Results of Primary 6 Mathematics in TSA 2008

The territory-wide percentage of P.6 students achieving Mathematics Basic Competency in TSA 2008 was 84.1%, which was almost the same as the performance levels in 2006 and 2007.

Primary 6 Assessment Design

The assessment tasks for P.6 were based on the *Basic Competency at the end of KS2 for the Mathematics Curriculum (Trial Version, November 2005)* and the *Mathematics Curriculum Guide (P1 – P6), 2000*. The tasks covered the five Dimensions of the Mathematics curriculum, i.e. Number, Measures, Shape & Space, Data Handling and Algebra.

The Assessment assumed students had already mastered the Basic Competencies covered in Key Stage 1 and therefore focused primarily on the basic and important areas of the Primary 4 to 6 curriculum, testing the concepts, knowledge, skills and applications relevant to these areas. However, a small number of test items were set to test specifically some of the Basic Competencies covered in Key Stage 1 to determine whether or not P.6 students still retained some essential concepts and skills learnt in Primary 1 to 3. Furthermore, since some of the Basic Competencies in the Number, Measures and Shape & Space Dimensions are the same for both Key Stages 1 and 2, six test items (nine score points) testing these common Basic Competencies were purposely set to be the same in the P.3 and P.6 Assessments. In this way, there was a basis for comparing the performance of P.3 and P.6 students on the same Basic Competencies which they had learnt during Key Stage 1. This comparison could indicate whether P.6 students still retained the Basic Competencies they had learnt during Key Stage 1 as well as their counterparts in P.3.

The Assessment included a number of item types including multiple choice, fill in the blanks, answers only and answers involving working steps as well as open-ended questions in which students were required to justify their answers, with item types varying according to the context. Some of the items consisted of sub-items. Besides finding the correct answers, students were also tested on the ability to present their solutions to problems, including writing out the necessary statements, mathematical expressions, equations and explanations.

The Assessment consisted of 143 test items (213 score points) covering the five Dimensions. These items were grouped into four sub-papers, each of 50-minutes in duration and

covering all five Dimensions. Some items appeared in more than one sub-paper to provide inter-paper links. Each student was required to attempt only one of the four sub-papers.

The composition of the four sub-papers is illustrated as follows:

Table 8.3 Composition of the Sub-papers

Sub-paper	Number of Test Items (Score Points)					
	Number Dimension	Measures Dimension	Shape & Space Dimension	Data Handling Dimension	Algebra Dimension	Total
M1	25 (35)	10 (16)	3 (8)	2 (7)	4 (4)	44 (70)
M2	24 (31)	12 (15)	4 (9)	3 (9)	3 (5)	46 (69)
M3	23 (30)	13 (19)	5 (9)	3 (8)	3 (5)	47 (71)
M4	19 (27)	12 (20)	5 (9)	4 (9)	4 (6)	44 (71)
Total *	72 (87)	36 (55)	13 (28)	9 (26)	13 (17)	143 (213)

* Items that appear in two different sub-papers are counted once only.

Performance of P.6 Students with Minimally Acceptable Levels of Basic Competence in TSA 2008

P.6 Number Dimension

Students performed satisfactorily in the Number Dimension. The majority of students demonstrated that they were competent in the four arithmetic operations on whole numbers, simple fractions and decimals. Even though fractions and mixed operations posed certain difficulties to many students, most students showed a basic understanding of simple concepts and could solve straightforward application problems. However, some students were weak in comprehending application problems with more complicated contexts. Further comments on their performance are provided below with examples from different sub-papers quoted in brackets as follows.

Understanding basic concepts

- Most P.6 students demonstrated understanding of the concept of place value which was learnt in Key Stage 1 when only whole numbers were considered (e.g. Q1/M1).

But, when extending this concept to decimal numbers at Key Stage 2, some students could not recognize the place values of digits to the right of a decimal point (e.g. Q11/M1 and Q1(a)/M2).

Q1/M2
在 730.582 這個數中， (a) 數字「8」是在 0.8 位； (b) 數字「0」是在 1位 位。

- Most students were able to write a number in words, including how to express the zero digits, except that some misspelt the English words or gave wrong Chinese characters (e.g. Q1/M3).

Multiples and factors

- While the majority of students understood the concepts of factors and multiples, some students could not list all the factors of a number (e.g. Q3/M1). A few of them tended to confuse the multiples and factors of a number (e.g. Q2/M1 and Q2/M3).
- Though many P.6 students could grasp the concept of common factors (e.g. Q1/M4), fewer of them could find the common multiples of two numbers (e.g. Q3/M3 and Q4/M1). Almost half the students could not list all common factors of two numbers (e.g. Q4/M3).
- The majority of students were able to find the least common multiple (L.C.M.) of two numbers (e.g. Q5/M3). Almost half could not find the highest common factors (H.C.F) of two numbers (e.g. Q9/M3).

Fractions

- The basic concept of a fraction as a part of one whole was well understood by the majority of P.6 students (Q7/M1; Q6/M3).
- The conceptual relationship between fractions and the whole was satisfactorily learnt by most students (e.g.Q19/M1). However, it is noteworthy that the performance

dropped when an integer was expressed in the form of equivalent fractions (e.g.Q6/M1).

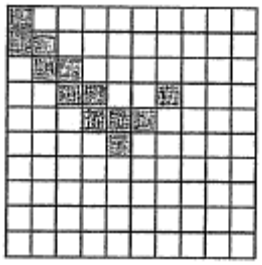
- Most students performed very well when converting improper fractions into mixed numbers and vice versa (e.g. Q8/M1).
- The majority of students understood the concept of equivalent fractions (e.g. Q7/M3).
- A small number of students could not give the correct answer in comparing two fractions (e.g. Q9/M3). Maybe some students did not pay enough attention and misread the question (e.g. Q9(a)/M1).

Decimals

- P.6 students were able to record numbers with decimals, for instance in writing a decimal number to represent shaded squares each one-hundredth of a larger square (e.g. Q10/M1).
- Many students were capable of converting decimals into fractions and vice versa except that their performance in getting the correct final answer was weakened by their inadequacy in reducing a fraction to its simplest form (e.g. Q11/M2) or in correcting a decimal to a specified degree of accuracy (e.g. Q10/M3).

Percentages

- The basic concept of percentage was satisfactorily handled by most students in simple contexts (e.g. Q22/M2).

