

Overview: Mathematics is a popular subject, ranking second among 14 subjects for year 4 students and third for year 8 students. Two thirds of year 4 students and one third of year 8 students were very positive about “learning and doing maths” as they got older. A clear majority of students in both years nominated basic facts and tables as very important for learning maths or being very good at maths. There has been a resurgence in attention, since 2005, to learning basic facts and tables in year 4 students’ own time, although not back to the level of 2001.



Attitudes and Motivation

Students’ attitudes, interests and liking for a subject can have a 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.

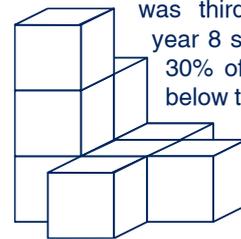
Mathematics Survey

The survey included 11 items which asked students to record a rating response by circling their choice, one item which asked them to select three preferences from a list, one item which asked them to nominate up to six activities, and two items which invited them to write comments.

In the social studies survey, also administered during the 2009 assessments, students were asked to select their three favourite school subjects from a list of 14 subjects. Full details are in the social studies report, but it is appropriate to

summarise here how mathematics fared. Mathematics was second in popularity of the 14 subjects among year 4 students, chosen by 44% of them. Physical education and sport was slightly higher, at 53%, with a large gap below mathematics to the next subject at 32%. Mathematics

was third in popularity for year 8 students, chosen by 30% of students, but well below the 71% for physical education and sport, and 45% for technology.



MATHS ACTIVITIES STUDENTS LIKE DOING AT SCHOOL:

[• = question not asked in that year]

	year 4 2009 ('05) ['01]	year 8 2009 ('05) ['01]
doing maths work sheets	49 (44) [41]	41 (35) [33]
work in my maths book	46 (36) [40]	30 (27) [22]
maths problems and puzzles	43 (41) [39]	57 (58) [60]
maths tests	36 (30) [30]	14 (10) [16]
using a calculator	35 (28) [29]	35 (33) [27]
using equipment	27 (37) [35]	42 (44) [43]
maths competitions	21 (24) [22]	26 (23) [25]
explaining my maths ideas	14 (9) [•]	8 (12) [•]
using maths textbooks	11 (16) [14]	20 (21) [17]

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 adjacent and are listed in order by year 4 percentages. Comparative figures are given for 2001 and 2005, but it should be noted that a new choice was added in 2005 so the percentages for 2001 are not strictly comparable.

The most notable changes from year 4 to year 8 are that “maths problems and puzzles” and “using equipment” are substantially more popular at year 8 level, while taking “maths tests” is substantially less popular at year 8 level. Comparing the 2001 and 2009 results, there have been moderate increases at both year levels in the popularity of “doing maths work sheets”, “work in my maths book”, and “using a calculator”, with a modest decline at year 4 level in the popularity of “using equipment”.

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 eight categories and the results shown in the table adjacent are percentage totals from the sets of three ideas. If a student listed two or more ideas in the same category (such as learning addition facts and multiplication tables), only one was counted. Basic facts and tables were seen by a clear majority of students in both years to be important (increased at least 10% from 2005), with several other factors given fairly equal but lower importance.

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 adjacent 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. The emphasis on basic facts and tables among year 4 students declined dramatically between 2001 and 2005, but increased again by 2009 to midway between the earlier percentages.

IMPORTANT FOR LEARNING AND BEING GOOD AT MATHS:

Factors nominated by students as being very important for learning maths or for being very good at maths.

	year 4 2009 ('05)	year 8 2009 ('05)
basic facts and tables	59 (43)	63 (53)
work skills (practice, study, revision, homework)	22 (21)	19 (18)
personal attributes (good attitudes, concentration, focus, enjoyment)	17 (18)	20 (23)
classroom behaviours (seeking help, discussing with others, paying attention)	16 (24)	15 (15)
intelligence (thinking, being brainy, being smart, being able to understand)	16 (17)	17 (15)
maths knowledge (algebra, money, percentages, use of calculators, etc.)	14 (14)	29 (23)
skills and abilities in related subjects (reading, writing)	7 (7)	4 (7)
problem-solving skills	5 (3)	7 (9)

