Table 1: High-order thinking ability assessment tool exemplar

(1) Generic Problem-solving Skills Assessment Criteria

Name of Student：_____ Date：_____

Problem solved：_____

Performance	Criteria
👍 **To be improved**	1. Attempted to solve the problem but has not completed the problem-solving steps and unable to solve the problem. 2. In the course of solving the problem, mistakes are made in the following areas: comprehension of the key points of the problem, screening and application of data, the reasoning steps and logic in problem-solving and computation. Subsequently, correct or reasonable solution cannot be reached
👍👍 **Up to Standard**	1. A few mistakes made in the course of solving the problem but the entire process is not seriously affected and the solution is correct or reasonable on the whole. 2. The process of problem solving nearly completed and it includes: comprehension of the key points of the problem, screening and application of data, the reasoning steps and logic in problem-solving and computation.
👍👍👍 **Excellent**	1. The problem-solving process and solution are correct. 2. Able to comprehend the key points of the problem, to select and apply appropriate data and to synthesise feasible problem-solving strategies from the knowledge acquired, the problem-solving or computation process is logical and without mistake. **3.** Able to verify the answer and provide arguments to support the answer.

✍ Areas of excellent performance：

_____

✍ Areas to be improved：

_____

Mathematical Problem-solving Skills Assessment Criteria #

Name of Student：_____Date：_____

Problem Solved: _____

Area of Assessment	👍👍👍 Excellent	👍👍 Up to Standard	👍 To be Improved
Comprehension of the problem	1. Able to comprehend the problem and express the key points of the problem in his/her own words	1. Able to comprehend the key points of the problem	1. Unable to comprehend or grasp the key points of the problem
Problem-solving strategies and process of computation	1. Able to screen and apply appropriate data 2. Able to synthesise feasible problem-solving strategies from the knowledge acquired 3. The computation is logical and accurate 4. Able to calculate the correct answer 5. Able to verify the answer 6. Able to explain his/her problem-solving process	1. Able to screen and apply appropriate data 2. Able to synthesise feasible problem-solving strategies from the knowledge acquired 3. The computation is logical but there are mistakes 4. The overall problem-solving strategies and process are reasonable, but the answer is incorrect, due to mistakes made in the process of computation	1. Unable to apply appropriate data 2. The problem-solving process is confused and not systematic 3. There are many mistakes in the process of computation 4. Unable to calculate the correct answer
Scientific knowledge	1. Able to apply mathematical terms and symbols correctly 2. Able to apply mathematical concepts and principles correctly 3. Able to make correct use of diagrams, tables and equations to present the problem, the process of problem-solving, and the answer	1. In general, able to apply mathematical terms and symbols 2. In general, able to apply mathematical concepts and principles 3. In general, able to make use of diagrams, tables and equations to present the problem, the process of problem-solving, and the answer	1. Unable to apply mathematical terms and symbols correctly 2. Unable to apply mathematical concepts and principles correctly 3. Unable to make correct use of diagrams, tables and equations to present the problem, the process of problem-solving, and the answer

#：As regards the mode of assessment, please refer to the “Creativity Assessment Criteria”

✍ Areas of excellent performance：

_____

✍ Areas to be improved：

_____

(一) Scientific Experiment Attempt Assessment Criteria#

Name of Student：_____ Date：_____

Scientific Experiment：_____

Area of Assessment	👍👍👍 Excellent	👍👍 Up to Standard	👍 To Be Improved
Understanding of the problem	1. Able to comprehend the problem and express the key points of the problem in his/her own words 2. Able to propose hypotheses based on scientific theories 3. Able to design a practical experiment and detailed procedures to verify the hypotheses	1. Able to comprehend the key points of the problem 2. Able to T propose hypotheses based on scientific theories 3. Able to design relevant experiment to verify the hypotheses, but the experiment is rough	1. Unable to comprehend or grasp the key points of the problem 2. Able to propose hypotheses based on scientific theories 3. Able to design thorough and practical experimental procedures to verify the hypotheses
The Process of the Scientific Experiment	1. Able to make correct use of the equipment involved in the experiment 2. During the experiment, the student is able to use appropriate skills and take care of different variables 3. Able to make careful observations and record experimental data and results correctly 4. During the process, the student is able to follow the safety rules of the laboratory	1. Able to make correct use of the equipment involved in the experiment 2. During the experiment, the student is generally able to use appropriate skills 3. During the process, the student is able to record experimental results and data 4. During the process the student is able to follow the safety rules of the laboratory	1. During the experiment, the student is unable to draft a thorough plan or is unable to make correct use of the equipment. The student is not able to complete the entire experiment 2. The student is only able to obtain some of the useful data 3. During the process, the student shows negligence in following the safety rules of the laboratory