Q22/M2
用鉛筆把右圖的小方格塗黑，使塗黑部分佔整個圖形的 12%。 

- The majority of students were capable of converting percentages into fractions and vice versa (e.g. Q23/M2) except that some students failed to reduce a fraction to its simplest form.

- Most students were capable of converting percentages into decimals and vice versa (e.g. Q23/M1).

Performing basic calculations

- Generally speaking, students showed no problems in carrying out the four arithmetic operations on whole numbers, including mixed operations involving brackets, division with a remainder or multiplication (e.g. Q13/M1; Q11/M3; Q5/M4). In the situation of division followed by multiplication (e.g. Q6/M4), quite a number of students failed to consider the multiplication first.
- As with the general rule 'performing multiplication/division before addition/subtraction,' still more than 10% of students chose the wrong option 'A' by doing the mixed operations from left to right (e.g. Q12/M1).
- In general, students showed no particular problems in carrying out the four arithmetic operations on fractions (e.g. Q14/M1; Q15/M1; Q12/M3; Q13/M3; Q8/M4), including mixed operations (e.g. Q9/M4).
- If the numbers resulted in a fraction that could be simplified, a few students forgot to reduce it to its simplest form (e.g. Q15/M1).
- The majority of students performed quite well in carrying out the four arithmetic operations on decimals, including mixed operations (e.g. Q16/M1; Q17/M1; Q14/M3; Q15/M3). However, it was still difficult for a small number of students to locate the decimal point in the result of a product or correct their answers to a specified degree of accuracy.

Solving application problems

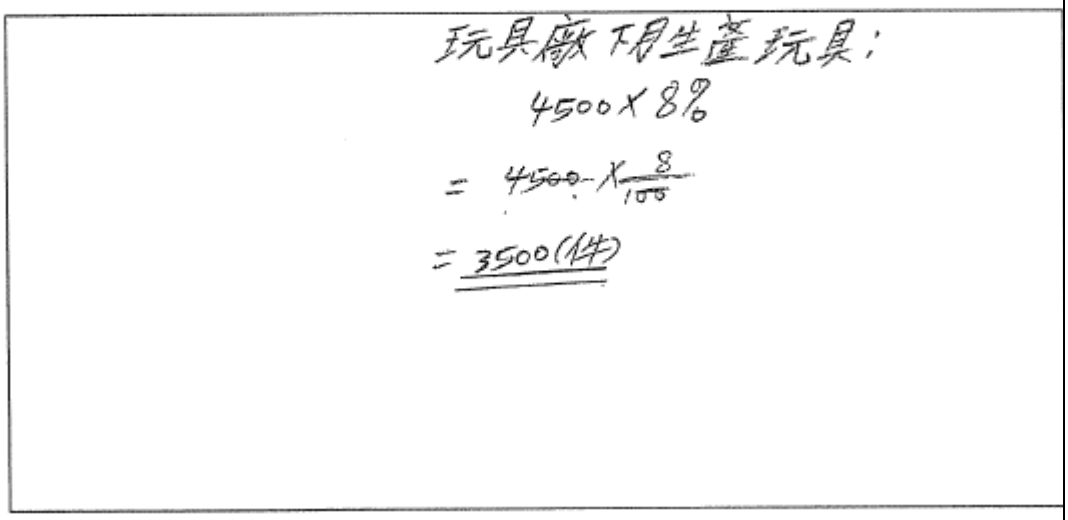
- Students on the whole could solve simple application problems involving whole numbers and simple fractions (e.g. Q9(b)/M1; Q18/M1; Q20/M1; Q16/M2; Q17/M2; Q18/M2; Q18/M3; Q12/M4; Q13/M4). Their performance in dealing with whole numbers was better than with fractions.
- Students on the whole could solve simple application problems involving whole numbers and decimals (e.g. Q22/M1; Q20/M2; Q20/M3). Their performance declined sharply when the context was complicated and demanded some other basic skills (e.g. reading the scale for a measurement of weight in Q22/M1).

- Students managed to solve application problems involving whole numbers and decimals in the calculation of money when the situation was simple and close to their everyday life (e.g. Q19/M2; Q15/M4). However, their performance declined when the context was more complicated (e.g. Q21/M1).
- Students' performance in solving application problems involving percentages varied (e.g. Q25/M1; Q24/M2; Q22/M3). The majority of students did well on the question on discount (Q25/M1) but the performance declined in finding the percentage (Q24/M2).
- A small number of students did not pay attention and overlooked the keywords 'reduced by' in solving the application problem Q22/M3, hence could not express the correct value of a percentage of a quantity as shown in the following student exemplar.

Q22/M3

玩具廠本月生產玩具 4 500 件，下月將減少生產 8 %。
玩具廠下月生產玩具多少件？

（列式計算）



- Most students could choose the best method to solve an estimation problem in which actual calculations would have been rather laborious (e.g. Q21/M2). However, a small number of students were not capable of estimating the highest average value (e.g. Q14/M4).

P.6 Measures Dimension

The performance of students in the Measures Dimension was satisfactory. On the whole, students demonstrated adequate mastery of the basic facts and skills learnt in Key Stage 1. They could directly apply the basic concepts and formulae in solving routine problems, but some had difficulty in applying such knowledge flexibly to solve problems involving contexts which were more complicated or unfamiliar to them. For better understanding of their strengths and weaknesses, further comments on their performance together with exemplars from different sub-papers are provided as follows.

Basic knowledge of Hong Kong money and measurement of time, length/distance, weight and capacity

- Students managed very well the computations on the exchange of Hong Kong money learnt in Key Stage 1 (e.g. Q36/M3).
- They were rather weak in measuring the length of objects with finger width as 'ever-ready rulers' (e.g. Q22/M4).
- The majority of students could read the calendar of the year properly according to various conditions of daily events (e.g. Q25/M2). They could tell the dates and days of a week. However, more than half of the students may have misinterpreted the meaning of 'the third Tuesday of the month' by counting simply from the box at the top of the Tuesday column even when it was blank (e.g. Q25(b)/M2).
- Most students were able to tell time from a clock face (e.g. Q20/M4).
- Many students had difficulties in working out the ending time of an event from a given starting time in hours and minutes (e.g. Q35(b)/M1).
- The majority of students were able to read the '24-hour time' from a simple time-table (e.g. Q27/M1).
- Students did very well in measuring length with a ruler (e.g. Q24(a)/M4). Many students could choose appropriate measuring tools to measure distance (e.g. Q28/M2).
- Students performed satisfactorily when comparing the weight of objects directly (e.g. Q28/M1). Half of them could not choose appropriate measuring tools to measure the weight of a carton of juice (e.g. Q29/M2).
- Students performed satisfactorily when comparing the capacity of containers (e.g.

