Year 11 Science: A worked physics investigation: wire length and resistance

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. At 60 cm one group read 1.66 V across the wire and 0.20 A through it. Find the resistance.

2. The class added a 70 cm length and got 9.8 Ω, 9.6 Ω and 9.7 Ω. Find the mean and its uncertainty, and say whether it agrees with R = 13.5 Ω/m × L + 0.3 Ω.

3. Use the line to predict the reading for a 50 cm length.

4. A student concluded: "When the wire got longer the resistance got bigger because there is more wire." Which grade is this closest to, and what two things would lift it to Merit?

5. Explain why the class's line meets the resistance axis at 0.3 Ω instead of passing through the origin.

Fix the mistake

6. Correct this statement: "The graph is a straight line, so resistance is proportional to length."

7. Correct this statement: "A longer wire has more resistance because the electrons get used up on the way."

8. Correct this statement: "Writing the physics in one paragraph and the results in another."

9. Correct this statement: "Predicting 1.50 m with the gradient 0.135 and getting 0.5 Ω."