



Republic of the Philippines  
 Department of Education  
 Cordillera Administrative Region  
**SCHOOLS DIVISION OF TABUK CITY**  
 City Hall Compound, Tabuk City



DEP-ED - TABUK CITY  
**RELEASED**  
 SEP 20 2019  
 RECORDS UNIT

Division Memorandum No. 187 s. 2019

TO: Public Schools District Supervisors  
 Elementary and Secondary School Heads of Public, Private schools & SUC  
 All other concerned

FROM: *IRENE S. ANGWAY*  
 OIC-Schools Division Superintendent

SUBJECT: **2019 DIVISION SCIENCE AND MATH FAIR**

DATE: September 18, 2019

1. Schools Division Office of Tabuk announces the conduct of the 6<sup>th</sup> Division Science and Math Festival on October 7-8, 2019 at Bado Dangwa National High School with the **Theme: "Science and Mathematics for the People: Enabling Technologies for Sustainable Development"**.
2. This is an annual academic competition that aims to promote Science, Mathematics and Technology consciousness among the youth and identify the most creative/ innovative and the best Science, Mathematics and Technology researchers who will represent the Division to the Regional Science and Math Fair.
3. The different contested activities are the following:

SCIENCE		
ACTIVITIES	ELEMENTARY	SECONDARY
Science Quiz	Top 1 in the District in each level from Grades 3-6	One per school from Grades 7-10
Science Investigatory Projects	Individual- Top 3 in each Districts	Life Science Individual-Top 3 per school
	Team- Top 3 in each Districts	Life Science Team- Top 3 per school
		Physical Science Individual- Top 3 per school
		Physical Science Team- Top 3 per school
On the S.Pp.O.T. ( Science Processes and Practices On- Site Test)		Team- 1 per school with SHS
Innovation Expo		Individual- Top 3 per school
		Team- Top 3 per school
Robotics		Individual- Top 3 per school
		Team- Top 3 per school

MATHEMATICS		
ACTIVITIES	ELEMENTARY	SECONDARY
Math Quiz	Top 1 in each grade level from Grades 3 to 6 in the district	-One per school from each grade level (Grades 7-10) - One per SHS implementer regardless of grade level and track/strand. ( General Mathematics only)
Damath	Top 1 in the district in each level (Level 1 – whole Damath and Level II- Fraction Damath)	one per school in each level
		Grade 7- Integers
		Grade 8- Rational Fractions
		Grade 9-Radical Fractions Grade 10-Polynomials
Math Investigatory Projects (Research Based)		No limit of entry per school both individual and team category. Entries may come from JHS or SHS
Math Investigatory Projects (Problem Based)		At most 2 from each school both individual and team category. Participants may come from JHS or SHS

4. A registration fee of fifty pesos (50.00) shall be charged from each participant to defray expenses for honoraria of the judges and other operational expenses. Participants are advised to pay their registration fee in advance thru the PSDS or the District coordinator to facilitate the registration on the opening day.
5. Attached are the list of Technical Working Groups (TWG) of the different activities, Guidelines of the Different contested activities and the agreements during the planning conference.
6. Registration, transportation and other related expenses of participants shall be charged to schools MOOE or local funds whichever is available subject to usual accounting and auditing rules and regulations.
7. Wide and immediate dissemination of this memorandum is desired.

## SCIENCE TECHNICAL WORKING GROUP

### A. QUIZ

GRADE LEVEL	QUIZ MASTER	TIMER	RECORDER
3	Rosalina Ayang-ang	April Joy Fausto	Helen Comia-as
4	Amado Danao	Florence Albano	Lotis Distor
5	Junny Decena	Ramilyn Mae Daliyong	Jessica Villanueva
6	Olivia Tanding	Ruby Joy Casiano	Joycel Cagayongan
7	Gay Rose Canao	Evangeline Ruth Boog	Marites Dona-al
8	Joan Orense	Grace G. Cawilan	Cherry Shane Wayaway
9	Beverly Baniaga	Geraldine Mandate	Aileen Shane Magmoyao
10	Randolf Cudal	Janice Morgia	Angeline Apaling

