1. Study Sections 2.3, 2.4.

2. Study English expressions handout.

3. Do Exercises 2.3(d, e, h), 2.4(b, d, f).

4. Do Exercise 2.5. Use

   r for "It's raining,"
   s for "I'm going swimming,"
   sc for "It's raining cats,"
   sd for "It's raining dogs,"
   eh for "I'll eat my hat."

5. Do Exercise 2.7. Use

   xly for $x < y$,
   xey for $x = y$,
   xgy for $x > y$,
   ylz for $y < z$,
   ygz for $y > z$,
   vew for $v = w$,
   $\neg xly$ for $x \geq y$,
   ep for "Execution of P is begun with $x < y$,"
   ty for "Execution of P terminates with $y = 2x$,"
   $ep1$ for "Execution of P is begun with $x < 0$,"
   ept for "Execution of P terminates."

   Hint for part (e): None or one of the three must be true. So, the expression should start like this. $(\neg xly \wedge \neg ylz \wedge \neg vew) \vee (xly \wedge \neg ylz \wedge \neg vew) \vee \ldots$, *etc*.

   Hint for part (i): The word "means" translates to $\equiv$.

6. Translate the following English sentences into boolean expressions. Use

   xgy for $x > y$,
   ylz for $y < z$.

   (a) $x > y$ if $y < z$.
   (b) $x > y$ iff $y < z$.
   (c) $x > y$ only if $y < z$.
   (d) $x > y$ if and only if $y < z$.
   (e) $x > y$ is a sufficient condition for $y < z$.
   (f) $x > y$ is a necessary condition for $y < z$.
   (g) $x > y$ is a necessary and sufficient condition for $y < z$.
   (h) $x > y$ whenever $y < z$.
   (i) $x > y$ provided that $y < z$.
   (j) $x > y$ unless $y < z$.
   (k) $x > y$ unless it is not the case that $y < z$.