Area of Assessment	👍👍👍 Excellent	👍👍 Up to Standard	👍 To Be Improved
Compilation of Experimental Results	1. Able to make correct use of flowcharts, diagrams and equations to express the procedures of the experiment clearly 2. Able to analyse the experimental results and data, and draw reasonable conclusions for the hypothesis 3. Able to synthesise the experimental results and data and make further hypotheses	1. Able to make use of flowcharts, diagrams and equations to express the procedures of the experiment 2. Able to draw reasonable conclusions for the hypothesis, according to experimental results and data	1. Unable to describe the procedures of the experiment accurately 2. Unable to draw reasonable conclusions for the hypotheses, according to experimental results and data
Scientific Knowledge	1. Able to make correct use of scientific terms and symbols	1. Overall, the student is able to make use of scientific terms and symbols	1. Unable make correct use of scientific terms and symbols

#： Please refer to the “Creativity Assessment Criteria” for mode of assessment

✍ Areas of excellent performance：

_____

✍ Areas to be improved：

_____

(4) The Adaptive Behaviour Scale of the Creativity and Higher-order Thinking Ability of Primary School Students (Applicable to primary school students)

Name of Student： Class：

The following is your description of the classroom behaviour of your student. Please put a "√" in the appropriate boxes, according to the student's actual performance (for example: ☑)

		Always	Sometimes	Rarely	Never
1.	When answering a question, the student seems to have thought it over thoroughly	☐	☐	☐	☐
2.	In raising a question, the student is able to give different opinions	☐	☐	☐	☐
3.	While answering a question, the student is able to use abundant vocabulary to express his or her views	☐	☐	☐	☐
4.	The student is able to respond appropriately to an open question	☐	☐	☐	☐
5.	During group discussions, the student is able to deliver many different opinions	☐	☐	☐	☐
6.	The student is able to express his or her own ideas in a systematic manner	☐	☐	☐	☐
7.	The student is able to raise unique or creative personal opinions	☐	☐	☐	☐
8.	The student is able to raise constructive ideas to other classmates during discussions	☐	☐	☐	☐
9.	The student is able to come up with a solution to a problem by himself or herself	☐	☐	☐	☐
10.	While completing a task, the student is able to raise questions regarding the content of the task	☐	☐	☐	☐
11.	The student is able to complete a "situational" task	☐	☐	☐	☐

(5) The Adaptive Behaviour Scale of the Higher-order Thinking Ability of Secondary School Students (Applicable to Secondary School Students)

Name of Student： Class：

The following is your description of the classroom behaviour of your student. Please put a "√" in the appropriate box, according to the student's actual performance (for example: ☑)

		Always	Some times	Rarely	Never
1.	The student is able to make use of detailed information to answer simple questions (verbally or in writing)	☐	☐	☐	☐
2.	The student is able to respond appropriately to an open question (verbally or in writing)	☐	☐	☐	☐
3.	The student is able to express his or her views in a systematic and logical manner (verbally or in writing)	☐	☐	☐	☐
4.	The student is able to express the key problem clearly during discussions	☐	☐	☐	☐
5.	The student is able to identify the key elements in a problem during discussions	☐	☐	☐	☐
6.	The student is able to explain and elaborate different kinds of data during discussions (diagrams, data, words, etc.)	☐	☐	☐	☐
7.	The student is able to make use of different data during discussions (diagrams, data, words, etc.)	☐	☐	☐	☐
8.	The student is able to use different methods and strategies to handle the problem	☐	☐	☐	☐
9.	The student is able to synthesise various data to propose a practical solution	☐	☐	☐	☐
10.	The student is able to respond to other classmates' opinions constructively during discussions	☐	☐	☐	☐
11.	The student is able to raise further questions, according to the data already acquired	☐	☐	☐	☐
12.	The student is able to design experiments to serve the purpose of verification	☐	☐	☐	☐
13.	The student is able to draw conclusions, according to experimental results	☐	☐	☐	☐
14.	The student is able to make use of theories to explain experimental results	☐	☐	☐	☐
15.	The student is able to prove experiences in everyday life by using experimental results	☐	☐	☐	☐