### B. SCIENCE INVESTIGATORY PROJECT

ELEMENTARY----- Ezra Loton

SECONDARY

•Life Science-----Brenda V. Pao-iton

•Physical Science-----Lorenzo Cosidon

C. INNOVATION EXPO and ROBOTICS-----Ma. Teresa Minda M. Lagang

D. On the S.Pp.O.T. (Science Processes and Practices On-Site Test)-----Aireen Fernandez

## MATH TECHNICAL WORKING GROUP

### A. Math Quiz

Level	Chairman	MEMBER	MEMBER
Grade 3	Gemma Laine Cawas	Corazon Alngag	Liezle Tovera
Grade 4	Myline Salvador	Clanarin Awas	WTD1
Grade 5	Hener Abad	Larry Buston	Myrna Dalo
Grade 6	Joan Dalilis	Masilyn Talingdan	Melita Gamongan
Grade 7	Jasmin Bangisan	Julie Pagtan	Yolanda Dumawing
Grade 8	Judy Abbacan	Jul ann Dawagan	Jonalyn Bagni
Grade 9	Irene Emralino	Chrislyn Reyes	Precy Balunggay
Grade 10	Eden Tuppiyac	Joselyn Vargas	Jasmin Bog-acon
SHS	Dominic Payyac	Sherwin Fernandez	Genalyn Ferrer

### B. Damath

Level	ARBITERS		
Elem - whole damath	Mark Malamnao	Toribio Fortez	Merlyn Pangda
Elem - Fraction damath	Rey Tumapang	Rey Abannag	Daisy Miller
Integers	Sherwin Dusagan	Leo Dugui-is	Shiena Latawan
Signed Fraction	Esrom Magannon	Ricardo Mukay	May Contis
Radical	Algie Gammod	Brendalyn Dumalleg	Reydondo Romero
Polynomials	Elizalde Blaza	Solomon Naganag	Jevilyn Dalimag
OVERALL CHAIRMAN	Limson Domogo		

### C. MIP

Judy Abbacan, Jerlyn Fernandez and Beverly Ngao-i

## AGREEMENTS OF MATHEMATICS GROUP

### A. Math Quiz

- a. The Math Quiz will be composed of 5 items 15 seconds question, 5 items 30 seconds question and 5 items 1 minute question. It shall be conducted following the mechanics in MTAP. "Do or Die" questions shall be given in case of tie. Each correct answer for the 15 second questions shall be given 2 points, 30 second questions 3 points and 1 minute questions 5 points.
- b. Questions for the elementary shall be prepared by the Division while questions for secondary and Senior High shall be a contribution from the participating schools. All submitted questions shall be collated categorizing 15 seconds question, 30 seconds question and 1 minute question. The agreed submission of questions shall be on **September 30, 2019**.
- c. Only the contestants can make a protest. All protest shall be referred to the facilitators serving the same as the board of judges before the quiz master read the next questions. No coaches shall be allowed to interfere in the conduct of the quiz.

### B. Damath

- a. Round Robin method shall use to determine the winner
- b. Calculator is not allowed in level 1 elementary while in level 2 Elem to Grade 10 is allowed/ required.
- c. Damath board squares measures 1.5 inches by 1.5 inches. Chips measures 1.25 inches by 1.25 inches or 1.25 in diameter.
- d. Fraction Damath ( Level 2 Elem), all scores shall be in fraction form. No conversion in decimal form.
- e. Scores in Integers Damath shall be rounded to whole number.
- f. Scores in Signed Fraction Damath shall be in fraction form but the final score shall be in decimal form.
- g. Only one score sheet shall be used. Cumulative scoring shall be followed.
- h. Players who doesn't know how to write moves and compute for the score shall be disqualified. This shall be determined after the first game and shall be declared by the arbiter. In case the contestant won, it shall be forfeited in favor of the opponent.
- i. Arbiter's decision is final.
- j. A short orientation to all arbiters shall be conducted before the start of games.

### C. Math Investigatory Projects

#### C.1 Research Base

- a. Entry is open in individual and team. No limit per school.
- b. Only one shall be selected as entry to the Region.
- c. Write ups shall be submitted on or before **September 26, 2019** for pre-judging. Schedule of presentation shall be determined after the judges confirmed.

