Parallel Circuits Intro Problems

1) You are given a 12-volt battery, ammeter $A$, voltmeter $V$, resistor $R_1$, and resistor $R_2$. Resistor $R_2$ has a value of 3.0 ohms.

(a) Using appropriate symbols from the Circuit Symbols physics reference table, draw and label a complete circuit showing:
   - resistors $R_1$ and $R_2$ connected in parallel with the battery
   - the ammeter connected to measure the current through resistor $R_1$, only
   - the voltmeter connected to measure the potential drop across resistor $R_1$

(b) If the total current in the circuit is 6.0 amperes, determine the equivalent resistance of the circuit.

(c) If the total current in the circuit is 6.0 amperes, determine the resistance of resistor $R_1$. [Show all calculations, including the equation and substitution with units.]

2) An electric circuit contains two 3.0-ohm resistors connected in parallel with a battery. The circuit also contains a voltmeter that reads the potential difference across one of the resistors.

(a) Draw a diagram of the circuit described, using the symbols from the Circuit Symbols physics reference table. [Assume availability of any number of wires of negligible resistance.]

(b) Calculate the total resistance of the circuit. [Show all work, including the equation and substitution with units.]
3) An 18-ohm resistor and a 36-ohm resistor are connected in parallel with a 24-volt battery. A single ammeter is placed in the circuit to read its total current.

Draw a diagram of the circuit described using symbols from the Circuit Symbols physics reference table. [Assume the availability of any number of wires of negligible resistance.]