Q36/M2), but did not do as well when dealing with capacity measurements on beakers (e.g. Q29(a)/M3). Mistakes in this regard seemed to suggest their difficulties in reading measurements on the scale of a beaker.

- As with the usage of appropriate units for recording measurements, students did well on length/distance (e.g. Q21(d)&(e)/M4), weight (e.g. Q21(a)&(c)/M4) and capacity (e.g. Q26(a)&(b)/M1; Q21(b)/M4).

Knowledge of perimeter, area and volume

- On such elementary concepts as perimeter, area and volume, students were able to handle straightforward comparisons (e.g. Q31/M1 on areas of 2-D shapes on square grids and Q33/M2 on volumes of 3-D solids made up of cubes) which were largely based on visual perception and counting. However, when the situation demanded comprehension of the relationship between the properties of 2-D shapes, some students wrongly thought that larger area would result in greater perimeter (e.g. Q27/M2).

Finding perimeters

- A considerable number of students could measure the perimeter of 2-D shapes (e.g. Q27/M2; Q24(b)/M4).
- Only just over a half of the students could solve problems involving the perimeters of squares and rectangles (e.g. Q29/M1; Q26/M2).
- Circumference, as perimeter of a circle, was understood properly by many students. The relationship between circumference and diameter of a circle was well recognized by P.6 students (e.g. Q30/M1; Q26/M4).
- They could also apply the circumference formula both in finding the unknown circumference (with given radius as in Q30/M2) and the unknown diameter (with given circumference as in Q25/M4).

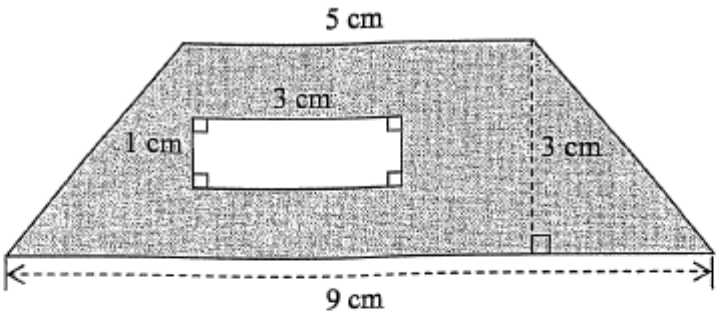
Finding areas and volumes

- The performance of students was good in comparing the area of 2-D shapes (e.g. Q31/M1).
- About half of the students could not give an exact answer to the area of an irregular 2-D shape on the square grid (Q32/M2), which might be due to carelessness (e.g.

giving wrong units of cm or cm^3) or ineffective use of such strategies as counting squares and calculating area with area formula.

- Many students were able to find the area of squares, rectangles, parallelograms, trapeziums and triangles (e.g. Q27/M4; Q32/M3; Q28/M4; Q31/M2). They could apply the formulas to find the areas of given figures except that some gave the wrong unit of area.

Q28/M4



求上圖梯形中陰影部分的面積。（列式計算）

面積是：

$[(5cm+9cm)\times 3cm \div 2] - (1cm \times 3cm)$

$= 21cm - 3cm$

$= 18cm$

- The performance of students declined significantly when the given shapes were not standard and the flexible use of relevant formulae was necessary. Only just over a half of the students could find the area of a polygon which was a composite figure of a triangle and a trapezium (e.g. Q32/M1).
- Most students could measure and compare the volume of solids (e.g. Q33/M2).
- The majority of students could find the volume of cubes though few students confused volume with area (e.g. Q29/M4). Their performance declined with composite solids in which they were required to calculate the total volume of two

cuboids (e.g. Q34/M1).

- Students were relatively weak in recognizing the relationship between capacity and volume (e.g. Q34/M3).
- The majority of students were capable of finding the volume of irregular solids by displacement of water (e.g. Q33/M1).

Concept of speed and its applications

- Most of the students could choose an appropriate unit of measurement for speed in a particular context (e.g. Q35/M2).
- Students in general could directly apply the speed formula (distance divided by time) to find the speed of a vehicle (e.g. Q34/M2). There were capable of handling the distance and the travelling time (e.g. Q35/M3; Q35(a)/M1).