#### C.2 Problem Base

- a. Entries shall be at most top 3 in each school per category.
- b. Only the top 2 shall be selected as entry to the Region both individual and team category.

## **SCIENCE AGREEMENT**

### **A. SCIENCE QUIZ**

1. The coverage of the Grades 3-10 quiz bee is from the First to Fourth grading Learning of the K to 12 Curriculum. There will be three (3) rounds in the competition with five questions each round. The EASY round will be answered within 15 seconds, the AVERAGE will be answered within 30 seconds and the DIFFICULT and CLINCHER will be answered for 1 minute. The points for each correct answer in each round shall be 2 points for Easy, 3 points for Average and 5 points for Difficult.
2. Questions for both elementary will come from the Districts while for secondary will come from all participating public and private secondary schools. Questions submitted will be collated and screened further categorizing it to Easy, Average and Difficult. All questions shall be submitted online through the email address of the Science Supervisor on September 23, 2019.
3. Complaints regarding the question or answer shall be and rose by the contestant and it should be addressed by the facilitator before moving to the next question. No coaches allowed interfering in the conduct of the quiz.
4. School Heads shall serve as quizmasters for elementary while its members shall come from the coaches. For secondary, quizmasters, timers and recorders shall come from the identified teachers.

### **B. SCIDAMA**

1. Scidama shall be removed in the Division Fair in as much as there in no more board games to be conducted in the Regional Fair.

### **C. On the S.Pp.O.T. (Science Processes and Practices On-Site Test)**

1. Entry shall be open only for teams compose of 2 members only. Entries shall come from the SHS limited to 1 entry per school.

### **D. INNOVATION EXPO, ROBOTICS and SIPs**

1. Robotics and Innovation Expo shall follow the same mechanics and guidelines while SIP shall use the 2019 NSTF guidelines.

## On the S.Pp.O.T. (Science Processes and Practices On-Site Test)

<b>Component Area</b>	<b>Science, Technology and Mathematics</b>	
<b>Grade Level</b>	<b>Senior High School enrolled in Public, Private schools and ALS</b>	
<b>Event Package</b>	<b>On the S.Pp.O.T. (Science Processes and Practices On-Site Test)</b>	
<b>No. of Contestants</b>	<b>Two</b>	
<b>Time Allotment</b>	<b>Six (6) Hours</b>	
<b>Description</b>	<b>The competition enables learners to apply science and mathematics thinking skills to solve problems that have local, national and global impact. It allows the contestants to become problem solvers by addressing social, scientific and environmental issues through the application of 21<sup>st</sup> century skills.</b>	
<b>Criteria for Assessment</b>	<b>Criteria (Part I)</b>	<b>Percentage</b>
	Discussion/Arguments (based on scientific, technological and other valid assumptions, Feasibility of the proposed solution)	60%
	Clarity of presentation (ability to effectively communicate solutions)	30 %
	Evidence of effective collaboration	10%
	<b>TOTAL</b>	<b>100 %</b>
	<b>(Part II)</b>	
	Organization/Discussion/Arguments (based on scientific, technological and other valid assumptions, Feasibility of the proposed solution)	50 %
	Relevance of data used	20 %
	Clarity of Presentation <ul style="list-style-type: none"> <li>• Written</li> <li>• Oral</li> </ul>	15 % 10 %
	Evidence of effective collaboration	5 %
<b>TOTAL</b>	<b>100 %</b>	
<p><b>A. Contest Mechanics</b></p> <p><b>General Guidelines</b></p> <p>Part I – One-Minute Presentation</p> <ol style="list-style-type: none"> <li>1. The first part of the contest is the One-Minute Presentation of the project proposal where the teams shall develop and present their proposal to the panel of judges of their solution about a real-world problem/scenario of local or global importance. The situation containing the problem shall be given on-site on the day of competition.</li> <li>2. The contestants are given 2 hours to conceptualize and prepare their slides for presentation. All presentations shall not bear any markings that identify their schools. The contestants may use the internet and other printed resources in developing their presentation, however, the teams are not allowed to confer with their coaches while the contest is on – going. Any form of communication between the contestants and other parties (coach, parents, classmates, teachers, etc.) shall warrant automatic disqualification.</li> <li>3. The presentations may consist of the following: <ol style="list-style-type: none"> <li>a. Detail key features of the proposed solution.</li> <li>b. Challenges to resolve in order to effectively implement the proposed solution.</li> <li>c. Proposed solution maybe similar or different from existing practices, technologies and solutions. If so, the presentation shall include on how the proposed solution would build up from the existing practices, technology and solutions.</li> </ol> </li> <li>4. At the end of two hours, all presentations shall be submitted to the assigned facilitators.</li> <li>5. During the presentation, each team shall be given one minute to present. The time shall start as the contestants start to speak.</li> <li>6. Draw lots shall be done to determine the order of presentation. While one team is presenting, all the other teams shall be at the holding room.</li> <li>7. A timer board shall show the public as well as the contestant the time remaining for their presentation.</li> <li>8. A buzzer shall signal that the time for presentation is up and the contestants shall immediately stop presenting. At the end of one minute, the team shall be advised to stop the presentation.</li> </ol>		

