Group problem grading for exam2

Overall, not bad. Things for everyone to work on:

- Defining variables
- Finding a general solution, rather than plugging in numbers.
- Checking limiting cases

The following comments are indicated on your problem solving sheet as C1.1=comment 1.1, etc

1) (4 pts) List given information, define variables, sketch pictures

1. Most of you did okay. However, since the ultimate goal is to find a general formula, you have to give symbols for all quantities in your diagram. -1 if you left out something, such as the supply voltage.
2. -2 if you defined no symbols here.

2) (2 pts) Simplify question, list target quantity

1. Here you need to specify the power you want is in the 5 ohm resistor. -1 if you did not
2. Most everyone figured out you want a power. -2 if you did not specify this.

3) (2 pts) List all related quantitative relationships

1. Everyone said something about power, Ohm's law, resistors in series and parallel.
2. Good

4) (4 pts) Outline approach, sketch diagrams if needed

- Many of you were a little unsure about this part. The main thing is you are trying to find power dissipated in the 5 Ohm resistor.
    1. -1 pts if you did not specify 5 Ohm (heater) resistor or said the right resistor by did not know how to calculate it.
    2. -1 pts if you did not mention that the power through the heater is highest when Rv is maximum. This is because more current will flow through the heater when Rv is large since current takes the path of least resistance.
    3. -2 pts if you assumed 15 A as current

5) (2 pts) Obtain general solution

- -2 pts if no general solution written down. A general solutions means you have a formula in only variables that you defined earlier. Only one group did this.

6) (2 pts) Check units

- Everyone did this.

7) (2 pts) Check limiting case.

1. Many of you do not understand what this means. This is supposed to be a way for you to check the general formula you found earlier. You should do two things:
    a. Specify how you expect the system to behave. For example, you could say you would expect the power dissipated through the 5 Ohm resistor to increase as the supply voltage increases.
    b. Check to see if the formula behaves in this way. You let the quantity get bigger or smaller, and see if the calculated quantity behaves as you expected.
    c. Then you comment on this and say whether this shows that your formula is correct or not.
2. -1 if you gave a way of checking, but did not have a general formula
3. -2 if you misunderstood what a limiting case check was

8) (1 pt) Obtain a numeric solution.

- -1 if the value was incorrect.

9) (1 pt) Why is the solution reasonable?

- -1 if your answer did not make sense