Republic of the Philippines

# Department of Education

CORDILLERA ADMINISTRATIVE REGION

**Schools Division of Benguet**

23 Oct 2023

**DIVISION MEMORANDUM**
**No. 390 s. 2023**

## ADDENDUM TO DIVISION MEMORANDUM NO. 367 S. 2023, 2023 DIVISION SCIENCE AND MATHEMATICS FESTIVAL

DepEd-Benguet Division
OCT 2 3 2023
RELEASED

To: Assistant Schools Division Superintendent
Public Schools District Supervisor/ District In-Charge
Elementary and Secondary School Heads and Teachers
All Others Concerned

1. Relative to DM No. 367 s. 2023, titled 2023 Division and Science and Mathematics Festival, here under are additional provisions:

   a. The festival shall take place at Buyagan Elementary School; and
   b. A registration fee of Php 300.00 shall be collected from learner and teacher participants (with official receipt) to cover materials and office supplies needed, honoraria, meals and snacks of judges and other incidental expenses that will be incurred during the affair.

2. The following are enclosed for information and guidance of all concerned:

   Enclosure 1: Steering Committee
   Enclosure 2: Guidelines on Problem-based Mathematical Investigation
   Enclosure 3: Guidelines in Scoring TUKLAS projects

3. All other provisions of DM No. 367 s. 2023 shall remain in place.

4. Immediate dissemination of and strict compliance with this memorandum is desired.

**SALLY L. BANAREN-ULLALIM CESO V**
Schools Division Superintendent

/CID/RAG/jso/meod/ffp

Address: Wangal, La Trinidad, Benguet
Telephone Number: (074) 422-6570
Email: benguet@deped.gov.ph
Facebook Page: DepEd Tayo Benguet

TAYAM
Integrity Tields Accomplishments Bodilies Advancement Nurtures Excellence
ACCREDITED

Enclosure 1 to DM No: 390 s. 2023

# Steering Committee

Over-all Chairperson: Sally L. Banaken-Ullalim CESO V, Schools Division Superintendent
Co-Chairperson: Carmel F. Meris, Assistant Schools Division Superintendent
CES-CID: Rizalyn A. Guznian EdD
Members: Jardson S. Onio, EPS-Mathematics
Merlyn Conchita O. de Guzman, EPS-Science
Public Schools District Supervisors/ In-charge

| Contest Areas | Technical Working Group | |
|---|---|---|
| **A. DAMATH** | | |
| **Elementary** | Chief Arbiter: Mark Binay-an<br>Arbiters: Chester Ramirez & Gabriel Ganawed<br>Scorer: Joemar Soriano<br>Timer: Eleuterio Tegan & Moresto Angyatao | |
| **Secondary** | Chief Arbiter: Eljun Arisga<br>Arbiters: Ester Bugtong, Hardy Domingo, Delfin Chawan & Dionesia Antonio<br>Timer: Nerie Guzman & Mylie Carino | |
| **B. SCI-DAMA** | | |
| **Elementary** | Chief Arbiter: Vincent Depayso<br>Arbiters: Junwinver Joaquin & Benson Labaddan<br>Scorer: Randall Napeek<br>Timer: Cynthia Soriano & Larson Calatero | |
| **Secondary** | Chief Arbiter: Amor Parista<br>Arbiters: Willy Bosantog, Jonathan Busilac and Tristan Malafu & Angelito Calatan<br>Timer: Jessie Galian &Wilson Caysoen | |
| **C. MATHEMATICAL INVESTIGATION** | Research-based | Chairperson: Jim Alberto<br>Member: Jufelia De Olon |
| | Problem-based | Chief: Heather Banagui<br>Member: Crispher Ediong |
| **D. TUKLAS** | | |
| **Research Project Fair** | Life Science | Chairperson: Loida Boslay<br>Members: Janica Bagiw & Sheela Senot |
| | Physical Science | Chairperson: Jomar Palileng<br>Members: Juvydale Politchay & Denver Dokey |
| | Robotics and Intelligent Machines | Chairperson: Jefferson Kisim<br>Members: Eugene Espiritu & Alvin Guaki |

| | | |
|---|---|---|
| | Mathematics and Computational Science | Chairperson: Nelia Depaynos<br>Member: Dyanne Alonzo |

