# AN ASSESSMENT OF SELECTED GEOGRAPHIC SKILLS ATTAINED BY GRADE FIVE STUDENTS IN NEWFOUNDLAND



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MEMORIAL UNIVERSITY OF NEWFOUNDLAND

# AN ASSESSMENT OF SELECTED GEOGRAPHIC SKILLS ATTAINED BY GRADE FIVE STUDENTS IN NEWFOUNDLAND

By

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A Thesis
Submitted to
the School of Graduate Studies in
partial fulfillment of the requirements
for the Degree of Master of Education

Department of Curriculum & Instruction

St. John's, Newfoundland

1979

## ABSTRACT

The purpose of this study was to assess the attainment of grade five students in eight geographic skills.

Six grade five classes involving 199 students were chosen from the Avalon North Integrated School District. Students were tested early in their grade five year on skills which were included in the grade four geography course. A forty-item, four-foil, multiple choice test was developed by the researcher. The test attempted to assess student attainment in determining location, scale, direction and elevation on maps, reading a grid map, reading horizontal and vertical graphs, and interpreting information from maps and diagrams. A level of attainment of 80 percent was selected as being acceptable for each skill area.

Analysis of the test results involved computing the mean percentage scores of all students in each skill area. Using a t-test, an analysis was made of the differences between the mean scores of boys and girls in each of the skill areas.

The results indicated that the students' level of attainment was well below the 80 percent level in all skill areas with the exception of reading a grid map. The analysis of the differences between the mean scores of boys and girls found a significant difference in only one skill area--reading horizontal graphs. This difference was in favour of the girls.

ACKNOWLEDGEMENTS

The writer wishes to express his gratitude to Dr. F. G. Jones for his valuable guidance, encouragement and assistance and to Dr. G. Murphy of the Department of Curriculum and Instruction and Mr. Gordon Hancock of the Department of Geography for their support and cooperation in the planning and completing of this thesis.

Appreciation is also expressed to the following: Mr. C. M. Smith, Superintendent; and the principals and teachers of schools involved in the study for their cooperation; Miss N. Case, Mr. W. Blundon, Miss J. Haines and Mrs. S. Sheppard for their assistance in validating the testing instrument; personnel in the Education Library for their cooperation in securing materials for this study; Professor Clifford Wood and students of the Geography Department for their assistance in the production of the maps used in the study; Mrs. Ruth Cornish of the Computer Centre, for her assistance with the statistical data.

All typing was undertaken by Miss Lillian Dawe, whose work is most gratefully acknowledged.

Finally the writer is indebted to Doris, his wife, and to his family for their patient understanding and constant support.

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# CHAPTER I

## Introduction

Geography as a social science discipline can, with adequate emphasis and appropriate instruction, make a major contribution to the social studies program in schools. Its main purpose is to give students an overall perspective of the natural and physical environments which are found around the earth. It attempts to explain why areas or regions are as they are and how man interrelates with these environments. While a large part of geography is of necessity descriptive, there is yet a strong emphasis on analysis, logical explanation and reasoning. The study of geography employs the scientific method of inquiry; it involves taking factual knowledge and, by a process of analysis and interpretation that shows causal connections and relationships, proceeds to generalizations.

The successful study of geography requires competence in the use of the basic skills of the subject. Map reading and interpretation skills are of prime importance in dealing with geographic material and content. Students who master the skills of geography will find the subject interesting and satisfying. Also, by its very nature, geography deals with real, everyday things which can capture the imagination and

awaken the curiosity of students. Moore and Owen (1966) stress that geography in the schools is concerned with real things rather than with abstractions and that its material is contemporary and immediate.

Geography, as a science, has its own structure and way of thinking which is different from other disciplines. In their study of geography, students can develop skills and methods of working which are peculiar to that subject. However, many of these skills and methods of working will carry over into the students' other subject areas as well and will contribute to their overall educational development. For example, in map reading and interpretation, students become involved in tasks which require accuracy and precision in weighing information, establishing relationships and making generalizations. These interpretative skills are used in studying such subjects as biology, physics, general science and history. In addition, geography contributes to the development of a number of general skills which permeate other school subjects. Some of these would be the effective use of language, the manipulation of numbers, drawing, the capacity for oral self-expression, and the use of logical thought.

Effective instruction in geography, like other school subjects, requires the use of a multitude of teaching aids and resources. Geography, by its very nature in dealing with the real world, has many of these teaching aids or raw materials on its doorstep. However, the organization of the school

program plus factors related to weather and time, do not permit a large amount of teaching and learning time outside the classroom. The teacher's task is, for the most part, that of finding classroom substitutes for real experiences in the outside world. As a result, a considerable amount of the teacher's instructional aids will include words, pictures, maps, diagrams, sketches, statistics and tactile materials. The use of these aids undoubtedly will vary from day to day and from classroom to classroom. In many instances some materials will be used by the teacher in demonstrating and explaining some particular aspect of the topic under discussion. At other times, some of the aids will serve as source materials to enable students to carry out their own investigations and projects.

