MINISTRY OF EDUCATION

What is the Grade Six Achievement Test (GSAT)?

The Grade Six Achievement Test (GSAT) forms part of the National Assessment Programme (NAP) comprising the Grade One Individual Learning Profile, the Grade Three diagnostic Test, the Grade Four Literacy and Numeracy Tests and the Grade Six Achievement Test. The NAP is aimed at determining how students are learning at key stages throughout the primary level and their readiness to access secondary level education.

The GSAT is a curriculum-based examination. This means that the items on the examination match the objectives in the curriculum. The GSAT is based on materials covered in the Grade 4 to Grade 6 curriculum. The examination is used to place students at the secondary level by the ranking of their overall performance on all subject areas tested. Table 1 below gives a break down of the structure of the GSAT.

Table 1: Structure of the GSAT

Subject	Type of Item	No. of Items	Value of Scale	Duration
Language Arts	**Multiple Choice** *Computer marked*	**80 questions**	**1 Raw score** *Scale 0-80*	**75 mins**
Mathematics	**Multiple Choice** *Computer marked*	**80 questions**	**1 Raw score** *Scale 0-80*	**75 mins**
Social Studies	**Multiple Choice** *Computer marked*	**80 questions**	**1 Raw score** *Scale 0-80*	**75 mins**
Science	**Multiple Choice** *Computer marked*	**60 questions**	**1 Raw score** *Scale 0-60*	**60 mins**
Communication Tasks	**1. Short Answer** **2. Extended Writing** *Specialized marking Team*	**1 question** **1 question**	**Subjective score** *Scale 0-12*	**60 mins**

Assessment Process

1.0 Registration

Registration for the examination begins in the month of October and closes in the month of November. There is a prescribed registration form to be completed by each student and signed by the parent/guardian. Students and parents select five schools in order of preference. As part of the registration process, parents are required to present the original or certified copy of the child's birth certificate or the child's passport to the school. The registration form and the birth certificate are submitted to the Student Assessment Unit through the regional offices. Education Officers from the Student Assessment Unit visit the regional offices to verify the accuracy of the information presented on the registration form. If the forms are found to be improperly completed, recommendations are made for the correction to be done for final submission. Once the verification process is completed, birth certificates are delivered to the principals to be returned to parents. Students' data is then processed and individual timetables are generated.

In order to sit the GSAT examination students at the Primary Level should not be younger than 11 years or older than 13 years at the time of the sitting.

2.0 Administration of the Test

The test is done over a two-day period under strict examination conditions. Each centre has an examiner and invigilators external to the school. At the end of the test, scripts are packaged and returned to the Ministry for marking and processing.

3.0 Marking Process

All multiple choice exams are marked by computers. However, the Communication Task papers are marked by specially selected and trained teachers. As a safeguard, no teacher is allowed to mark scripts from any schools in the parish in which they live or work. Teachers selected to mark the Communication Task paper are required to sign a contract

to ensure that confidentiality is maintained. Marking is done in a sterile environment at a central location. Markers work in groups headed by table leaders who are required to ensure that there is consistency in the grading of scripts. Scripts are second marked as part of the quality assurance process. Where there are discrepancies in marking, these are handled by the table leader and the chief examiner.

While the marking for the Communications Task is being done, the scores are placed on a machine-readable form which is then scanned and electronically merged with the scores from the multiple choice-based exams for each candidate. Following this process, a computer run algorithm generates standard scores from which a composite score is derived and used to rank each candidate.

3.0.1 Test Development

The GSAT is curriculum-based and each test component is designed to cover the critical areas of the curriculum, both in terms of the scope and sequence of the content areas. Tests are set to balance and account for, grade level, time allotted, volume of material and difficulty of material. As a loose general principle, curricula with wider content scope would require more items on a test to adequately cover the content scope than curricula with narrower content scope. Additionally, more difficult content would mean that fewer questions are placed on a test. As a result of these and other psycho-metric considerations the number of items and therefore the relative value of each item between various tests will differ.

For example, Mathematics, Social Studies and Language Arts are marked on a scale of zero to eighty (0 - 80) with each item valued at one raw score. Science is marked on a scale of zero to sixty (0 – 60) with each item on the science test valued at 1 raw score. Communications Task which has two items, is marked on a subjective scale of zero to twelve (0 - 12) with an answer being valued a possible maximum of six (12) raw scores. The science curriculum is narrow in scope and more challenging in terms of content and is therefore marked on a different scale from the other objective tests.

The Communication Task tests the written aspect of the Language Curriculum. It tests the integration of the mechanics, content, and style of writing. It is a subjective test and is marked on a different scale.

4.0 The Process of Standardizing Scores

A child's performance at GSAT is used to place that child in high school and where scholarships are available it is used to determine the beneficiary. GSAT is therefore used as a placement mechanism. Approximately 49,000 students compete for secondary school places island wide.

