

WHAT TO CONSIDER FOR EXAM PREPARATION

The Grade 8 Common Examination in Mathematics reflects our current curriculum expectations as set out in our Foundations for Implementation document: (p. A-1)

The Grades 5 to 8 Mathematics curriculum is designed to support and promote the understanding that mathematics is

- *a way of learning about our world*
- *part of our daily lives*
- *both quantitative and geometric in nature, with both aspects being equally important in the development of mathematical literacy*

In addition, mathematics and its study encourages the development of

- *creative thinking*
- *logical thinking*
- *problem-solving skills*
- *data analysis skills*
- *co-operative interaction*

The Foundations for Implementation document clearly states the change that must take place from past practices: (p. A-2)

Today's students must use diagrams, manipulatives, and written language to convey understanding and to explain the processes used in arriving at solutions.

The Common Curriculum Framework states that there are four strands to be taught in Mathematics (Statistics and Probability, Number, Patterns and Relations, Spaces and Shape).

The Grade 8 Common Examination in Mathematics also reflects the mathematical processes (big ideas) that students "must develop and practise". (p. A-3,A-4)

- *Communication*
- *Connections*
- *Estimation and Mental Math*
- *Problem Solving*
- *Reasoning*
- *Technology*
- *Visualization*

The strands are the content knowledge of the curriculum that is taught. The processes are the way in which the content knowledge is delivered to students. These processes are also outlined in detail in *Grades 5 to 8 mathematics: Manitoba Curriculum Framework of Outcomes and Grade 6 Standards (1996)*.

#1:

At the beginning of each of the four parts of the exam (mental math, selected-response, constructed-response, and open-response) there are direction pages. If students have not had an opportunity to see these pages before the examination they may find these very intimidating. To remove any anxiety that these pages may cause, it is recommended that you review these instruction pages, display them in the room and perhaps use a similar format on some summative tests.

**PART III
(6 questions)
DIRECTIONS TO STUDENT**

- Read each question very carefully.
- Provide **complete answers** for these questions in the space provided.
- Be sure to use clear explanations of your ideas.
- Some questions include diagrams, which may **not** be drawn to scale.
- This section should take you about **30- 45** minutes to complete.
- If a question is taking too long to answer, come back to it later.
- There are **6** questions. Check the total value of each question.
- Remember: You may need to use the formula sheet provided on page 2 of this booklet.
- **Do not stop at the end of this part. You can move on to part IV when you are ready.**

#2:

Students will be provided with a formula sheet that they will be able to use during the examination. This formula sheet should be part of the student's "tool kit" for the entire year so that it can be used effectively during the exam. The formula sheet can be found at:

http://www.wsd1.org/pc_math/Exam%2005%20Formula%20Sheet.pdf

#3:

The first part of the examination consists of 14 mental mathematics questions that students have 10 minutes to answer. *"(Mental mathematics) is an important process in mathematics because skill at mental computation...*

- *is a practical life skill*
- *can make other computations easier and quicker*
- *is essential in estimation*
- *can lead to a better understanding of place value, mathematical operations, and basic number properties."*

Students must have an opportunity to regularly practise numerous mental mathematics strategies. More information on mental math can be found at:

http://www.wsd1.org/pc_math/approaches%20to%20calculation%20bns.pdf

#4:

The second part of the examination consists of selected response items in which students select the answer from among three possible options. Students should be aware that:

- All three choices have been chosen for a reason. It might be good practice to look at the two incorrect responses to discover what the student would have done wrong if they made one of those choices.
- Sometimes a strategy of eliminating the two incorrect responses to determine the correct response is helpful. An example of this practice can be found on the following page.



| QUESTION | OBVIOUSLY NOT... (CIRCLE 2) | EXPLANATION |
|---------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $3/4 + 3/4$ | 11/2, <u>6/8</u> , <u>2</u> | 6/8 is incorrect because 6/8 is equivalent to 3/4 so $3/4 + 3/4$ can't equal 3/4. The question is "less than 1" + "less than 1" and that can't equal 2. |
| $2/3 \times 2/3$ | 11/3, 4/9, 24/9 | |
| $1/2 \div 2$ | 1, 1/4, 2 | |
| 1.4×3 | 44, 4.2, 3.2 | |
| $11.3 \div 2.1$ | 5.38, 51.6, 1.31 | |
| 5.38, 51.6, 1.31 | 104, 32, 78 | |
| 16 23 11 | 16 23 11 | |
| $33 + 506$ | 609 559 539 | |
| $143 - 23$ | 90 150 120 | |
| $169 \div 13$ | $169 \div 13$ | |

Sometimes a strategy of eliminating the two incorrect responses to determine the correct response is helpful. This strategy gives students an opportunity to consider all three options and use what they know to eliminate the two options that obviously don't make mathematical sense. This also gives students another chance to practise communicating their thoughts using "math words". Sharing their thoughts with a partner, group or in a class discussion will add to the enrichment of communicating mathematically.