9. After the deliberation of the members of the panel of judges, the top three teams shall be determined and announced to the public. The top three teams shall move to the final round. The finalists shall not be allowed to leave the contest venue during the break. They can take their meals and snacks in the contest venue.

Part II – Developing the Proposed Solution

10. The Final round of the competition shall include developing the written description of the proposed solution and the oral presentation. Similar to part I the teams are allowed to use internet and other print resources. There shall also be no markings that will identify the schools of the contestants. They shall develop and print their proposals within 4 Hours. The scores in the preliminary round shall have no bearing in the final round.
11. The proposed solution shall have the following components:
  - a. Title
  - b. Summary (100 – 200 Words)
  - c. Background and Problem (200 – 300 Words)
    - Describe the challenges and how the proposed solution address the problem presented.
    - Scientific Principles and Technology applicable to the resolution of the problem.
    - Beneficiaries
  - d. Proposed Solution to the Problem Presented (300 – 500 words)
    - Methods/Details of the proposed solution including the Cost -Analysis
    - Include illustrations, figures and charts.
  - e. References
    - May use any format as long as consistency is observed.
12. The teams shall encode their proposals in word processing software, double spaced using Bookman Old style font size twelve set in A4 size paper. Margins shall be 1 inch in all sides of the paper. Within the 4 hours, the teams shall submit their printed proposals (three copies) to the panel of judges.
13. The proposals shall be subjected to a plagiarism check. Any proposals which exceeds 15% similarity index (uncited) shall be deducted 2 points from the total score for every percent in excess. However, cited references shall be excluded from the 15% tolerance.
14. There shall be an oral presentations limited to **3 minutes** for each team without the use of slide decks. During the presentations, the team shall not identify themselves and the schools they are representing. Questions may be asked by the judges after each presentation. There shall be another drawing of lots to determine the order of presentation.

### Format of Display Board for the Innovation Expo

#### 6.1 Sample Format of Display Board for Science Innovation Expo

<b>Title</b>	The title should be short but would capture the essence of the product/invention
<b>Picture</b>	picture of the product/invention only
<b>Overview</b>	What problem is solved by the invention? What are the existing solutions and what limitations do these solutions have?
<b>Key Features</b>	What are the novelty features of this invention?
<b>Benefits and Impact</b>	What are the benefits/impact of this invention to humans?
<b>Developers' Name</b>	Who is/are the inventors?

#### **Specifications:**

Each Display Board must have a 38" x 48" dimensions (portrait style)

#### **Judging Criteria:**

The following **criteria** are used to evaluate each project:

- (a) *Originality & Innovation*..... (30 %)
- (b) *Community Connection & Impact*.....(25 %)
- (c) *Functionality and Quality*.....(25%)
- (d) *Utilization of Patent Information*.....(20%)



## UPDATED CHECKPOINTS FOR SRC REVIEW

Source: Society for Science and the Public

This document was developed to provide guidance for an SRC to review a project after experimentation.