Schools Selected as First Choice

	School Name	Number of Students	Places presented	Summary Students	Summary Place
1	GLENMUIR HIGH	1,956	250		
2	CAMPION COLLEGE	1,879	222		
3	ARDENNE HIGH	1,867	304		
4	MANNING'S HIGH	1,672	315		
5	MANCHESTER HIGH	1,557	240	8,931	1331
6	ST. JAGO HIGH	1,473	250		
7	WOLMER'S HIGH SCHOOL FOR GIRLS	1,204	228		
8	ST. MARY HIGH	1,124	252		
9	CORNWALL COLLEGE	1,095	200		
10	CALABAR HIGH	1,044	304	14,871	2565

Places area warded according to the rank of the child.

Why Standard Scores?

Standard scores are needed as

1. the papers differ in that all test papers do not have the same number of items
2. The GSAT placement and scholarship process requires that we use a total score for placement
3. It is statistically unsound to add scores which are of different values

Calculating Standard Scores

This is similar to changing measurement from inches to feet or Fahrenheit to Celsius or yards to metres. The following measures are needed to calculate standard scores:

1. the mean score for the children on the particular test

2. the standard deviation or the unit which tells the average distance of each student's score from the mean. These can be calculated by hand for small groups of children but for large groups like the GSAT population a computer programme is used.

Statisticians determine what the new scale should be before calculating the standard scores. They choose means and standard deviation for ease of calculations. For the GSAT standard scale the mean is 100 and the standard deviation is 15. So, for example, the raw score mean on the Social Studies paper for 2008 of 42.92 become 100 on the standard scale and each raw score distance of 17.96 from the mean (Standard deviation) is represented by 15 on the standard scale . Let's calculate the standard scores for a raw score of 60 and 35 on this paper.

First the formula:

Raw Score 60

$$100 + \frac{Rawscore - mean}{S\tan dardDeviation} \times 15$$

Calculation

$$100 + \frac{60 - 42.918}{17.959} \times 15$$

$$100 + (17.082 / 17.959) \times 15$$

$$100 + (0.9512 \times 15)$$

$$100 + 14.2675$$

$$= 114.2675$$

Raw Score 35

$$100 + \frac{Rawscore - mean}{S\tan dardDeviation} \times 15$$

Calculation

$$100 + \frac{35 - 42.918}{17.959} \times 15$$

$$100 + (-7.918 / 17.959) \times 15$$

$$100 + (-0.4409 \times 15)$$

$$100 + -6.6134$$

$$= 93.3866$$

So a student with a raw score of 60 on the Social Studies paper gets a Standard Score of 114.2675 and another student with a raw score of 35 gets a standard score of 93.3866 on that paper.

Let us examine another example. For this purpose we will look at four students who sat Test A, Test B and Test C. The tables below represent the scores attained by these students. The first gives the raw and equivalent percent scores. These are the scores which are most often presented for reporting and general distribution.

	Test A			**Test B**			**Test C**			**Avg %**
	Raw	%		Raw	%		Raw	%		
Student 1	12	48		40	80		70	70		66.0000
Student 2	7	28		30	60		40	40		42.6667
Student 3	20	80		45	90		91	91		87.0000
Student 4	20	80		46	92		89	89		87.0000
Average	14.75	59		40.25	80.5		72.5	72.5		
Standard Deviation	5.53963			6.339361			20.4756			

Note that the population average (e.g. 14.75 for Test A) and the standard deviations (e.g. 5.53963 for Test A) are also included.

Let us now compute the standard scores for these students. Scores are standardized to an average of 100 and a standard deviation of 15.

Student 1, Test A

Calculate **Z-score** by subtracting the population average from the raw score and then dividing the result by the standard deviation, that is:

(12-14.75) / 5.53963 = -0.496423

Next, the *Z-score* is converted to the standard score by multiplying the Z-score by the agreed standard deviation of 15, then adding the agreed average of 100, that is:

(-0.496423 x 15) + 100 = 92.55365

A similar computation is applied to each student's score for each paper, the results of which are in the table below.

	Test A			**Test B**			**Test C**			**Comp**
	z	Std		z	Std		z	Std		
Student 1	-0.496423	92.55365		-0.03944	99.4085		-0.1221	98.1686		290.1307
Student 2	-1.39901	79.01484		-1.61688	75.7468		-1.58726	76.1912		230.9528
Student 3	0.9477167	114.21575		0.749287	111.2393		0.903515	113.5527		339.0078
Student 4	0.9477167	114.21575		0.907031	113.6055		0.805837	112.0876		339.9088

Note that in the case of Students 3 and 4, who would have had a tied average percent score of 87, their standards score are 339.0078 and 339.9088 respectively.