In order for geography instruction to be meaningful, students should be involved in working at their own level, in a manner similar to that of a geographer. Consequently, the teacher has the role of providing the setting and the materials whereby the students can carry out their explorations and investigations, collect information and draw conclusions relative to specific topics. The teacher is their guide and source person. Moore and Owen (1966) and Gopsill (1973) both contend that the key to successful teaching in geography is the teacher, who must ensure that the relevant materials are available for the topic under study and then guide the students in their learning activities.

In the elementary grades much of the subject matter of geography courses involves the use of maps and map related materials. The skills involved with the use of maps cannot be overemphasized since much of the information in the textbooks is given in maps. Moore and Owen (1966), Preston (1968) and Tiegs and Adams (1959) all contend that the map is the geographer's basic tool and that the skills of map reading, map making, and map interpretation are fundamental to students' success in geography. The emphasis on map work needs to concentrate on tasks which the students can do for themselves employing the tools and techniques which they can best use. Instruction in geographic skills needs to be conducted with a knowledge of the students' intellectual abilities, maturity, and experience. Activities involving these skills should be arranged in a step-by-step method that builds on skills already learned. Finally, the learning of geographic concepts and skills will be more meaningful if they are relevant to the particular topic under study.

Many educators have expressed dismay over the lack of emphasis given to geography in the schools. Hudman (1972) and Ball (1971) both feel that the basic concepts and skills of geography are not being emphasized by teachers. They maintain that too much attention is devoted to factual information and material in verbal form. The most important part of learning geography - that of using the skills in a way similar to a geographer - tends to be played down. The lack of emphasis on

the basic skills of geography cannot but leave students ill-prepared to cope with situations requiring accurate analysis and interpretation of geographical information.

Statement of the Problem

The purpose of this study was to assess the attainment of selected geographic skills by grade five students. Specifically, this research was intended to provide answers to the following questions.

1. To what extent have learners in grade five acquired the following geographic skills:

(a) understanding location?

(b) use of scale?

(c) determining directions?

(d) understanding elevation?

(e) understanding a grid system?

(f) interpreting information from horizontal graphs?

(g) interpreting information from vertical graphs?

(h) interpreting information from maps and diagrams?

2. Will there be a difference in the test scores of boys and girls in the following geographic skills:

(a) understanding location?

(b) use of scale?

(c) determining directions?

(d) understanding elevation?

(e) understanding a grid system?

(f) interpreting information from horizontal graphs?

(g) interpreting information from vertical graphs?

(h) interpreting information from maps and diagrams?

Definition of Terms

For the purpose of this study the following definition of terms will apply:

Contour - "An imaginary line on the ground, all points of which are at the same elevation above a specified datum surface." (Raisz 1962). The datum surface is usually sea level.

Elevation - "The vertical height above a datum surface, usually sea level, expressed in some unit of measurement." (Carswell, 1968)

Geography - "A science that deals with earth and its life, especially the description of the land, sea, air and the distribution of plant and animal life including man and his industries with reference to the mutual relations of these elements." (Websters Third New International Dictionary).

Grid - "A network of lines used (for example) to find places on a map." (Stamp, 1966)

Map - "A selective, symbolized, and generalized picture of some spatial distribution of a large area, usually the earth's surface, as seen from above at a much reduced scale." (Raisz, 1962)

Scale - "The relationship between a distance on the map and the corresponding distance on the ground." (Raisz, 1962)

Skill - "Anything that the individual has learned to do with ease and precision, may be either a physical or mental performance." (Good, 1959).

Symbols - "Conventional signs used on maps to represent specified objects, they are usually explained on the face of or below the map." (Stamp, 1966)

## CHAPTER II

## Review of Related Literature

This chapter will be concerned with presenting the results of empirical research that related to the ability of students in primary and elementary grades with respect to geographic skills.

Research studies investigating student attainment in geographic skills have been relatively few. A number of geographic educators (Rice, 1965; Arnsdorf, 1967; Bartz, 1970; Bettis and Manson, 1975) have all expressed concern over the meagre scientific research and evaluation that have been carried out in geographic education. Rushdoony (1973), in summarizing the research to date on students' abilities in map reading, found that most of the research completed prior to 1960 was in the form of survey or diagnostic testing.

