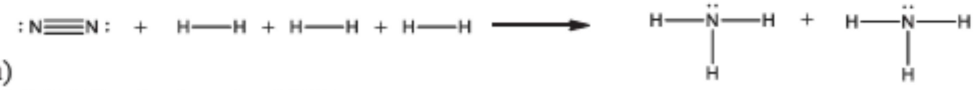
Chapter 15 Homework Key

12, 13, 16, 18, 20, 26, 28

12. $2\ CH_4 + 3\ O_2 \rightarrow 2\ CO + 4\ H_2O$

13. A reaction goes faster at a higher temperature.



16. (a)
    (b) 946 kJ/mol x 1 mol = 946 kJ
    (c) 432 kJ/mol x 3 mol = 1300 kJ
    (d) -391 kJ/mol x 6 mol = -2350 kJ (Note: There are 3 moles of N-H bond in each ammonia molecule.)
    (e) -104 kJ; energy is released to the surroundings.

18. 572 kJ/2.00 mol x 30.0 mol = 8580 kJ

20. 15.8 g H_2/2.02 g/mol = 7.82 mol H_2
    483.6 kJ/2 mol H_2 x 7.82 mol H_2 = 1890 kJ

26. Nitrogen in the atmosphere.

28. When the form of energy is changed, some of it is randomly distributed or lost to entropy.