Standard scores are calculated for all the papers and totaled to get the total standard score. The total standard score is used to rank the students for placement and to award scholarships.

5.0 The GSAT Placement Mechanism

The Ministry recognizes that the issue of placement of GSAT students is one of the main areas of concern and anxiety among parents. It is with this in mind that this paper seeks to shed some light on the process of placement. As was mentioned in section 1.0 (Registration), students select five secondary schools and rank them in order of preference.

Inputs in Placement

1. Students' choices
2. Students' gender
3. Available places for each receiving school broken down by gender

4. Ministry's Proximity List: This list is compiled by officers in the different regions who have intimate knowledge of the location and proximity of sending schools in relation to receiving schools.
5. Students' Standard scores

Placement Process

The GSAT placement is about 95% automatic. It starts with the computer ranking all students with the child getting the highest score being ranked one down to the child with the lowest score. The child ranked one is placed in his first choice school followed by the one ranked two and so on. This continues until all the places in a school for a gender are filled. When the computer comes to placing another child on the list whose first choice school is already full it searches the child's second choice school for a place that matches the gender. If the place is available the child is placed in that school. If the place is not available it searches the third choice school for a place, if there is no place it searches the fourth and the fifth choices. If there is no place in any of the five schools chosen by a child then the computer searches through the Ministry's proximity list for a school with a place that matches that child's gender.

There is a small number of children whose scores are very low who are manually placed. These children are placed blindly with only an identification number and their sending schools known to the Education Officers from the different regions who place the children. They are placed in schools which have available places and which can cater to their needs.

Each year, the GSAT results are made available to schools and parents/guardians in the form of rounded percentage scores. A raw score in this instance is the original score a child receives based on the correct items on a multiple choice test or the grade attributed based on written subjective tasks.

6.0 Awarding Scholarships

6.0.1 Eligibility Criteria

Scholarships are generally awarded based on criteria set by donors or sponsors. Among the criteria are:

- Performance level
- Gender
- Location
    1. County
    2. Parish
    3. Inner-City
- Economic need
- Subject area
- Membership at:
    1. Financial Institutions
    2. Organizations/Groups (eg. Jamaica Civil Service Association, Blue Cross, JCF

Scholarships are also awarded to students of particular schools through endowments or by philanthropic past students. Example: Mable Downer Memorial Scholarship which is awarded to the top performer from the Watt Town All Age School.

6.0.2 Selection Process

No beneficiary of a Government Scholarship or a Bank of Nova Scotia Scholarship under the GSAT scheme may hold more than one scholarship award at any given time.

The computerized system used for placement of students would have already ranked all the students sitting the examination based on their **standard score** from the first to the final candidate. Students who are to be considered for scholarship awards are therefore

selected using the stipulated criteria and information from the database used for **ranking** and **placement.**

7.0 Appeals and Review Protocol

The Ministry recognizes that parents/guardians may from time to time have queries with regard to the results of their children/wards. Accordingly, we have decided to establish a Review Committee. This Committee consists of:

- A representative from the University of the West Indies
- A representative from the company contracted to process the examination results
- A representative from the Ministry of Education
- The Public Defender
- The President of National Parent Teacher Association

Aggrieved parents/guardians may submit a written request through the Student Assessment Unit to the Committee.

NB: All requests/queries must be submitted to the Committee within ten (10) working days after the release of the scholarship/placement information.

8.0 Review of the Test

For the past 10 years, the GSAT component of the National Assessment Programme has been used as a placement mechanism. The test was piloted in 1996 in preparation for the replacement of the pass/fail Common Entrance Examination. The Ministry recognizes the need for continuous review of processes in order to ensure continued improvement in standards and quality. As a result, a technical review of the test will be carried out. Particular focus will be given to the area of the marking scale for the Communications Task component and the Science component.

9.0 Ensuring equal placement opportunities

Students with identical scores will have the same rank. Where these students are competing for the same place, they will be equally placed and ranked placement will continue in the normal consecutive manner.

Appendix

Performance in the 2008 Sitting of the Grade Six Achievement Test

Performance in the GSAT differs by type of school. The average performance in all subjects was highest in the Kindergarten/Preparatory schools followed by the Primary Schools with averages in all subjects above or equal to the national averages. All Age schools had the lowest averages, performing below the national average in all subjects except the Communication Task.

Performance in all subject areas except for Communication Task tends to reflect a bi-modal distribution with a fairly large number of students dong well, that is, performing at or above the national average, while a majority is performing below average. At the same time, the majority of the students perform at or above average on the Communication Task. Overall performance also reflects a bi-modal distribution, demonstrating almost two distinct populations in terms of performance, the smaller performing very well and the larger, not so well.