In the past 10 to 15 years more attention has been given to the place of geographic skills in the social studies programme. While some writers felt that geographic skills were many and unrelated, Askov and Kamm (1974) maintained that in the elementary grades there were only a few fundamental skills each of which included a number of related subskills. With more emphasis being placed on map reading

skills in recent years some writers (Askov and Kamm, 1974; Douglass, 1967; Hanna, Sabaroff et.al., 1966; Kennamer, 1963; Ragan and McAulay, 1964 and Witucki, 1962) have contended that more attention is needed in creating a developmental framework for teaching these skills. These writers also felt that instruction in geographic skills should not be carried out in isolation but rather should be included as a vital part of the social studies programme. Instruction should be based on the students' needs at any given time. Askov and Kamm (1974) were of the opinion that textbooks in the lower grades gave instruction in map skills and required students to use many skills for which they had not been adequately prepared. Sabaroff (1963) felt that this situation was much the same in the upper grades when she stated that "at the fourth grade level and above, many social studies textbooks include maps which assume that children have a skill with a 'language' they may never have been taught" (p. 59).

Review of Research

The following studies have concentrated on research carried out at the primary and elementary school level. Table 1 presents a summary of the research studies cited as follows.

An early study focusing upon students' abilities in geographic skills was conducted by Howe (1931). He attempted to determine elementary students' knowledge of directions in space and on a map. The study involved 1,300 students from

TABLE 1
Summary of Related Research

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| Howe, G.F. (1931) | Grades K-6 | Elementary children's knowledge of directions in space and on a map. | 1,300 children in three schools. Pupils were tested individually. | Percent frequency of responses. | (a) Children's knowledge of directions was extremely low in Kindergarten to grade two.<br>(b) In grades three to six more than half of the children did show a knowledge of directions but their performance showed so many errors that the investigator concluded that directions had not been taught systematically, thoroughly and accurately.<br>(c) Boys indicated a better knowledge of directions than girls. |
| Millar, C.J. (1931) | Grade 8 | Map reading, using the map from the elementary texts used by the children. | A section of grade VIII's in the district. | Percent of correct responses. | Student performance was low in determining directions on maps, using scale and interpreting map symbols. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| Lord, F.E. (1941) | Upper Elementary grades | Spatial orientation. | Tests developed by the investigator. | Mean composite scores and standard deviation. | (a) Children's understanding of cardinal directions was poor.<br>(b) There was no evidence to indicate that children had had the necessary experiences in learning direction. |
| Chace, H. (1955a) | Grades 1-6 | Map skills | Informal tests in primary grades; Iowa Every-Pupil Tests of Basic Skills in Map Reading; Binet or Pinter Cunningham Intelligence Tests in elementary grades. | Not indicated. | At the end of the year students performance indicated definite progress in the area of map skills. |
| Chace, H. (1955b) | Grade 1 | Map skills | Informal tests | Not indicated | At the end of the year students performance indicated definite progress in the area of map skills. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| Weinswig, S.E. (1962) | Grade 4 | Map skills | Kuhlmann-Anderson Intelligence Test; Map Reading Section of the Iowa Tests of Basic Skills; Map skills test designed by the investigator. | Not indicated | (a) Experimental groups showed highly significant gains between pre-test and post-test.<br>(b) Team learning techniques proved successful in relation to learning map skills and social studies factual data.<br>(c) There was no significant correlation between the students' retention of map skills and intelligence. |
| Rushdoony, H.A. (1963) | Grade 3 | Map-reading skills | Iowa Tests of Basic Skills (W.I.)<br>Stanford Achievement Test (Elementary Battery)<br>California Test of Mental Maturity | Item analysis<br>Analysis of Variance and Covariance<br>Coefficients of Correlation | Children in grade three can benefit from an instructional program that emphasizes the introduction and development of map reading skills from the primary level to a recommended fifth-grade level. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| McAulay, J.D. (1964) | Grade 4 | Map skills | California Test in Social Studies (forms AA & BB)<br><br>Three tests on social studies designed by the investigator. | T-test | (a) Fourth grade students seem to be sufficiently mature and capable of learning and using map skills early in their school year.<br><br>(b) Maps help fourth-grade children understand social studies content more efficiently and effectively. |
| Arnsdorf, V.E. (1964) | Grade 5 | Using map overlays to build geographic understanding and map-reading skills. | California Test of Mental Maturity.<br><br>Iowa Tests of Basic Skills.<br><br>Test developed by the investigator. | T-test | (a) Pupil growth in map skills and geographic understandings was accelerated.<br><br>(b) Progress of individual learners in combined or large classes equals or surpasses that of the students in the self-contained classroom in work skills and geographic understandings.<br><br>(c) The inquiry-discovery approach helped pupils make better progress in social studies. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| Douglass, M.P. (1965) | Grades 1-6 | Assessment of knowledge of directions. | Intelligence Test. Test constructed by the investigator. | Mean scores. Standard deviation. | (a) No apparent trend towards greater proficiency in responding to the test of directions from the earliest grades through the later grades.<br>(b) Boys scored consistently higher than girls. |
| Carmichael, D.R. (1965) | Not Given | Map reading skills and geographic understandings | Standardized map reading test; unpublished test of Geographic Understandings. | Not given. | Pupils taught by the conceptual method made (a) significantly greater improvement in geographic understandings and (b) greater but not statistically significant greater improvement in map reading skills. |
| Lee, J.R. and Stampfer, N (1966) | Grades 1-6 | Geography skills and understandings | Test instrument not defined. | Percentage of students performing specific skills. | Performance of elementary students on selected geography skills was low. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| McAulay, J.D. (1966) | Grade 2 | Growth of children in comprehension of geographic understandings - Environment - Map and Globe use - Geographic drawings | Pre-test Post-test | Not given | Significant gain in geographic understanding in a nine month period (September to May). |
| Towler, J.D. and Nelson, L.D. (1968) | Grades 1-6 | Concept of scale | -Intelligence test<br>-Test on scale designed by the investigators | Intercorrelations between the scores. | (a) Growth of the concept of scale correlated with intelligence, chronological age, and grade level.<br>(b) No significant correlation with factors of sex and socio-economic status. |

