Although national monitoring has been designed primarily to present an overall national picture of student achievement, there is some provision for reporting on performance differences among subgroups of the sample. Nine demographic variables are available for creating subgroups, with students divided into two or three subgroups on each variable, as detailed in Chapter 1 (p6).

The analyses of the relative performance of subgroups used an overall score for each task, created by adding scores for the most important components of the task.

Where only two subgroups were compared, differences in task performance between the two subgroups were checked for statistical significance using t-tests. Where three subgroups were compared, one way analysis of variance was used to check for statistically significant differences among the three subgroups.

Because the number of students included in each analysis was quite large (approximately 450), the statistical tests were quite sensitive to small differences. To reduce the likelihood of attention being drawn to unimportant differences, the critical level for statistical significance was set at $\mathrm{p}=.01$ (so that differences this large or larger among the subgroups would not be expected by chance in more than one percent of cases).
For the first five of the nine demographic variables, statistically significant differences among the subgroups were found for less than fifteen percent of the tasks at both year 4 and year 8 . For the remaining four variables, relating to student ethnicity, school socio-economic status and school ethnic mix, statistically significant differences were found on a substantial proportion of tasks at one or both levels.
In the report below, all "differences" mentioned are statistically significant differences (to save space, the words "statistically significant" are omitted).
School type
Results were compared for year 8 students attending full primary and intermediate schools. A difference was found on just 1 of the 38 tasks. Students attending full primary schools scored higher on Link Task 14 (p51).
School size
Results were compared from students in larger, medium sized, and small schools (exact definitions were given in Chapter 1 (p6).

For year 4 students, there was a difference among the subgroups on 1 of the 33 tasks: students from small schools scored highest on Down at the Sea (p44).

For year 8 students, there was a difference on just 1 of the 38 tasks: students from small schools scored lowest on Eye Colours (p49).

## Community size

Results were compared for students living in communities containing over 100,000 people (main centres), communities containing 10,000 to 100,000 people (provincial cities), and communities containing less than 10,000 people (rural areas).

For year 4 students, there was a difference among the three subgroups on 1 of the 33 tasks. Students from urban areas scored highest and students from rural areas lowest on Map Key (p46).
For year 8 students, there were differences on 2 of the 38 tasks. Students from rural areas scored lowest on both Choosing a Garment (p32) and Link Task 11 (p37).

## Zone

Results achieved by students from Auckland, the rest of the North Island, and the South Island were compared.

For year 4 students, there were differences among the three subgroups on 3 of the 33 tasks. Students from the South Island scored highest on all 3 tasks: Tim's Budget (p15), Down at the Sea (p44), and Link Task 16 (p51). On the latter 2 tasks, students from Auckland scored lowest.

For year 8 students, there were differences among the three subgroups on 6 of the 38 tasks. Students from Auckland scored lowest on 3 tasks: Link Task 2 (p35), Link Task 3 (p35), and Link Task 10 (p37). Students from the South Island scored highest on 3 tasks: Weekend Trip (p20), North Island, South Island (p33) and Link Task 13 (p37).

## Gender

Results achieved by male and female students were compared.
For year 4 students, there were differences between boys and girls on 2 of the 33 tasks. Boys scored higher than girls on Rangi (p17) and Houses (p27).

For year 8 students, there were differences between boys and girls on 6 of the 38 tasks. Girls scored higher than boys on School Picnic (p21), Link Task 1 (p35), Link Task 9 (p37), Link Task 11 (p37), Eye Colours (p49), and Link Task 17 (p52).

## Student ethnicity

Results achieved by Māori and non-Māori students were compared.
For year 4 students, there were differences on 11 of the 33 tasks. In each case, non-Māori students scored higher than Māori students. The differences occurred on Tryathlon (p16), Maria's Day (p19), Travel Times (p27), Birthdays (p28), Link Task 1 (p35), Link Task 2 (p35), Link Task 3 (p35), Pocket Money (p43), Down at the Sea (p44), Map Key (p46), and Link Task 16 (p51).

For year 8 students, there were differences between Māori and non-Māori students on 16 of the 38 tasks, spread across chapters 3 and 4. In each case, non-Māori students scored higher than Māori students. Because of the large number of tasks, they are not listed here.

## Proportion of Māori students in schools

Schools were categorised into three subgroups: schools with less than 10 percent Māori students, schools with 10 to 30 percent Māori students, and schools with more than 30 percent Māori students. Results were compared for students attending schools in these three categories.

For year 4 students, differences between the three subgroups were found on 8 of the 33 tasks: Tim's Budget (p15), Sleeping (p23), Link Task 1 (p35), Link Task 2 (p35), Link Task 4 (p35), Fruit Pictures (p40), Pocket Money (p43), and Link Task 16 ( p 51 ). In all cases, performance levels declined as the proportion of Māori students increased

For year 8 students, differences between the three subgroups were found on 15 of the 38 tasks, spread across chapters 3 and 4 . In all cases, performance levels declined as the proportion of Māori students increased.

## Proportion of Pacific Island students in schools

Because most of the Pacific Island students are concentrated into relatively few schools, it was difficult to create sensible subgroups for schools with higher or lower percentages of Pacific Island students. Two subgroups were formed: students attending schools with up to 10 percent Pacific Island students, and students attending schools with more than 10 percent Pacific Island students. Results were compared for students in these two subgroups.

## Socio-Economic Index

For year 4 students, differences between the two subgroups were found on 14 of the 33 tasks, spread across chapters 3 and 4 . In each case, students attending schools with more than five percent of Pacific Island students scored lower.
For year 8 students, differences between the two subgroups were found on 20 of the 38 tasks, spread across chapters 3 and 4 . In each case, students attending schools with more than five percent of Pacific Island students scored lower.

Schools are categorised by the Ministry of Education based on census data for the census mesh blocks where children attending the schools live. The SES index takes into account household income levels, categories of employment, and the ethnic mix in the census mesh blocks. The SES index uses ten subdivisions, each containing ten percent of schools (deciles 1 to 10). For our purposes, the bottom three deciles ( $1-3$ ) formed the low SES group, the middle four deciles (4-7) formed the medium SES group, and the top three deciles (8-10) formed the high SES group. Results were compared for students attending schools in each of these three SES groups.

For year 4 students, there were differences among the three subgroups on 17 of the 33 tasks. Because of the large number of tasks involved, they will not be listed here. In each case, students in the low SES schools performed worst. While students from high SES schools generally did better than students from medium SES schools, these differences were usually smaller than the differences between students from low and medium SES schools.

For year 8 students, there were differences among the three subgroups on 32 of the 38 tasks. In general, there was a steady trend of improvement from lower SES schools to higher SES schools.

## Summary

School type (full primary or intermediate), school size, community size, geographic zone and student gender did not seem to be important factors predicting achievement on the graphs, tables and maps tasks. The other four factors revealed more substantial differences. Non-Māori students outperformed Māori students on 33 percent of the tasks at year 4 level and 42 percent of the tasks at year 8 level. Students attending schools with high proportions of Māori students performed worse than students attending other schools on 24 percent of the tasks at year 4 level and 39 percent of the tasks at year 8 level. Students attending schools with more than five percent Pacific Island students performed worse than students at other schools on about 50 percent of the tasks at both year levels. Most notably, there were statistically significant differences in the performances of students from low, medium and high decile schools on 52 percent of the year 4 tasks and 84 percent of the year 8 tasks.