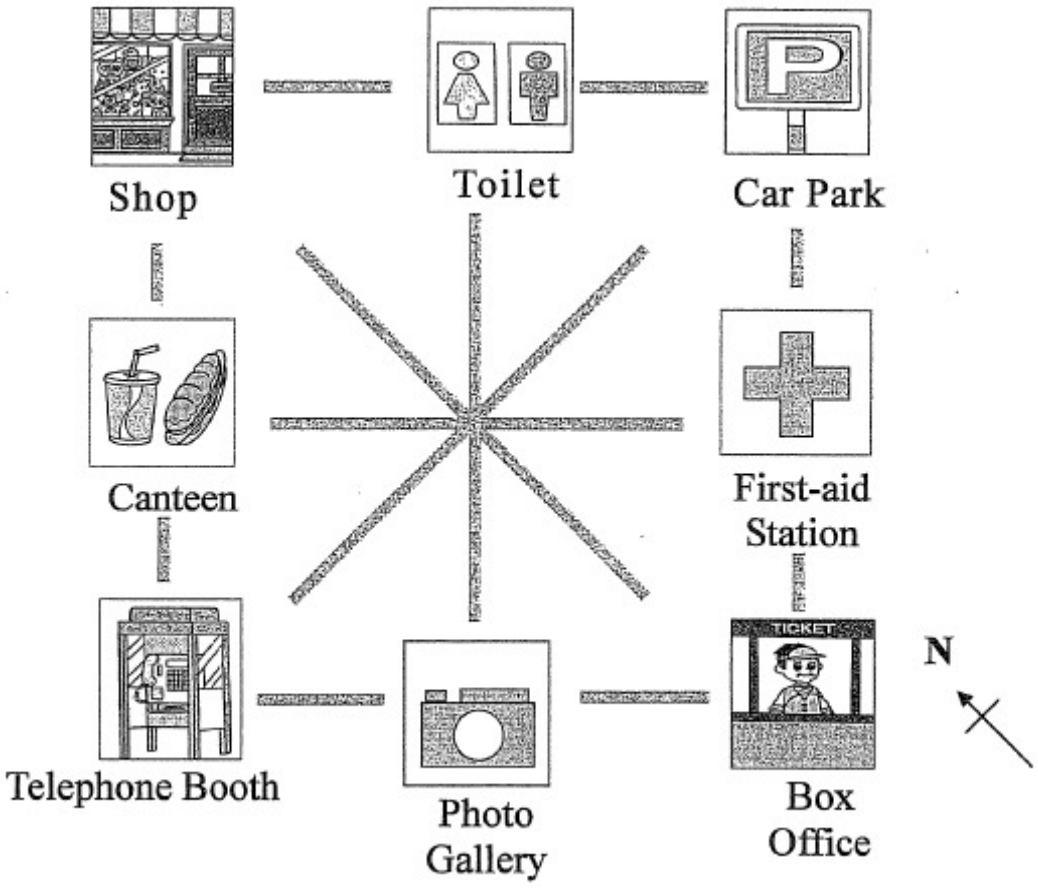
P.6 Shape & Space Dimension

Students generally performed well in this Dimension. They could recognize the characteristics of 2-D shapes (including triangles, quadrilaterals, simple polygons and circles) and 3-D shapes. However they had problems understanding the characteristics of various special types of quadrilaterals. The students were well acquainted with the eight compass points. Further comments on their performance are provided below with examples from different sub-papers quoted in brackets.

Basic geometrical knowledge learnt in Key Stage 1

- The majority of students were able to identify the straight lines, curves, parallel lines and perpendicular lines in a geometric figure (e.g. Q40/M3).
- Most students could compare the size of angles in a simple geometric figure (e.g. Q41/M3; Q35/M4) save a few students made wrong judgments by their visual impression (they chose Angle A in Q41/M3).
- Most students were good at recognizing the eight compass points (e.g. Q42/M1 and Q43/M2), though performance was a little weaker when the north direction was not pointing upward on the map (e.g. they mistook the telephone booth to be in the south of the canteen in Q42(b)/M1).

Q42(b)/M1



(b) The Telephone Booth is to the S (direction) of the Canteen.

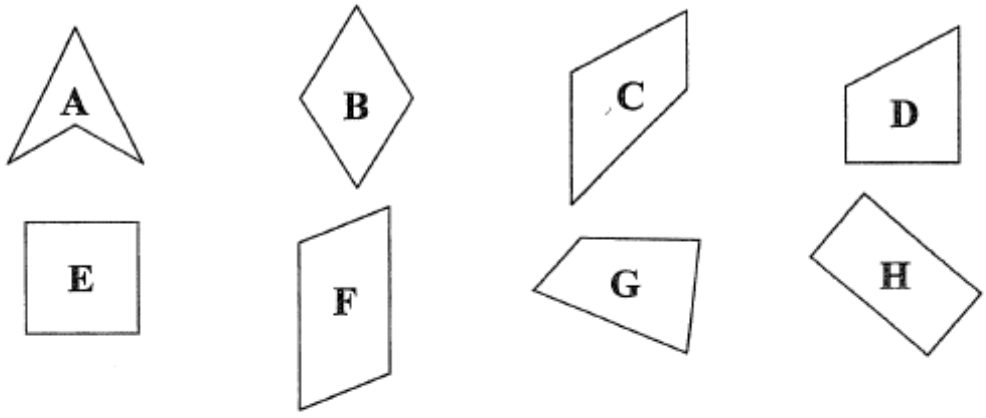
Knowledge of 2-D shapes

- Students were good at recognizing the radius and diameter of a circle (e.g. Q40(b)/M1 and Q41(a)/M2). However, some students confused the radii of circles with their centres, probably mistaking the notation BC to represent centres B and C of the two circles (e.g. Q40(a)/M1).
- Students were good at recognizing the relationship between the radius and diameter of a circle (e.g. Q41(b)/M2).
- The majority of students were good at recognizing the centre of a circle and measuring its radius (e.g. Q39/M3).
- In general, students could recognize and identify special types of 2-D geometric

figures (e.g. Q38/M3 and Q34/M4), and they could also group them according to some prescribed categories (e.g. Q41/M1 and Q42/M2).

- Whereas they performed better with squares, trapeziums and pentagons (e.g. Q34/M4 and Q42(b)/M2), some students had difficulties in classifying triangles. A few students confused right-angled triangles with isosceles triangles (e.g. Q41(a)&(b)/M1, Q42(c)/M2).
- Focusing more on the special types of quadrilaterals, individual students demonstrated varied performance in dealing with their characteristics. In Q34(a)/M4 students could identify squares and rectangles whereas they were not able to recognize trapeziums in Q34(b)/M4.

Q34/M4



(a) Which of the above shapes has/have four right angles? Write the letter(s) for the answer.

Answer: H, E

(b) Figure C and Figure D each has *(one pair) / two pairs of parallel opposite sides (*circle the answer). They are both parallelograms

- The majority of students could not identify a rhombus presented in a 'non-standard' orientation (e.g. Q42(a)/M2) and some students confused circles with ellipses (e.g. Q41(c)/M1).

Knowledge of 3-D shapes

- P.6 students were very good at identifying 3-D shapes. They could give the numbers of vertices, edges and faces and distinguish between cones and prisms (e.g. Q37/M3).
- Most students managed to recognize the characteristics of cubes and prisms (e.g. Q37/M3 and Q40/M2).

P.6 Data Handling Dimension

Students performed quite well in the Data Handling Dimension. Most students could read and interpret data or information from given statistical graphs and could construct graphs from given data. However, they were relatively weak in making use of the data provided for further computations and comparisons. On the notion of averages, the majority of students managed to calculate the average of a group of data. Further comments on their performance are provided below with examples from different sub-papers quoted in brackets.