#5:

In the third part of the examination students will be required to do constructed response questions that require them to show their thinking to obtain marks.

Marks are awarded according to:

- the ability to recognize a strategy that can be used
- the degree of completion; and
- the number of errors made.

Students must be aware of and practice using a scoring guide. Example:

| SCORING GUIDE | | | | | | | | | |
|---------------|-------------------------------------|---------------|-----------------------------------------------|---------------|-------------------------|--------------------------|-------------------------------|---------------|------------------|
| MARKS | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | |
| DID YOU: | Begin with an appropriate strategy? | | Calculate following a clear accurate process? | | Calculate correct area? | Choose the correct roll? | Explain your choice of rolls? | | Possible 4 marks |

During the year, students must have the opportunity to learn how to obtain full marks from the scoring guide. They will be comfortable dealing with what it means to:

- begin with *an appropriate* strategy
- use *clear and accurate* processes
- *calculate* correctly
- make *accurate* choices
- *explain, justify, show, prove, discuss*, etc. their answers.

None of these questions in the "Did You" row should be new to the students at examination time. A sample unit test where students helped develop the scoring guide can be found at:

http://www.wsd1.org/pc_math/Restricted%20response%20sample.pdf

An effective strategy used in a number of classrooms is to have students review exemplars of completed problems to determine where marks could be given and if incomplete' what might be needed to receive full marks.

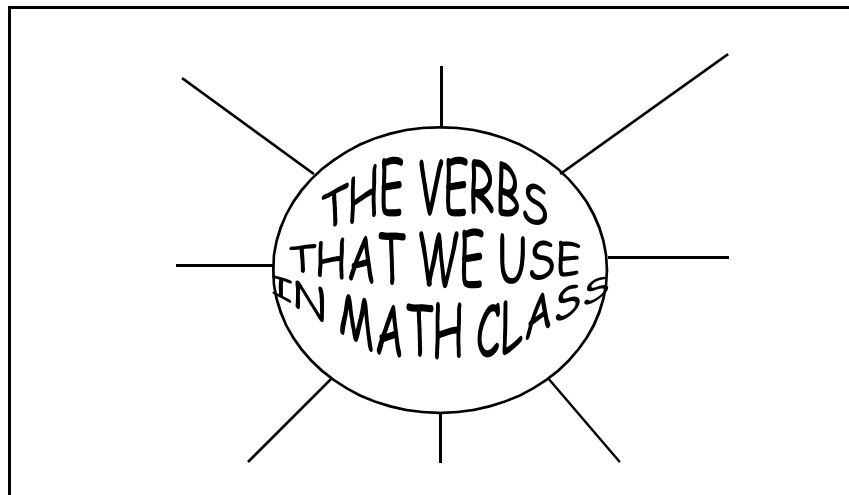
Another effective strategy is to give students an opportunity to share with a student who received a higher mark to determine what they did differently to obtain that mark. This is also useful after time is given to do a self-evaluation. This modeling and practise will allow students to use scoring guides more effectively.

#6:

There are a number of “**verbs of mathematics**” used in the exam. These verbs should be modeled, discussed and become part of what a students uses to deal with mathematics during the entire year so that they are aware of what they need “**to do**” to be successful. Some verbs found on previous examinations include:

- | | | | |
|------------|------------|----------|-----------|
| -choose | -estimate | -list | -identify |
| -find | -determine | -show | -solve |
| -calculate | -explain | -round | -create |
| -write | -develop | -label | -include |
| -chart | -record | -justify | -describe |

One strategy that is effective in improving the use of the verbs of mathematics is a graphic organizer or word-web. Students could begin the web with the verbs that they have used and understand. As more verbs are used, modeled and practiced in class, the students web will grow. They could then contribute to a classroom web that can be displayed on the wall. For example:



#7:

The last portion of the exam will include open-response questions. These questions appear to be identical to constructed-response items. The difference lies in the nature of the information given and decisions or choices that the student is required to make. Students must be given opportunities to consider different ways of solving a problem. More information on open response/ended questions can be found at:

http://www.wsd1.org/pc_math/view_media.pdf

#8:

Many students get anxious when they hear the word exam. Some tips to help them do well can be found at:

http://www.wsd1.org/pc_math/Study%20Tips.pdf

#9:

Past exams can be very useful if used appropriately. It is felt that appropriate use would include modeling/practicing/strategizing one question every other week for students to become familiar with scoring guides, verbs-of-math, clear explanations, showing all steps in solving, etc.. This would allow students to become familiar and less anxious about the actual examination day.

Using previous examinations as a preparatory strategy can be a good one. However, before doing so teachers should consider what is best for your students. You do not want to heighten their anxiety leading up to the examination so it is very important that if you provide them with a 'practice examination', that you be sure to review it with them to ensure that they grow from the experience.

It is recommended that teachers practice all of the strategies in this document with their students in the months prior to the examination so that format and structure are not new to them on examination day.