

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

1. Which of the following sentences are propositions?
  - (a) There is a Wheaton College in Norton, Massachusetts.
  - (b) There is a Wheaton College in Mansfield, Massachusetts.
  - (c)  $x = 3x - 4$
  - (d)  $x = 3x - 4$  if  $x = 2$
  - (e) How are you doing today?
2. Let  $p$  be the statement “Lily has purple hair”,  $q$  be the statement “Lily is fluent in Spanish”; and  $r$  be the statement that “Lily lives in Springfield”. Express each of the following statements using  $\sim$ ,  $\wedge$ ,  $\vee$ , and the letters given.
  - (a) Lily has purple hair and lives in Springfield.
  - (b) Lily is fluent in Spanish but does not have purple hair.
  - (c) Lily neither has purple hair nor lives in Springfield but is fluent in Spanish.
  - (d) Lily either lives in Springfield or has purple hair, but not both.

3. Construct truth tables for each of the following:

- (a) The logical expression from 2(b)
- (b) The logical expression from 2(c)

4. Construct truth tables for each of the following:

- (a)  $(p \vee q) \wedge r$
- (b) The logical expression from 2(d)