SCIENCE NORTH SCIENCE NORD

SUDBURY, ONTARIO, CANADA

Heat Transfer Part 5 - Assessment of Learning Rubric

Level	1	2	3	4
Particle Motions in water	Inaccurate or no sketch. The explanation is basic and incomplete. Student does not describe that hot and cold particles have different motions.	Sketch may have some inaccuracies. The explanation misses some of the details of the experiment. Student describes that hot and cold particles have different motions.	Accurate sketch of experiment results Explanation mostly complete. Student describes that hot particles have higher motion.	Accurate and nice sketch of experiment results. Detailed explanation of how the experiment progressed. Explanation clearly describes that hot particles have higher motion than cold particles, making the food colour spread faster.
Frozen Balloons	Incomplete and inaccurate explanation of experiment.	Description or explanation may be inaccurate, but an attempt was made to describe the experiment.	Description states that the balloon lost volume when it was frozen. The explanation is brief but essentially accurate.	Description clearly states that the balloon lost volume when it was frozen. The explanation identifies that cold air takes up less volume than hot air, deflating the balloon.
Convection Box	Inaccurate explanations and sketch. It is not clear why convection develops.	Sketch and explanation lack some detail but are mostly correct. The description of how convection currents develop lacks detail.	Accurate sketch of experimental setup. Explanation is mostly complete and correct. Basic explanation for convection currents correct.	Accurate and nice sketch of experimental setup. Detailed explanation of what happened when the experiment was performed. Clear explanation of how and why convection currents develop.

Convection in Water	Inaccurate descriptions and sketch. No explanation for convection flows is given.	Some inaccuracies in description and sketch. Explanation of convection flows is not quite complete or correct.	Description of experiment and results. Sketch is good but lacks some detail. Explanation of convection flows is basically correct.	Accurate description of experiment and what happened when the food colour was dropped in different places. Sketch clearly illustrates how the water currents rise over the hot spot. Explanation correctly describes convection flows.
Heating Clear and Dark Water	Incomplete temperature recordings. Graph has incorrect data points and is not labelled correctly.	Some temperature recordings may be missing. Graph is not entirely accurate and the axes may not be labelled correctly.	Almost complete recording of temperatures of both types of water over time. Mostly accurate and clearly drawn graph with correctly labelled axes.	Complete recording of temperatures of both types of water over time. Accurate and nicely drawn graph of temperatures, with correctly labelled axes and scales.
Insulated Greenhouse	Either no feature to increase heat absorption or heat retention is included.	One feature to increase heat absorption is included and listed in explanation. One feature to better retain heat is included and listed.	One or two features to increase heat absorption are included and described. One or two features to better retain heat are included and described.	Two or more features to increase heat absorption are included and accurately described. Two or more features to better retain heat are included and accurately described.

Greenhouse heat retention experiment	Many data points not recorded or not graphed correctly. Labels on graphs may be missing; explanations may be incomplete or inaccurate.	May have missed recording a few data points. Graph may have a couple of errors. Basic description of results (one sentence minimum) and brief explanation that could be expanded on.	Almost complete recording of temperatures over time. Mostly accurate and clearly drawn graph with correctly labelled axes. Good description of experimental results and an adequate explanation that may be brief.	Complete recording of temperature over time. Accurate and nicely drawn graph of temperature, with correctly labelled axes and scales. Fully accurate description of experimental results. Accurate explanation.