TYPE OF FORM	WHO WILL FILL OUT?	WHEN TO FILL OUT?	WHEN IT IS REQUIRED?
<b>Form 1</b> - Checklist for Adult Sponsor	Research Adviser	Before experimentation	Required for all Projects
<b>Form 1A</b> - Student Checklist	All student researchers	Before experimentation	Required for all Projects
<b>Form 1B</b> - Approval Form	All student researchers	Before experimentation	Required for all Projects
Research Plan/Project Summary	All student researchers	Before experimentation	Required for all Projects
<b>Form 1C</b> - Regulated Research Institution/Industrial Setting Form	Adult supervising	After experimentation	Required if research conducted in a regulated research institution, industrial setting or any work site other than home, school or field
<b>Form 2</b> - Qualified Scientist Form	Qualified Scientist/Adult Supervising	Before experimentation	Required if research involving human participants, vertebrate animals, potentially hazardous biological agents and hazardous
<b>Form 3</b> - Risk Assessment Form	Student Researcher/s Qualified Scientist/Adult Supervising	Before experimentation	Required for all Projects
<b>Form 4</b> - Human Participants Form	Student Researcher/s Institutional Review Board	Before experimentation	Required if research involves human participant  <i>*if in a regulated research institution use institutional approval forms</i>
<b>Form 4A</b> - Human Informed Consent Form	Student Researcher/s Research Participant	Before experimentation	Required if research involves human participant
<b>Form 5A</b> - Vertebrate Animal Form	Student Researcher/s Scientific Review Committee  Veterinarian  Designated Supervisor/Qualified Scientist	Before experimentation	Required for all research involving vertebrate animals that is conducted in a school/home/field research site
<b>Form 5B</b> - Vertebrate Animal Form	Student Researcher/s Qualified Scientist	Before experimentation	Required for all research involving vertebrate animals that is conducted in Regulated Research Institution
<b>Form 6A</b> - Potentially Hazardous Biological Agents Risk Assessment Form	Student Researcher Qualified Scientist/Designated Supervisor  Scientific Review Committee	Before experimentation	Required for research involving microorganisms, rDNA, fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids.
<b>Form 6B</b> - Human and Vertebrate Animal Tissue	Student Researcher Qualified Scientist/Designated Supervisor	Before experimentation	Required for research involving fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids. If the research involves living organisms please ensure that the proper human or animal forms are completed.
<b>Form 7</b> - Continuation/Research Progression Projects Form	Student Researcher	Before experimentation	Required for projects that are a continuation/progression in the same field of study as previous project.

## Format of Paper Invention Report

### **Invention Report Paper:**

- a) **Title Page and Table of Contents:** The title page and table of contents allows the reader to follow the organization of the paper quickly.
- b) **Introduction:**
- 1) **Features and Specifications** – This describes the details of your invention.
  - 2) **Market Trends and Opportunities** – This part of the report must include three items: what inspired you to develop this invention, an explanation of what problem your invention will solve, and describe in detail how you determined that the invention that you created did not already exist. Explain what products are already on the market that are somewhat like your invention and describe how yours differs.
- c) **Materials and Methods:** Describe in detail how you made your invention. Explain what materials were used and how you put them together to make your invention. Your report should be detailed enough so that someone would be able to repeat the steps and make your invention. Directions on how to use the invention are also necessary here. You must include a detailed drawing(s) of your invention.
- d) **Results and Discussion:** This is the essence of your paper. Compare your results with theoretical values, published data, literature and related studies, commonly held beliefs, and/or expected results. Include a discussion of possible errors, statistics, graphs, pages with your raw collected data, etc. How did the data vary between repeated observations of similar events? How were your results affected by uncontrolled events? What would you do differently if you repeated this project? What other experiments should be conducted?
- f) **Conclusions:** This discusses the potential applications, possible customer benefits, and the impact of the problem in solving problems and issues of today and tomorrow.
- g) **Acknowledgements:** You should always credit those who have assisted you, including individuals, businesses and educational or research institutions.
- h) **References/Bibliography:** Your reference list should be written based on the Chicago Manual of Style. For more information, you may visit the websites below:

- <http://www.chicagomanualofstyle.org/home.html>
- <http://www.calvin.edu/library/knightcite/index.php>