Read and interpret pictograms and bar charts

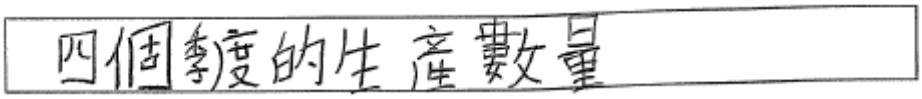
- Students were good at reading data or information directly from given pictograms (e.g. Q44(a)&(b)/M2) and bar charts (e.g. Q46(a)&(b)/M3), including those of greater frequency counts (e.g. Q43/M1 and Q45/M2).
- Students performed less satisfactorily when they were required to make further use of the data read from statistical graphs in different ways of comparison, particularly when fractions (e.g. Q46(c)/M3) and percentages (e.g. Q44(c)/M2, Q45(c)/M2) were involved in the comparisons.
- Most students performed well in comparison in terms of integral number of times (e.g. Q43(b)/M1).

Construct pictograms and bar charts

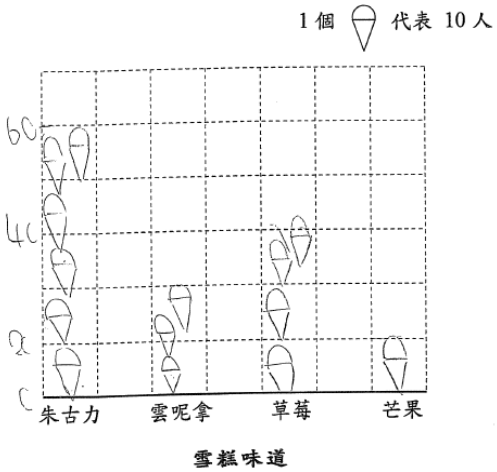
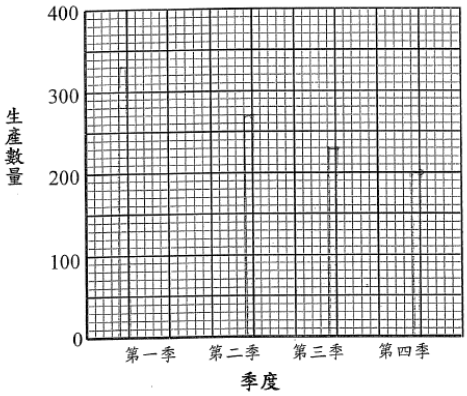
- In general, performance in constructing pictograms and bar charts was satisfactory, even when it was necessary to use a picture to represent 10 units (as in Q41/M4) or when the data needed to be first rounded off to a specified degree of accuracy (as in Q44/M1).
- As in previous years, a few students still had difficulty in writing down a proper title

for a statistical graph. Redundant words or missing key words revealed that students were not able to grasp the subject or main elements of a survey (e.g. Q41(b)/M4, Q44(b)/M1). Exemplars of problematic titles given by students were shown in the table below:

Q41(b)/M4


Q44(b)/M1


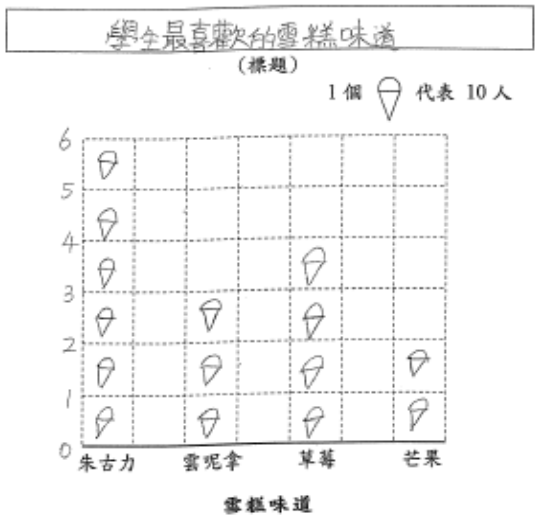

- Some students did not draw their statistical graphs carefully and failed to draw in a clear and tidy manner (see the following exemplars of students' work).

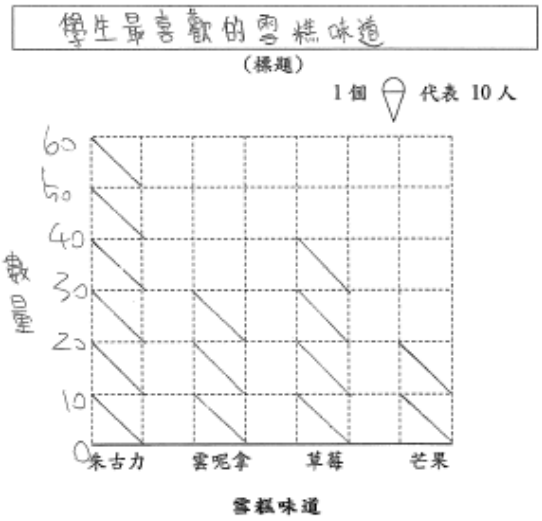
Q41/M4	Q44/M1
	

- As in previous years, a small number of students thought that a pictogram, just like a bar chart, should have a 'frequency axis' and added a vertical axis to record the frequencies of data. Some seemed to have mixed up pictograms with bar charts (see

the exemplars of students' work for Q41/M4 below).

Q41/M4

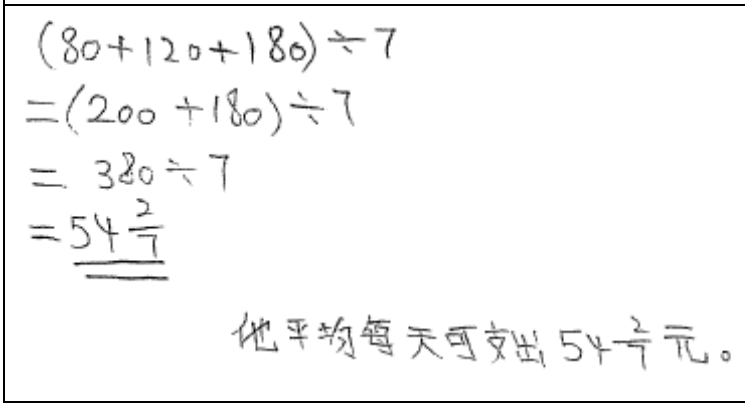




Concept of averages and its applications

- The majority of students were able to calculate the average of a set of data (e.g.Q47/M3).
- In application problems, some students could not handle the data represented by 'each day' or forgot to times 5 in getting the total (e.g. Q46/M2) as shown in the example below:

Q46/M2



P.6 Algebra Dimension

Students on the whole performed quite well in the Algebra Dimension. They could use symbols to represent numbers, understand the concept of an equation and solve simple

equations up to two steps. They could also solve straightforward problems using simple equations. More detailed comments on their performance are provided below with examples from different sub-papers quoted in brackets.

