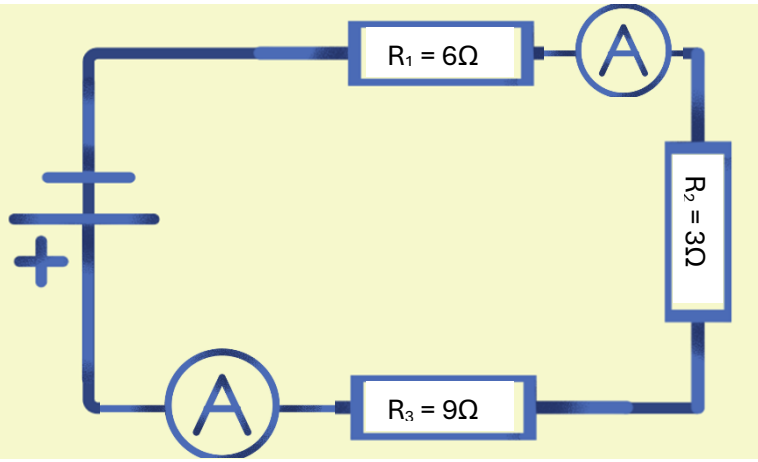
Name:_____

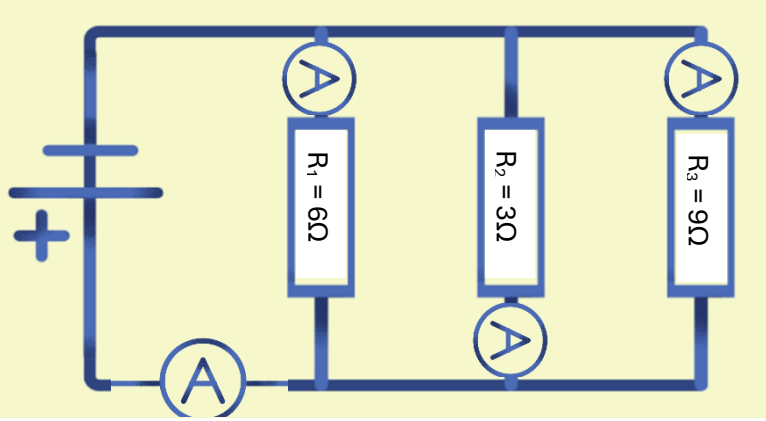
Series, Parallel, Power, & Efficiency Quiz

#1) Find the equivalent resistance of each of the following (6pts)

a)



b)



#2a) On the circuit for #1a, will both ammeters read the same current? Why? (2pts)

b) On the circuit for #1b, will all the ammeters read the same current? Why? (2pts)

c) On the circuit for #1b, how does ammeter 1 relate to the other ammeters?

#3) Hope gets a new pair of headphones over the holidays. She finds that the power rating on them is 15W. Mr. K recommends she uses them to listen to the deluxe tracks off of Tate McRae's "So close to What?" album (about 14minutes total). How much energy is required to make this happen? (4pts)

#4) Emma, Lauren, and Ryann decide to have a sleepover and they decide to watch Stranger Things season 5. Emma's TV has a percent efficiency of 30%. If the TV needs 180,000J (180kJ) to work, how much energy is actually used? (3pts)

#5) Cohen and Hayden are watching a Boston Bruins vs Edmonton Oilers NHL game. The game goes into overtime and a shootout and lasts about 3 hours. Cohen's TV has a power rating of 75W. If Cohen's TV only uses 676,767J of energy, what is the percent efficiency of the TV? (7pts)

Bonus Questions (If you have time):

#1) Rowan decides to experiment with some resistors. He starts with a 16Ω resistor that is 6cm long.

a) He stretches it so that its 12cm long. What is the new resistance? (1pt)

b) The diameter is 3mm. If Rowan stretches it so its new diameter is 12mm, what is the new resistance? (1pt)

#2) Express the energies calculated in #3 and #4 in both kJ and J (1pt)