MATHS ACTIVITIES STUDENTS DO IN THEIR OWN TIME:

	year 4 2009 ('05) ['01']	year 8 2009 ('05) ['01]
basic facts and tables	47 (36) [56]	29 (20) [21]
puzzles, quizzes and games	24 (25) [23]	22 (23) [24]
maths homework	10 (8) [7]	9 (9) [10]
math skills (excluding basic facts)	9 (14) [9]	21 (16) [25]
life skills maths (counting money, banking, calculating animal feed, fencing for paddocks, etc.)	3 (3) [3]	10 (12) [15]
none	6 (7) [8]	16 (18) [16]
other	9 (16) [8]	3 (14) [12]



Rating Items

Responses to the 11 rating items are presented in separate tables on the following page 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 become more cautious about expressing high enthusiasm and self-confidence over the

four additional years of schooling. It is also clear, however, that about 10% more year 8 than year 4 students have distinctly negative views about their own capabilities in mathematics, while 32% more year 8 than year 4 students are negative about "doing maths in their own time". These patterns have stayed quite consistent from the 2001 survey to the 2009 survey. Over the same period, there have been worthwhile reductions, at both year levels, in the percentages of students who said that they didn't

know how good their parents thought they were at maths, or how good their teacher thought they were at maths.



There is clear scope for further reduction in the percentage of students who do not know what their teacher thinks about their mathematical capabilities.



YEAR 4 MATHEMATICS 2009 (2005) [2001]

[* = question not asked in that year]

	<i>more</i>	<i>about the same</i>	<i>less</i>	
1. Would you like to do more, the same or less maths at school?	40 (37) [38]	42 (41) [39]	18 (22) [23]	
2. How much do you like doing maths at school?	55 (50) [51]	31 (34) [30]	10 (10) [10]	4 (6) [9]
3. How good do you think you are at maths?	45 (33) [41]	43 (55) [45]	9 (8) [10]	3 (4) [4]
4. How good does your teacher think you are at maths?	46 (39) [46]	32 (30) [25]	5 (6) [5]	1 (1) [1]
				don't know
5. How good does your Mum or Dad think you are at maths?	69 (63) [65]	18 (21) [15]	2 (4) [4]	1 (2) [1]
6. How much do you like doing maths on your own?	49 (50) [53]	27 (26) [23]	13 (14) [14]	11 (10) [10]
7. How much do you like doing maths with others?	62 (59) [55]	26 (25) [27]	8 (7) [9]	4 (7) [9]
8. How much do you like helping others with their maths?	64 (60) [56]	22 (22) [25]	9 (9) [9]	5 (9) [10]
9. How do you feel about doing things in maths you haven't tried before?	45 (47) [47]	31 (31) [28]	16 (14) [15]	8 (8) [10]
10. How much do you like doing maths in your own time (not at school)?	38 (40) [37]	26 (26) [23]	16 (14) [16]	20 (20) [24]
11. How do you feel about learning or doing maths as you get older?	68 (64) [*]	21 (24) [*]	7 (6) [*]	4 (6) [*]

YEAR 8 MATHEMATICS 2009 (2005) [2001]

[* = question not asked in that year]

	<i>more</i>	<i>about the same</i>	<i>less</i>	
1. Would you like to do more, the same or less maths at school?	15 (14) [13]	65 (59) [59]	20 (27) [28]	
2. How much do you like doing maths at school?	24 (25) [26]	51 (48) [40]	19 (19) [23]	6 (8) [11]
3. How good do you think you are at maths?	14 (23) [22]	64 (56) [58]	16 (16) [16]	6 (5) [4]
4. How good does your teacher think you are at maths?	15 (20) [20]	47 (39) [34]	12 (8) [10]	2 (3) [3]
				don't know
5. How good does your Mum or Dad think you are at maths?	29 (31) [35]	44 (43) [32]	11 (10) [7]	2 (2) [1]
6. How much do you like doing maths on your own?	20 (26) [23]	36 (38) [42]	28 (22) [21]	16 (14) [14]
7. How much do you like doing maths with others?	46 (46) [49]	38 (37) [34]	13 (14) [11]	3 (3) [6]
8. How much do you like helping others with their maths?	30 (33) [30]	44 (38) [40]	20 (21) [20]	6 (8) [10]
9. How do you feel about doing things in maths you haven't tried before?	34 (32) [33]	45 (45) [38]	16 (17) [21]	5 (6) [8]
10. How much do you like doing maths in your own time (not at school)?	9 (11) [9]	23 (22) [22]	31 (31) [33]	37 (36) [36]
11. How do you feel about learning or doing maths as you get older?	34 (32) [*]	47 (50) [*]	14 (14) [*]	5 (4) [*]