Answer Key

1. a. 9 mod 7
   9 mod 7 = 2; $9 = 7 \cdot 1 + 2$

   b. 5 mod 2
   5 mod 2 = 1; $5 = 2 \cdot 2 + 1$

   c. 15 mod 3
   15 mod 3 = 0; $15 = 3 \cdot 5 + 0$

   d. -7 mod 2
   -7 mod 2 = 1; $-7 = 2 \cdot -4 + 1$

2. a. If a divides b and a divides c, then a divides $b + c$. [1]
   $b = ak, c = aj$ $=> b + c = ak + aj$ $=> a(k + j)$

   b. If a divides b and c divides d, then ac divides bd. [2]
   $b = ak, d = cj$ $=> bd = (ak)(cj)$ $=> (ac)(kj)$

[1] From Discrete Mathematics by Ensley and Crawley
[2] From Discrete Mathematics by Ensley and Crawley