TABLE 1 (Continued)

| Researcher | Grade Level | Content | Treatment Comparison | Statistic Used | Outcomes |
|---|---|---|---|---|---|
| Carswell, R.J.B. (1968) | Grades 4,5, & 6 | Topographic Map Reading Program | Iowa Map Skills Test<br><br>Intelligence Test<br><br>Test of Topographic map skills devised by the investigator. | T-test | (a) Symbols and direction are the least difficult skills and can be mastered in the intermediate grades.<br><br>(b) Scale, grid system and elevation seem to be of equal difficulty and may be learned and used in the intermediate grades.<br><br>(c) Interpretation appears to be a complex skill that requires further research before conclusive statements can be made. |
| Savage, T.V. Jr. and Bacon, P. (1969) | Grade 1 | Comparison of two methods of learning map symbols.<br>1. Concrete objects<br>2. Abstract objects | Criterion test based on the unit constructed by the investigator. | T-test of difference between the means. | First grade children do have the skill and sophistication to begin on a more abstract level than had been previously assumed. |
| Bettis, N.C. and Manson, G. A. (1975) | Grade 5 | Geographic concepts and skills | Michigan Elementary Geography Test. | Percentage of students getting correct answers | Elementary grade students are lacking in geographic knowledge and skills. |

kindergarten to grade six in three schools. The test, designed by the investigator, was administered to students individually. Results of the study indicated that students' knowledge of direction was remarkably low. In kindergarten to grade two, where geography was not taught, students' knowledge of direction was extremely poor and Howe concluded that children did not acquire any knowledge of directions outside of school. In grades three to six, geography was part of the curriculum, but even so, students' knowledge of directions was extremely poor. The investigator concluded that the elementary grade students had not been taught directions systematically, thoroughly and accurately.

Millar (1931) reported on a study of the map-reading ability of grade eight students carried out by the Bureau of Research, New York City schools. The results indicated that students were weak in determining directions on maps, using scale, and interpreting map symbols.

In a study to determine the spatial orientation of students in the upper elementary grades Lord (1941) concluded that student understanding of cardinal directions was very poor. Although this geographic skill was included in the elementary social studies curriculum, the investigator felt that there was little evidence that the students had been exposed to the necessary experiences to help them in learning directions.

Chace (1955a) described an attempt by teachers of grades

one to six to develop map skills that would be appropriate to each grade level. Using the results of (1) teacher-made tests for primary grades (2) the Iowa Every-Pupil Tests of Basic Skills in Map Reading for grades four, five and six and (3) Intelligence Tests in all grades, the teachers attempted to define the specific map reading skills which could be taught and learned at each grade level. It was concluded that making a definitive list of skills for each grade level would not be possible but that skills could be graded in order of difficulty so that they could be taught at workable levels.

In another report Chace (1955b) described an experiment carried out by first grade teachers to determine what map skills could be taught at the grade one level. Throughout the school year the teachers carefully noted the performance of students in their activities related to maps and took advantage of all other teaching situations in which map skills and related activities might be employed. At the end of the year informal testing indicated improvement in each student's map skills. From this, the teachers concluded that planned work in teaching map skills may be started at the first grade level.

