

Students’ attitudes, interests and liking for a subject have a strong bearing on their achievement. The *Mathematics Survey* sought information from students about their curriculum preferences and perceptions of their own achievement. The questions were the same for year 4 and year 8 students. The survey was administered to the students in an independent session (four students working individually on tasks, supported by a teacher). The questions were read to year 4 students, and also to individual year 8 students who requested this help. Writing help was available if requested.

The survey included eleven items which asked students to record a rating response by circling their choice, two items which asked them to select three preferences from a list, one item which asked them to nominate up to six activities, and three items which invited them to write comments.

The students were first asked to select their three favourite school subjects from a list of twelve subjects. The results are shown below, together with the corresponding 1997 results.

THREE FAVOURITES:		% responses	
Percentages of students rating subjects among their 3 favourites		2001 ('97)	2001 ('97)
Subject:		year 4	year 8
	Art	64 (68)	52 (43)
	Physical Education	49 (47)	62 (57)
	Mathematics	42 (42)	26 (35)
	Reading	33 (30)	18 (16)
	Writing	31 (19)	13 (13)
	Music	27 (27)	22 (25)
	Science	20 (22)	25 (23)
	Technology	9 (10)	46 (30)
	Māori	8 (9)	6 (11)
	Social Studies	4 (5)	13 (16)
	Speaking	3 (4)	8 (9)
	Health	1 (3)	4 (3)

Mathematics was the third most popular option for year 4 students and the fourth most popular option for year 8 students. At year 4 level its popularity remained constant between 1997 and 2001, but at year 8 level it was chosen by 9 percent fewer students while technology and art gained substantially over the four year period.



Students were presented with a list of nine mathematics activities and asked to nominate up to three that they liked doing at school. The responses are shown below, in percentage order for year 4 students. Comparative figures are given for 1997, but it should be noted that four additional choices were available in 1997 so the percentages are not strictly comparable.

The most notable changes from year 4 to year 8 are that “maths problems and puzzles” are substantially more popular at year 8 level, while “work in my maths book” is substantially less popular at year 8 level. Comparing the 1997 and 2001 results, “maths problems and puzzles” and “using equipment” became more popular at both levels.

MATHS ACTIVITIES STUDENTS LIKE DOING AT SCHOOL:	% responses	
	2001 ('97)	2001 ('97)
	year 4	year 8
Doing maths work sheets	41 (41)	33 (30)
Work in my maths book	40 (34)	22 (21)
Maths problems and puzzles	39 (30)	60 (43)
Using equipment	35 (21)	43 (27)
Maths tests	30 (23)	16 (16)
Using a calculator	29 (31)	27 (26)
Maths competitions	22 (18)	25 (17)
Using maths textbooks	14 (11)	17 (14)
Something else	5 (3)	10 (7)



An open-ended question asked students to nominate what they considered to be some very important things a person needs to learn or do

to be good at maths. They were asked to try to think of three things. Their responses were coded into nine categories and the results shown in the table below are percentage totals from the sets of three ideas. Because some students nominated two or three things that were coded into the same category (e.g. practising addition, subtraction and multiplication) the percentage could have exceeded 100. Basic facts and tables were seen by students in both years to be most important, but this in part will have arisen because some students referred separately to two or more of addition, subtraction, multiplication and division facts.

IMPORTANT FOR LEARNING AND BEING GOOD AT MATHS	% responses	
	y4	y8
<i>Activities nominated by students as being very important for learning maths or for being very good at maths.</i>		
Basic facts and tables	79	85
Classroom behaviours <i>seeking help, discussing with others, paying attention</i>	33	28
Work skills <i>practise, study, revision, homework</i>	32	25
Personal attributes <i>good attitudes, concentration, focus, enjoyment</i>	33	29
Maths knowledge <i>algebra, money, percentages, use of calculators, etc.</i>	12	26
Intelligence <i>thinking, being brainy, being smart, being able to understand</i>	18	25
Skills and abilities in related subjects <i>reading, writing</i>	11	9
Problem solving skills	1	8
Other factors	6	6

A second open-ended question asked students "What are some interesting maths things you do in your own time?" Their responses were coded into seven categories, and the results shown in the table are percentage totals, out of those students who responded. Year 4 students placed more emphasis on basic facts and tables, while year 8 students made more diverse choices.