**REGISTRATION COMMITTEE**
Chairperson: Efagenia L. Paing
Members: Marijune Lucio

**AWARDS COMMITTEE**
Chairperson: Ryan Jay Salamat
Members: Carlyn Mama-o

**DOCUMENTATION COMMITTEE**
Chairperson: Michelle Ngala
Members: Sharon Lamagan

**TOKEN COMMITTEE**
Chairperson: Joanna Pontino
Members: Glinah Depollo

**MEALS AND SNACKS COMMITTEE**
Chairperson: Jocelyn Langbis
Members: Cesar Martin

Enclosure 2 to DM No: 390 s. 2023

## Guidelines on Problem-Based Mathematical Investigation

1. A problem is given for you to explore and prove in 3 hrs.
2. Below is the format in solving following its process in investigating the problem:
   A. Title:
   B. Focus of Investigation / Objectives:
   C. Definition (s) and Representation:
   D. Exploration:
      - Systematic listing/drawing
      - Organizing relationships in tables or graphs
      - HOTS: Organizing, comparing – identifying similarities/differences
        Classifying – grouping into categories
        Ordering – sequencing according to criterion
        Representing – changing in form to show how critical

      elements are related.
   E. Conjecture (s):
      - Making general statements about patterns or relationships observed in the cases considered
      - A conjecture is generalization obtained inductively, which has not been validated or proven true.
      - HOTS: Synthesizing – involves putting together the relevant parts or aspects of a solution, understanding or principle.
   F. Testing / Verifying Conjectures:
      - Checking consistency of conjectures using existing cases
      - Predicting results for untried cases for which data are available
   G. **Explaining/Justifying Conjectures**
      - Explaining why the conjectures made will work for new or all cases
      - Proving the conjectures (by mathematical induction, direct/indirect proof, visual proof)
      - HOTS: Evaluating – involves assessing the reasonableness of ideas.
   H. Justification (s), Proof(s) and Explanation:

3. Criterion on Mathematics Investigation

A) Use of Notation (5 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student does not use appropriate notation and terminology |
| 3 | The student uses some appropriate notation and terminology |
| 5 | The student uses appropriate notation and terminology in a consistent manner and does so through the work. |

B) Communication (5 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student neither provides explanations nor uses appropriate forms of representation. |
| 2 | The students attempt to provide explanations or use some appropriate forms of representations. |
| 3 | The student provides adequate explanations or arguments, and communicates then using appropriate forms of representation. |
| 5 | The student provides complete, coherent explanations or arguments, and communicates then clearly using appropriate forms of representation. |

C) Patterns (10 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student does not attempt to use a mathematical strategy. |
| 2 | The student uses a mathematical strategy to produce data. |
| 4 | The student organizes the data gathered. |
| 6 | The student attempts to analyze data to enable the formulation of a general statement. |
| 8 | The student successfully analyzes the correct data to enable the formulation of general statement. |
| 10 | The student tests the validity of the general statement by considering further examples. |

D) Generalization (10 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student does not produce any general statement consistent with the patterns and/or structures generated. |
| 2 | The student attempts to produce a general statement that is consistent with the patterns and/ or structures generated. |
| 4 | The student attempts to produce a general statement that is consistent with the patterns and /or structures generated. |
| 6 | The student expresses the correct general statement in appropriate mathematical terminology. |
| 8 | The student correctly states the scope or limitations of the general statement. |
| 10 | The student give a correct, formal proof of the general statement. |

E) Use of Technology (5 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student uses a calculator or computer for only routine calculations. |
| 2 | The student attempts to use a calculator or computer in a manner that could enhance the development of the task. |
| 3 | The student makes limited use of a calculator or computer in a manner that enhances the development of the task. |
| 5 | The student makes full and resourceful use of a calculator or computer in a manner that significantly enhances the development of the task. |

F) Use of Work (5 pts)

| Achievement Level | Descriptor |
|---|---|
| 1 | The student has shown a poor quality of work. |
| 3 | The student has shown a satisfactory quality of work. |
| 5 | The student has shown an outstanding quality of work. |