Weinswig (1962) evaluated a series of lessons designed to teach introductory map skills in grade four. His experiment, carried out over a five and one-half week period, involved 25 classes in grade four. His purpose was to evaluate a planned programme with students working alone, in

pairs, and in groups of three. The control group, made up of seven classes, followed the prescribed social studies programme. The remaining 18 classes were divided into three experimental groups of six classes each and were all given the same self-directed map skills lessons without teacher aid. In experimental group I each student worked on the lessons entirely on his own, in experimental group II students worked in pairs, and in experimental group III the students worked in groups of three.

Prior to the experiment, the Kuhlmann-Anderson Intelligence Test, the map reading section of the Iowa Tests of Basic Skills and the investigator's map skills test were administered in order to equate the groups. The map tests were readministered at the end of the experiment and again at two later dates. The results showed that the lessons used in the intensive teaching programme were effective in teaching map skills. Each experimental group showed highly significant gains between the initial mean scores and mean scores at the end of the experimental teaching period and the delayed testing periods. Also the experimental groups produced statistically significant differences (.01 level of significance) when compared with the control group. With regard to the team learning techniques it was found that the greatest gains were made by students working in teams of three, followed by children working in pairs and those working alone, respectively.

Rushdoony (1963) conducted a study to ascertain which mapping skills recommended for grades four and five could be learned by students in grade three when advanced instruction was provided. One hundred twenty-nine third graders from a west coast American city constituted the sample for the study. The students were randomly assigned to two groups. For a period of 15 weeks the experimental group was given advanced instruction in fourth and fifth-grade map reading skills while the control group was taught the program outlined in the social studies teaching guide for grade three in that particular school system. A map reading test was given at the beginning and end of the 15 week period.

At the end of the 15 weeks the experimental group made greater gains on nearly all items than the control group. The experimenter concluded that children in the third grade can benefit from an instructional program that emphasized the introduction and development of map reading skills from the primary level to a recommended fifth-grade level. As a result he maintains the following:

> Textbooks, teachers' guides, courses of study, units of work and activities, and pupils' experiences need to be re-evaluated in the light of what children can and should do in social studies, rather than what they cannot do with advanced skills and concepts (Rushdoony, 1963, p. 75).

McAulay (1964) carried out a study which assessed the abilities of fourth-grade students to learn map skills.

Also, he attempted to assess the students' understanding of social studies content through the use of maps as opposed to reading materials. The study was carried out over a three-month period and involved 74 students in two classrooms from the rural areas of central Pennsylvania. Both classes studied the same unit on Pennsylvania in this study. In classroom A there was an abundance of teaching aids (mainly print materials and posters) but only occasional reference was made to maps whereas in classroom B there was a much lesser variety of teaching aids except that commercial maps were used extensively. At the end of the three month period tests given to both classes indicated that students in classroom B, which had used maps extensively, achieved scores significantly higher than the students in classroom A.

McAulay concluded that children in grade four seemed to be sufficiently mature and capable of learning and using maps skills early in grade four. Also he was of the opinion that maps helped students understand social studies content more efficiently and effectively.

Arnsdorf (1964) studied a series of learning experiences which used a discovery approach with map overlays as an aid in building geographic understanding and map-reading skills. Two hundred thirty-four grade five students from 10 classrooms in four different schools located in an urban community participated in the study. The experiment was conducted over

a six week period. Initial measures of work study skills and reading and intelligence tests showed that the group was average or above average when compared with national norms. The students were involved in 12 lessons which used a set of map projectuals of the United States in an attempt to help the children develop an understanding of the distribution and interrelationship of physical, biotic and cultural features.

The students scored significantly higher on post-test measures of map reading, reading graphs and tables, and knowledge and use of reference materials on the Iowa Tests of Basic Skills. The grade equivalent differences between initial and final mean scores were 1.9 years in map reading and 6 months for the remaining two tests. The investigator concluded that a program of instruction in social studies that emphasized the use of map overlays accelerated pupil growth in map skills and geographic understanding.

According to Carmichael (1965) students acquired map reading skills and developed better geographic understandings when taught by a conceptual method rather than by an expository method. His investigation involved 352 students randomly assigned to two treatment groups. The experimental group was involved in a unit of study which concentrated on the learning of geographic concepts, relationships, and generalizations and stressed thinking strategies rather than factual knowledge. The control group used an expository textbook-

centered approach, with the concepts and generalizations being related by the teacher or in the textbook. Prior to the experiment, which was conducted over a 14 week instructional period, students were given standardized tests of intelligence to determine I.Q., mathematics, and reading achievement levels. At the end of the instructional period a standardized map reading test and an unpublished test of geographic understandings were administered to the groups. The results showed that students in the experimental groups indicated greater improvement in both map-reading skills and geographic understandings.