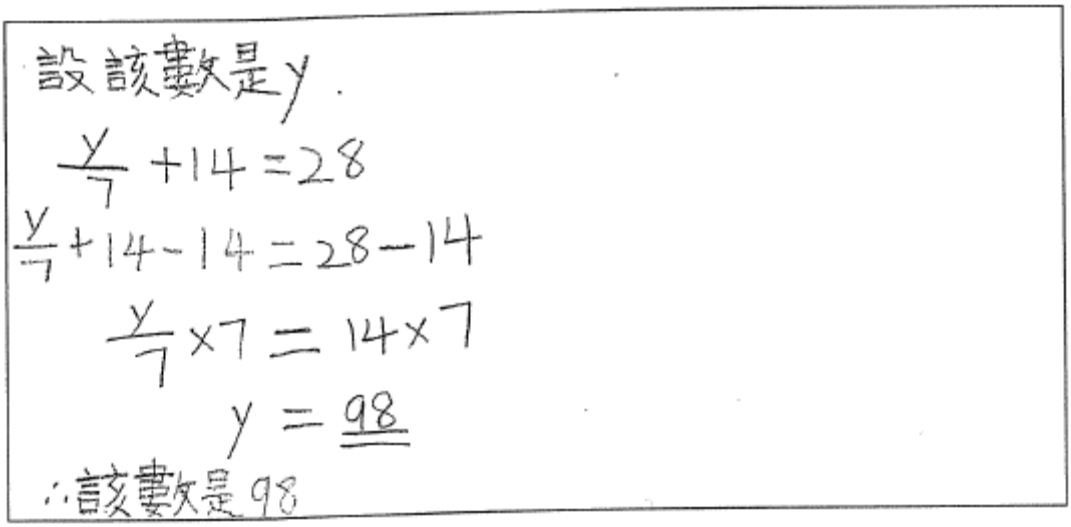
Using symbols to represent numbers

- Given a specific context, students generally could write down simple algebraic expressions by using symbols to represent numbers (e.g. Q37/M4). However, a small number of students confused the key words 'factory' and 'machine' in Q37/M2.

Solving simple equations

- P.6 students in general understood the concept of an equation and most of them could distinguish an equation from other algebraic expressions (e.g. Q42/M3).
- They performed well in solving simple equations up to two steps and involving whole numbers (Q37/M1) or decimal numbers (e.g. Q38/M1).
- They also did well in solving simple equations up to two steps and involving fractions (Q38/M2 and Q39/M4).
- Students performed well in solving problems by 'the method of solving equations' when the situation was mathematical (e.g. Q39/M2) or familiar to them (e.g. Q40/M4).

Q39/M2



Q40/M4

Let y be the number of candies in the bag originally.

$\frac{3}{5}y - 4 = 41$

$\frac{3}{5}y - 4 + 4 = 41 + 4$

$\frac{3}{5}y \times \frac{5}{3} = 45 \times \frac{5}{3}$

$y = \underline{\underline{75}}$

The number of candies is 75 in the bag originally.

General Comments on P.6 Student Performances

The overall performance of P.6 students was satisfactory. Generally speaking, P.6 students did quite well in the Data Handling and Shape & Space Dimensions, while they demonstrated satisfactory performance in the Algebra, Number and Measures Dimensions. On the whole, P.6 students who met the minimally acceptable levels of basic competence had generally mastered the basic concepts and computational skills stipulated in the document *Basic Competency at the end of KS2 for the Mathematics Curriculum (Trial Version, November 2005).*

However, some students still had difficulties in handling certain important concepts and skills associated with common multiples and common factors, place values in decimals, fractions, special types of quadrilaterals, perimeter and area, volume and capacity, etc. More attention should be paid to fractions and percentages which appear in various problem across different dimensions (e.g. Q46(c)/M3 and Q45(c)/M2). Almost half of the students confused a circle with an ellipse (e.g. Q41(c)/M1). The majority of students could not identify a rhombus in 'non-standard' orientation (e.g. Q42(a)/M2).

P.6 students lacked the skills in justifying their answers based on simple but mathematically valid concepts. Some students had difficulties in expressing the answers, particularly those involving fractions and decimals (e.g. Q43/M3).

Q43/M3

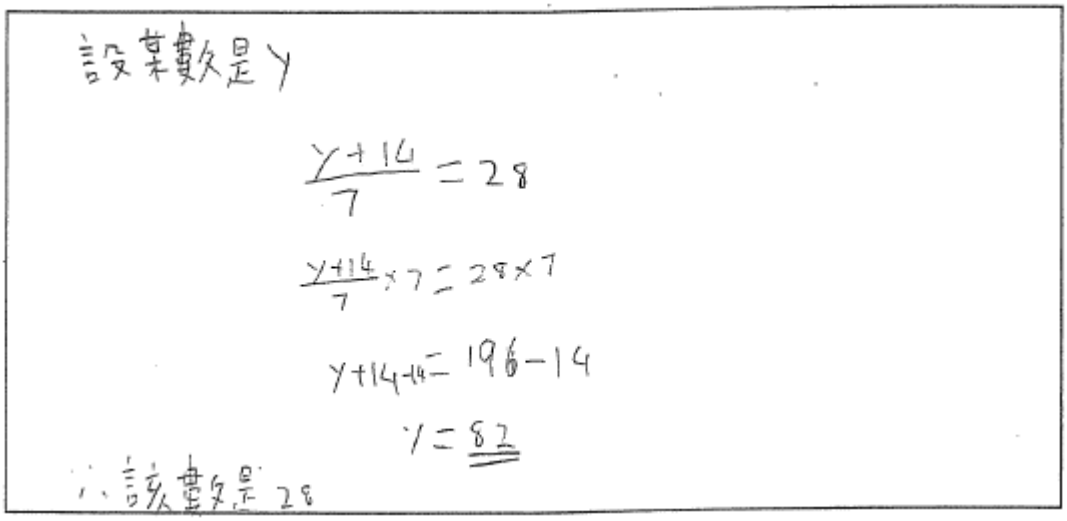
$3m + 1\frac{1}{2} = 6$

$m = \boxed{\frac{2}{3}}$

Generally speaking, students had difficulty in solving application problems involving more complicated or unfamiliar contexts. P.6 students in general could present logical working in solving a problem, but they should be more careful in reading the given conditions of a problem and in doing numerical calculations. An example of a student's answer to Q39/M2 below shows the typical errors in solving problems by 'the method of solving equations'. The student misinterpreted the question and set up an equation with

