


SCOPE & SEQUENCE
GR. 9 - SCIENCE

Student Task

GRADE 9: Science

TOPIC 3: Heat Energy: Transfer And Conservation

TASK: Recording Lab Experiment Results Using Spreadsheet

PRODUCTIVITY TOOL: Spreadsheet, Word Processor

TIMELINE: 2 Classes (1 for lab; 1 for write-up)

LEVEL OF DIFFICULTY: ୪୫ Average

Students will conduct an experiment whereby they test two containers with contrasting types of surfaces (i.e. one dull and one shiny) for the rate of heat transfer through radiation, conduction or convection. After filling the two containers with water and heating the containers with a bright lamp, they measure the temperature of the water in each container to determine how different types of materials are affected by heat and light. They will plot the data recorded on a graph depicting two “best fit” lines denoting the information for each sample.



ICT Outcomes

The learner will:

- C1** 3.1 plan and conduct a search, using a wide variety of electronic sources
- 3.6 communicate in a persuasive and engaging manner, through appropriate forms, such as speeches, letters, reports and multimedia presentations, applying information technologies for content, audience and purpose
- C6** 3.2 identify the appropriate materials and tools to use in order to accomplish a plan of action
- C7** 3.1 identify patterns in organized information
- 3.2 make connections among related, organized data, and assemble various pieces into a unified message
- F1** 3.1 demonstrate an understanding that information can be transmitted through a variety of media
- 3.3 apply terminology appropriate to the technology being used at this division level
- F3** 3.1 use time and resources on the network wisely
- 3.6 model and assume personal responsibility for ethical behavior and attitudes and acceptable use of information technologies and sources in local and global concepts
- F4** 3.1 identify aspects of style in a presentation
- P1** 3.2 use advanced word processing menu features to accomplish a task; for example, insert a table, graph or text from another document
- P2** 3.2 design, create and modify a spreadsheet for a specific purpose, using functions such as SUM, PRODUCT, QUOTIENT, and AVERAGE
- 3.3 use a variety of technological graphic tools to draw graphs for data involving one or two variables
- P4** 3.3 emphasize information, using placement and colour





Curriculum Outcomes

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Specific Learner Expectations

Attitudes

Students will be encouraged to develop:

3. confidence in personal ability to solve practical problems.

Skills

Students will demonstrate the following technological problem-solving skills:

1. Understanding the Problem
 - identifying the purpose
 - identifying specific requirements (specifications)
2. Developing a Plan
 - identifying alternative approaches to the design of insulated containers
 - planning and designing for heat transfer
 - planning and designing for insulation
3. Carrying Out the Plan
 - testing the designs – construction of an insulated container
 - troubleshooting the designs – identifying and correcting sources of heat loss
4. Evaluating
 - evaluating the effectiveness of different insulating materials and designs for insulation
 - evaluating the planning process

Concepts

3. Heat can be transferred by conduction, convection and radiation.
 - identify factors that affect rates of radiation (e.g. colour, surface area, temperature)
4. Heat transfer can be controlled through selection of appropriate materials and by use of appropriate design
 - identify applications in which heat transfer is controlled (e.g. car radiator)