Douglass (1965) carried out a study, of which one purpose was to provide information on how well and in what manner children acquire their knowledge of directions. The sample for his study involved 236 elementary school children in grades one to six from nine schools in seven school districts in southern California. Information about sex, grade, and intelligence quotient of each child was secured for the experiment. The test instrument, consisting of fourteen items relating to knowledge of directions and the ability to orient oneself in space, was administered to the students individually out of doors. A standardized procedure was followed. The results indicated that there was no apparent trend towards greater proficiency in responding to the test of directions from the earliest grades through the later grades. That is, students in the first and second grades scored as well on this test as their older counter-

parts in the elementary grades. Although it was not considered significant, there was a slight positive relationship between the students' intelligence quotient and the scores obtained on the test of directions. It was noted too that the boys scored consistently higher than the girls. The difference in the means of the two scores was significant at the .01 level of confidence.

A study by Lee and Stampfer (1966) measured the geographic skills attained by pupils in grades one through six. A sample of classes from 350 classes in six school districts was taken for the study. The results indicated that the elementary students' performance on geographic skills was very poor despite the fact that teachers claimed that the skills had been taught in the primary grades. One particular weakness that was noted by the experimenters was that there appeared to be a lack of attention given to the skills involved with reasoning about given information. Also the results showed that there is a lack of continuity in the program from grade to grade as it applied to geographic learning.

McAulay (1966) conducted a study of second grade children to determine their growth in comprehension of geographic understandings. Three specific aspects of geographic understandings were assessed. These were environment, map and globe use, and geographic drawings. The study involved 34 children from families in the upper socio-economic group from

a community south of Pittsburgh, Pennsylvania. Tests on each aspect of geographic understandings were administered to the students individually in September and again in May. The results indicated that these second grade students had developed sufficiently in geographic understanding to transfer the immediate, observed environment to an illustrated map representation and to use a globe to solve particular problems. In the September pre-test only nine students out of the 34 could read and interpret the map and the globe in a general way. In May this number had increased to 29 students. Also in September only five students could solve simple map questions, but in May this number had increased to 30. Although the students in this study displayed excellent progress over the nine month period, the investigator cautioned that some of their geographic maturity may have been attributed to the fact that they were from families with high socio-economic status.

According to Towler and Nelson (1968) there was widespread disagreement among educators as to what geographic skills should be introduced in elementary grades. In their study with respect to the abilities of elementary school children in the use of scale, they concluded that most children do not develop a concept of scale before the ages of 10 or 11.

For their study, Towler and Nelson (1968) selected 60 boys and 60 girls in grades one to six from three elementary

schools in Edmonton. Each student was involved in two testing situations--an intelligence test and an individual battery of subtests designed by the investigators. Their findings indicated that the growth of the concept of scale showed no significant correlations with factors of sex or socio-economic status. However, there was a significant correlation with chronological age, intelligence, and grade level. The experimenters concluded that, with the existing methods of instruction, children did not fully understand the concept of scale until they had reached grades five or six. However, Towler and Nelson stated that their findings "do not preclude the development of teaching techniques which might develop the child's understanding of scale at a much earlier age than is now the case" (p. 29).

Carswell (1968) investigated the topographic map reading and interpretation abilities of students in grades four, five and six. Particular skills assessed were the ability to read symbols, direction, scale, elevation and grid systems as well as the ability to interpret information from the map. For the study 15 classes were selected in consultation with the Calgary Separate School Board. At each grade level four classes were arbitrarily assigned to the experimental group and one to the comparison group. Before instruction a comparison of the two groups indicated that there was no significant differences on the Test of Topographic Map Skills, Iowa Map Skills and mental age. At the end of the instruction period a post-test was administered and results showed

that in each grade there was a significant gain in ability of students in the experimental group while the comparison groups did not make any improvement that was statistically significant. Specific findings were as follows:

(1) Symbols and directions are the least difficult skills and may be mastered in the intermediate grades;

(2) Scale, grid system and elevation seem to be of equal difficulty and may be learned and used in the intermediate grades.

(3) Interpretation appears to be a complex skill that requires further research before conclusive statements are made. (p. 7)

Carswell went on to point out that map skills were a part of our social studies curriculum yet students' abilities in these skills were very poor. He felt that teachers overestimated their success in teaching map reading skills. He cited four reasons why teachers were not adequately teaching map skills.

(1) There is a gross oversimplification in the minds of teachers of just what is involved in reading a map.

(2) The wrong things are being taught about maps. That is, teachers are probably teaching about maps rather than with maps.

(3) There is something lacking in the sequencing of map skills.

(4) The techniques which are used to teach mapping skills seem to be ineffectual if they exist at all. In many cases the teacher seems to assume that children can read a map (p. 5).