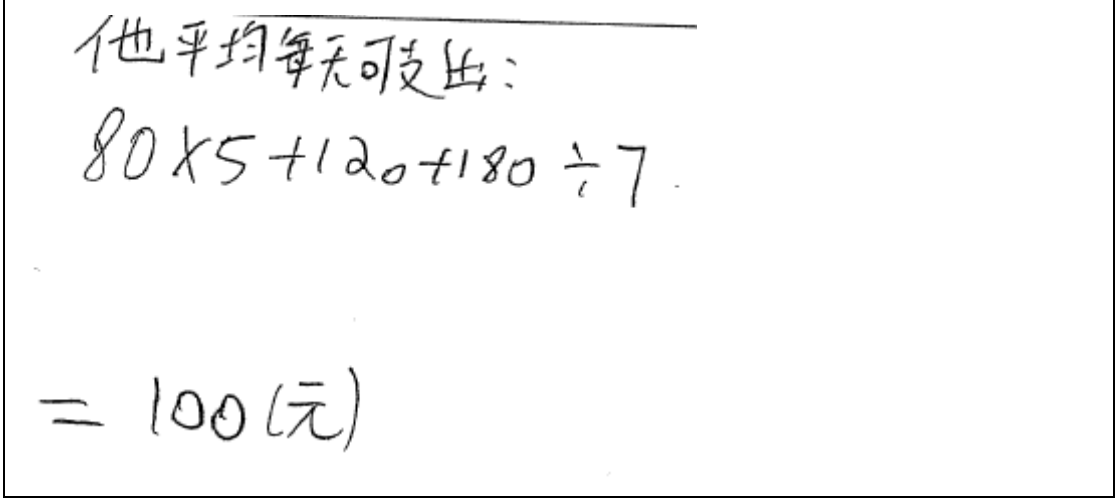
the wrong order of addition and division. The working steps and presentation revealed that the answer given by the student was computationally wrong and self-contradictory.

Q39/M2



When students were required to show the working, some students showed unawareness or carelessness in the use of brackets as shown in the example of Q46/M2 below:

Q46/M2



Performance of the Best P.6 Students in TSA 2008

Students were ranked according to their scores and the performance of the top 10% of them was singled out for further analysis. Among the top performing P.6 students, about one third of them achieved a perfect score or lost at most two score points in the whole assessment. That is, they demonstrated an almost complete mastery of the concepts and skills being assessed by the sub-papers they attempted.

Most of the top performing students understood well the concepts of factors and common factors as well as the place values of decimals. They could solve application problems involving daily life or more complicated contexts. Under the Measures Dimension, they generally retained a good mastery of the concepts and skills learnt in Key Stage 1. They knew well the relationship between volume and capacity. They did very well in solving speed problems.

Most of the top performing students could identify different types of polygons from given attributes. Despite their overall good performance, some were still weak in grouping 2-D shapes. For instance, more than half of these students could not identify a rhombus in 'non-standard' orientation (e.g. Q42(a)/M2). They did far better than their peers in answering questions based on further manipulation of data read from statistical graphs. They were very good at understanding the concept of an equation, solving all kinds of simple equations up to two steps and using equations to solve application problems.

Their performance of the top performing P.6 students in 2008 was significantly better than their peers in the following basic competencies:

- Understand the concepts of multiples and factors (e.g. Q2/M3).
- Recognize the relationship between fractions and the whole (e.g. Q6/M1).
- Solve problems involving whole numbers and fractions (e.g. Q12/M4).
- Solve problems involving whole numbers and decimals in the calculation of money (e.g. Q21/M1).
- Find the length from given perimeter of a rectangle (e.g. Q26/M2).
- Apply the formula of circumference (e.g. Q25/M4).
- Find the area of squares, rectangles, parallelograms, trapeziums, triangles and polygons (e.g. Q32/M1, Q28/M4).

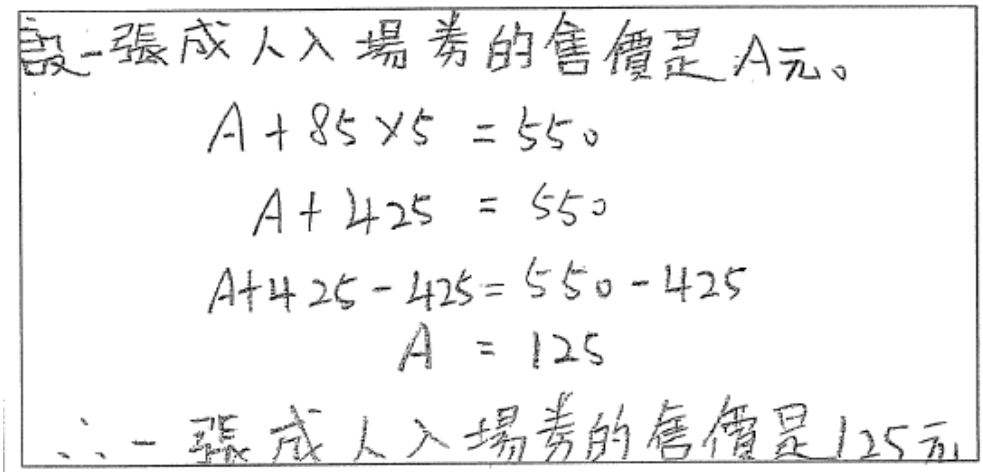
- Solve simple problems involving speed (e.g. Q35/M1).
- Solve problems by simple equations (e.g. Q40/M4).
- Read and interpret bar charts with a one-to-hundred representation (e.g. Q46(c)/M3).

Many top performing students were able to analyze problems, synthesize and apply what they had learnt in Key Stages 1 and 2 as well as present their answers systematically. (see the example of student's work in Q18/M3 below).