4. **Oral Defense (10 pts)**
5. **Total Points 50 points**

Enclosure 3 to DM No: 390 s. 2023

# GUIDELINES IN SCORING TUKLAS PROJECTS

**Title of Research Project:** _____ **Code:** _____

**Fair Division:** [ ] Life Science [ ] Physical Science [ ] Robotics and Intelligent Machines
[ ] Mathematics and Computational Science **Category:** [ ] Individual [ ] Team

| CATEGORY | SCORE |
|---|---|
| **1. CREATIVE ABILITY (30)**<br>1. Does the project show creative ability and originality in the:<br>a. questions asked?<br>b. approach to solving the problem?<br>c. analysis of the data?<br>d. interpretation of the data?<br>e. use of equipment?<br>f. construction or design of new equipment<br><br>2. Creative research should support an investigation and help answer a question in an original way.<br><br>3. A creative contribution promotes an efficient and reliable method for solving a problem. When evaluating project, it is important to distinguish between gadgeteering and ingenuity. | |
| **2. SCIENTIFIC THOUGHT (30)**<br>(If an engineering project, please see 2b Engineering Goals.)<br>1. Is the problems stated clearly?<br>2. Was the problem sufficiently limited to allow plausible approach? Good scientists can identify important problems capable of solutions.<br>3. Was there a procedural plan for obtaining a solution?<br>4. Are the variable clearly recognized and defined?<br>5. If controls were necessary, did the student recognize their need and were they used correctly?<br>6. Are there adequate data to support the conclusions?<br>7. Does the finalist/team recognize the data's limitations?<br>8. Does the finalist/team understand the project's ties to related research?<br>9. Does the finalist/team have an idea of what further research is warranted?<br>10. Did the finalist/team cite scientific literature, or only popular literature (e.g. local newspapers, Readers Digest)?<br><br>**ENGINEERING GOALS**<br>1. Does the project have a clear objective?<br>2. Is the objective relevant to the potential user's needs?<br>3. Is the solution: workable? Acceptable to the potential user? Economically feasible?<br>4. Could the solution be utilized successfully in design or construction of an end product?<br>5. Is the solution a significant improvement over previous alternatives or application?<br>6. Has the solution been tested for performances under the conditions of use? | |
| **3. THOROUGHNESS (15)**<br>1. Was the purpose carried out to completion within the scope of the original intent?<br>2. How completely was the problem covered?<br>3. Are the conclusions based on a single experiment or replication?<br>4. How complete are the project notes?<br>5. Is the finalist/team aware of other approaches or theories? | |

6. How much time did the finalist or team spend on the project?
7. Is the finalist/team familiar with scientific literature in the studied field?
8. Are the relevant details (including the pages and dates) of the experiment recorded in the research data logbook?

**4. SKILL (15)**

1. Does the finalist/team have the required laboratory, computation, observational and design skills to obtain the supporting data?
2. Where was the project performed (i.e. home, school laboratory, university laboratory) Did the student or team receive assistance from parents, teachers, scientists or engineers?
3. Was the project completed under adult supervision, or did the student/team work largely alone?
4. Where did the equipment come from? Was it built independently by the finalist or team? Was it obtained on loan? Was it part of a laboratory where the finalist/team worked?

**5. CLARITY (10)**

1. How clearly does the finalist or team discuss his/her/their project and explain the purpose, procedure, and conclusions? Watch out for memorized speeches that reflect little understanding of principles.
2. Does the written material reflect the finalist's or team's understanding of the research?
3. Are the important phases of the project presented in an orderly manner?
4. How clearly is the data presented?
5. How clearly are the results presented?
6. How well does the project display explain the project?
7. Was the presentation done in a forthright manner, without tricks or gadgets? Did the finalist/team perform all the project work, or did someone help?

**TOTAL**

**Signature Over Printed Name of Judge**



Address: Wangal, La Trinidad, Benguet
Telephone Number: (074) 422-6570
Email: benguet@deped.gov.ph
Facebook Page: DepEd Tayo Benguet

Integrity Fields Accomplishments Bodilies Advancement Nurtures Excellence