Savage and Bacon (1969) investigated two methods of teaching the skill of recognizing map symbols. The traditional approach of beginning with the manipulation of concrete objects was compared to a method which begins on a more abstract level. Forty first grade pupils (20 boys and 20 girls) randomly selected from the population of first graders in a Seattle elementary school made up the sample for the study. They were randomly assigned to the two groups of 20 each. A criterion test based on the objectives of the unit was developed by the experimenters and administered to both groups after the period of instruction. The findings supported the hypothesis in that there was no significant difference in the two groups with respect to recognizing map symbols. The experimenters concluded that there appeared to have been too much emphasis placed on the need for manipulation of concrete objects in the primary grades. It seemed that first grade children would learn on a more abstract level than had been assumed possible.

In 1973 the Michigan Council for Geographic Education developed a standardized achievement test suitable for assessing the geographic knowledge and skills of fifth grade students in Michigan. The test, containing 50 items, assessed

three domains of geographic content - physical geography, human geography, and geographic skills. The section dealing with geographic skills focused on reading and interpretation of maps, graphs and pictures. Bettis and Manson (1975) administered this test to 1,689 fifth grade students in 64 classrooms from 20 school districts in Michigan. They reported that over 50 percent of the students demonstrated some ability with respect to map symbols and the reading of graphs but less than 50 percent displayed ability in calculating distance, determining directions and interpreting graphs. Their findings attested to the need for an assessment of the teaching and learning of geography in the elementary schools.

Summary

Most of the reported research seemed to indicate that elementary grade students did not display adequate proficiency in the geographic skills which were an important part of the elementary social studies program. However, the research did show that, with adequate instruction, elementary students were capable of learning and understanding most of the geography skills. Some experimenters have shown that students in primary grades can learn a number of geographic skills that are presently included in the elementary social studies programs. Researchers who have expressed opinions as to a probable reason for the lack of proficiency in geographic skills of elementary grade students have claimed

that (1) there was not enough attention given to the sequencing of geographic skills up through the grades and (2) there were a number of inadequacies in the teaching of the basic skills of geography.

In Newfoundland schools the geography course up to the end of grade four includes the geographic skills which have been discussed in this review of research. Moreover, the social studies programme for all the elementary grades in this Province is not an integrated one but rather treats geography as a separate subject. Consequently, it is to be expected that a great deal of attention would be devoted to geographic skills as a means of studying and reinforcing the geography content. With this in mind the writer attempted to make an assessment of the abilities of grade five students in selected geographic skills to which they have been exposed up to the end of their grade four geography course.

Geography instruction in the elementary grades in Newfoundland schools appears to lack many of the techniques which will develop in students the basic geographic skills necessary to a successful study of that subject. Too much emphasis seems to be placed on the learning of facts and understanding of factual knowledge. Little attention seems to be given to having students work and learn in a way similar to that of a geographer. The results of Jones' study (1978) attested to this and indicated that the mode of instruction in geography is mainly expository with rote memorization being emphasized as the means of learning.

Geography in Newfoundland schools begins in most instances in grade four. The Provincial Department of Education recommends a social studies program for grades one, two and three but very few schools include it in their programme on a regular basis. The geography course prescribed for grade four is actually the students' first formal exposure to geography. In grade four, students are confronted with content material which requires both the learning of, and practice in the use of, basic geographic skills. Consequently this study was mainly concerned with the major geographic skills taught in the grade four course. Specifically, these skills were (1) map reading skills related to location, scale, direction, elevation and map grids and (2) skills involved in interpreting and reading information contained in selected maps, graphs and diagrams.

## CHAPTER III

## Methodology

This chapter will describe the procedures followed in carrying out this study. Specific sections will be presented as follows. (1) Treatment Material (2) Instrumentation (3) Sample (4) Contextual Variables (5) Statistical Procedures (6) Hypotheses and (7) Limitations of the Study.

### Treatment Material

The grade four geography text Around Our World by Massey (1965) provided students with exposure to the geographic skills used in this study. The text introduced students to a study of various world communities contrasting climates and ways of living. A large part of the text involved the abundant use of maps, charts, pictures and diagrams. These were intended to present factual information and reinforce information found in the narrative. The use of other maps and related materials was also suggested in order to supplement the content material found in the various chapters. The textbook was designed in such a way that students were introduced to the sutdy of communities by beginning, on a limited scale, with their own particular school or home community.

All of the geographic skills of the type used in this study received a very thorough introduction in the text. A specific

section called the 'Map Shop' was included in each of chapters one through eight. These sections provided the introduction to the various map reading skills as they were needed and used throughout the text.

