Work on these with your partner(s) at the board

1. Let p be the statement "The windchill is below zero",
   q be the statement "I am wearing a hat today", and
   r be the statement "I overslept this morning"
   Express each of the following using p, q, r and logical connectives:
   (a) If the windchill is below zero, then I am wearing a hat today.
   (b) If I am wearing a hat today, then the wind chill is below zero or I overslept.
2. Show that a conditional statement and its contrapositive are logically equivalent to each other by building the truth tables.
3. (a) State the converse of 1(a)
   (b) State the contrapositive of 1(b)
4. Provide an example of a true conditional proposition whose converse is false.
5. Provide an example of a true conditional proposition whose inverse is false.
6. Provide an example of a true conditional proposition whose contrapositive is false.