MATHS ACTIVITIES STUDENTS DO IN THEIR OWN TIME.	% responses	
	y4	y8
Basic facts and tables	56	21
Puzzles, quizzes and games	23	24
Maths homework	7	10
Math skills (excluding basic facts)	9	25
Life skills maths <i>Counting money, banking, calculating animal feed, fencing for paddocks, etc.</i>	3	15
None	8	16
Other	8	12

The third open-ended question asked, "If you have something really hard to do in maths, what do you do?" Students' responses were coded into seven categories, and the results shown in the table are percentage totals, out of those students who responded. Year 8 students were more inclined to ask for help, while year 4 students were a little more likely to keep trying by themselves.

STRATEGIES STUDENTS USE WHEN THEY HAVE SOMETHING IN MATHS THAT IS VERY HARD TO DO.	% responses	
	y4	y8
Ask a teacher	31	42
Try harder; persevere	33	24
Ask for help		
No specific people indicated	16	25
Ask family/friends for help	6	22
Quit/nothing	8	4
Guess	3	1
Other	10	9

Rating Items

Responses to the eight rating items are presented in separate tables for year 4 and year 8 students.

The student responses to the rating items showed the pattern found to date in all subjects except technology: year 8 students are less likely to use the most positive rating than year 4 students. In other words, students

YEAR 4 MATHEMATICS SURVEY 2001 ('97)

1. Would you like to do more, the same or less maths at school?

more *about the same* *less*
38 (36) 39 (46) 23 (18)

    *don't know*

2. How much do you like doing maths at school?

51 (52) 30 (31) 10 (10) 9 (7)

3. How good do you think you are at maths?

41 (40) 45 (46) 10 (11) 4 (3)

4. How good does your teacher think you are at maths?

46 (37) 25 (29) 5 (5) 1 (1) 23 (28)

5. How good does your Mum or Dad think you are at maths?

65 (60) 15 (19) 4 (3) 1 (1) 15 (16)

6. How much do you like doing maths on your own?

53 (•) 23 (•) 14 (•) 10 (•)

7. How much do you like doing maths with others?

55 (•) 27 (•) 9 (•) 9 (•)

8. How much do you like helping others with their maths?

56 (•) 25 (•) 9 (•) 10 (•)

9. How do you feel about doing things in maths you haven't tried before?

47 (39) 28 (35) 15 (20) 10 (6)

10. How much do you like doing maths in your own time (not at school)?

37 (41) 23 (26) 16 (14) 24 (19)

11. Do you want to keep learning maths when you grow up?

yes *maybe / not sure* *no*
51 (54) 41 (41) 8 (5)

YEAR 8 MATHEMATICS SURVEY 2001 ('97)

1. Would you like to do more, the same or less maths at school?

more *about the same* *less*
13 (14) 59 (63) 28 (23)

    *don't know*

2. How much do you like doing maths at school?

26 (25) 40 (49) 23 (18) 11 (8)

3. How good do you think you are at maths?

22 (14) 58 (60) 16 (22) 4 (4)

4. How good does your teacher think you are at maths?

20 (15) 34 (36) 10 (6) 3 (2) 33 (41)

5. How good does your Mum or Dad think you are at maths?

35 (26) 32 (39) 7 (9) 1 (2) 25 (24)

6. How much do you like doing maths on your own?

23 (•) 42 (•) 21 (•) 14 (•)

7. How much do you like doing maths with others?

49 (•) 34 (•) 11 (•) 6 (•)

8. How much do you like helping others with their maths?

30 (•) 40 (•) 20 (•) 10 (•)

9. How do you feel about doing things in maths you haven't tried before?

33 (26) 38 (46) 21 (22) 8 (6)

10. How much do you like doing maths in your own time (not at school)?

9 (13) 22 (28) 33 (33) 36 (26)

11. Do you want to keep learning maths when you grow up?

yes *maybe / not sure* *no*
39 (43) 54 (53) 7 (4)

become more cautious about expressing high enthusiasm and self-confidence over the four additional years of schooling. Between 1997 and 2001, fewer students at both year levels said that they didn't know how good their teacher thought they were at maths. This is a worthwhile improvement. A higher proportion of students at both levels believed that their teachers and parents thought that they were good at mathematics. Student enthusiasm for mathematics was static or declined slightly.