Q18/M3

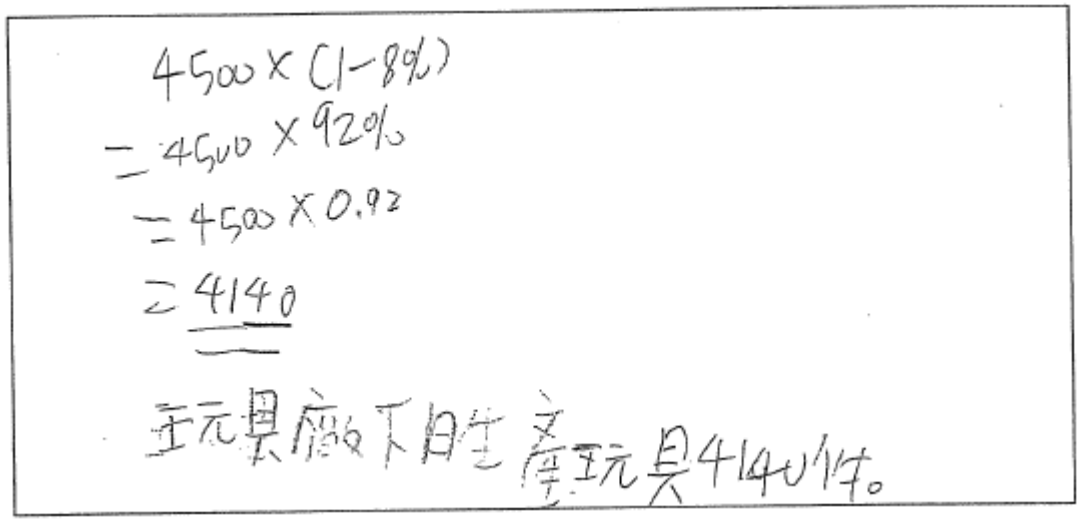
購買一張成人和五張小童的遊樂場入場券合共550元，已知一張小童入場券售85元，一張成人入場券的售價是多少元？

（列式計算）



In responding to application problems, almost all the top performing students could present their working steps systematically and give a clear explanation for their solutions (see a student's answer for Q22/M3 below).

Q22/M3



Comparison of Student Performances in Mathematics at Primary 6 TSA 2006, 2007 and 2008

This was the forth year that P.6 students took the Territory-wide System Assessment. The percentages of students achieving Basic Competency in 2006, 2007 and 2008 are provided below.

Table 8.4 Percentages of P.6 Students Achieving Mathematics Basic Competency in 2006, 2007 and 2008

Year	% of Students Achieving Mathematics Basic Competency
2006	83.8
2007	83.8
2008	84.1

A comparison of the strengths and weaknesses of P.6 students in TSA 2006, 2007 and 2008 provides useful information on how teachers can help students improve. The percentage of students achieving mathematics basic competency in 2008 was the same as that in 2006 and 2007. The following provides a comparison of the students' performance for these

years in each of the five dimensions.

Number Dimension

- On the whole, P.6 students from 2006 to 2008 performed at about the same level on questions relating to number concepts and arithmetic operations on whole numbers, fractions and decimals. Students in 2008 did better in understanding the concept of place values of whole numbers. They maintained the same level of performance in mastering the concept of place values of decimals and in carrying out the arithmetic operations on decimals.
- Students' performance in 2008 improved slightly in understanding more difficult concepts like common factors, H.C.F., common multiples and L.C.M.
- On the whole, students from 2006 to 2008 performed at roughly the same level on interchanging improper fractions with mixed numbers and comparing fractions.
- Students from 2006 to 2008 performed at roughly the same level in interchanging decimals with fractions.
- Compared to students in previous years, students in 2008 performed slightly better on solving application problems involving whole numbers and fractions, as well as application problems involving whole numbers and decimals. Students in 2008 also improved in presenting their working steps when solving application problems.
- Students in 2008 improved in estimating the answers compared to the previous years.
- Students in 2008 maintained the same level of performance in interchanging percentages with fractions or decimals. Students in 2008 showed improvement in understanding the concept of percentages and solving simple problems on percentages.

Measures Dimension

- Students in 2008 demonstrated improvement in mastering the basic facts and skills learnt in Key Stage 1 (e.g. exchanging money, measuring length with a ruler, choosing the appropriate units of measurement for recording length/distance, weight and capacity; etc.).
- Students in 2008 could recognize the relationship between the circumference and diameter of a circle.

- Students in 2008 performed at the same level as last year in finding the area of an irregular 2-D shape by counting squares in a square grid.
- Students in 2008 performed roughly at the same level as previous years in finding the perimeter and area of given 2-D shapes.
- Students in 2008 did slightly better than previous years in finding the volume of 3-D shapes. They showed improvement in recognizing the relationship between volume and capacity and in finding the volume of irregular 3-D solids.
- In general, the performance of students in 2008 improved in choosing an appropriate unit of measurement for speed in a given context and solving speed problems.

Shapes & Space Dimension

- Students in 2008 performed well in recognizing parallel and perpendicular lines, comparing the sizes of angles and applying their knowledge of the eight compass points.
- Students in 2008 could recognize the characteristics of 2-D shapes as well as students in 2006 and 2007.
- Students in 2008 improved in identifying 3-D shapes compared with the previous two years.
- Students in 2008 improved in recognizing the numbers of vertices, edges and faces of 3-D shapes.

Data Handling Dimension

- Students in 2008 performed well in reading and interpreting data or information directly from statistical graphs. They were capable of answering straightforward questions based on simple manipulation of the data extracted from given graphs.
- Students in 2008 showed only moderate improvement when making simple inferences or in answering questions based on further manipulation of data.
- As in previous years, students in 2008 performed well when they were asked to round off data to a specified degree of accuracy and draw pictograms or bar charts from given data. However, some students still did not draw statistical graphs in a tidy manner and mistakenly added a ‘frequency axis’ to pictograms.

- Students in 2008 performed improved slightly in finding the average of a group of data. Students in general could solve simple problems of averages.

Algebra Dimension

- Assessment data showed that students in 2008 improved in every aspect of learning in the Algebra Dimension.
- In 2008, students showed improvement in using symbols to represent numbers and understanding the concept of equations.
- Students performed satisfactorily in solving simple equations up to two steps and solving application problems by simple equations.