The introduction to location and direction skills was made by having students draw a map of a local area which they had recently visited with the teacher. From this stage they proceeded to use these skills on a large scale map of a small town. In subsequent chapters, students became involved in progressively more difficult activities using these two skills.

Student activity involving the use of a contour map was concentrated late in the text. However several subsequent maps included information on land elevation.

Questions and activities related to the interpretation of information from maps and diagrams began early in the text with their degree of difficulty increasing as students progressed to new and more difficult material. For example, in looking at a large scale map of a town, students would be asked to suggest a suitable place for a camp-ground. Later in the text, when they were studying a contour map, students were asked to suggest the best possible location for a forest ranger's cabin.

Activities involving the use of globes occurred early in the text with the introduction of the topics 'Seasons' and 'Day and Night'. Suggestions for the introduction of these topics involved several demonstrations using a globe and flashlight in a darkened room. In addition, the text provided a

number of diagrams and pictures to reinforce understanding of topics involving the use of the globe.

Horizontal and vertical bar graphs were found throughout the text to support and show in a concise manner the factual material related to various aspects of climate and resources. The introduction to these graphs began on a relatively simple scale. For example the average monthly temperatures and rainfall of a particular region were shown on separate graphs in the first sections of the text. After this, such information was incorporated into a single graph.

In summary, the grade four geography text would appear to have provided both a basic introduction and adequate practice for students attainment of the geographic skills used in this study.

Instrumentation

The test instrument. For the purpose of this study a test of geographic skills was constructed by the investigator. This test was designed to measure students' abilities in geographic skills related to map reading and the interpretation of information from maps and diagrams as developed in the grade four programme in the Province of Newfoundland.

Developing the instrument. Initially a fifty item, four foil, multiple choice test was constructed. Items on the test measured student abilities in eight geographic skill areas. These were location, scale, direction, elevation, map grids, horizontal graphs, vertical graphs,and interpretation of

specific information from maps and diagrams. A complete copy of this fifty item test can be found in Appendix A.

Validity. In order to establish validity, the fifty-item test was submitted to six judges. As a result of their suggestions several minor changes were made in the wording of some questions. For example, item number 29 originally read "What city has most of its rain in winter?" It was felt that 'winter' might be hard for students to determine since the graphs did not indicate in which hemisphere the cities were found. The revised question was changed to have students specify the month rather than the season. Likewise in item number 31, 'winter' was changed to 'the month of December'. As another example, the phrase 'all year round' in item 30 was considered too difficult for early grade five and was changed to 'for most of the year'.

Finally, item number 32 was originally worded "What is the average monthly temperature at city 3?" This was considered too difficult for students to determine from the vertical bar graphs. It was felt that the same objective could be achieved by wording the question as follows: "Which city has the most even temperature all year?".

Administering the initial test. The fifty item test was administered by the investigator to a grade five class not involved in the study. Following this, an item difficulty and item discrimination analysis was performed using the Alberta Computer Programme Package. On the basis of this analysis, 10

items considered too easy, too difficult or irrelevant were deleted from the test. These items were numbers 2, 7, 8, 10, 14, 28, 33, 37, 40 and 50 and are indicated by an asterisk in the test in Appendix A.

The administering of the initial test indicated a further need for some refinement in the test format. In the test setting, students were required to use a booklet containing the fifty questions, another booklet containing the maps and diagrams, plus a separate answer sheet. It became obvious after the investigator had administered the pilot test, that a number of students found it difficult to focus their attention on the three components of the test at the same time. Consequently, the test format was revised whereby the separate answer sheet was discarded and students indicated their choice of answer immediately following each question in the test booklet.

The revised test. The revised test consisted of forty four-foil multiple choice items. The test itself could be broken down into eight sub-tests, each measuring a particular skill area.

Four of the skill areas--elevation, grid map, horizontal graph and vertical graph--were confined to particular sections of the test and each skill focused upon one particular map or graph. The remaining four skill areas--location, scale, directions and interpretation of information--had question items spread throughout the test. The skill areas of location and scale were given substantially more question items on the test.

It was felt that these skills would be tested more effectively by applying them to a number of different maps. The test items reflecting each skill area are summarized as follows:

TABLE 2
Summary of Test Items According to Skill

| Skill Area | Test Items |
|---|---|
| Location | 1, 6, 10, 12, 28, 29, 30, 31, 33 |
| Scale | 4, 5, 7, 8, 9, 11, 14 |
| Directions | 2, 3, 27, 32, 35 |
| Elevation | 34, 36, 37 |
| Grid Map | 15, 16, 17, 18 |
| Horizontal Graph | 19, 20, 21, 22 |
| Vertical Graph | 23, 24, 25, 26 |
| Interpretation | 13, 38, 39, 40 |

Reliability. Using the Alberta Computer Programme Package, a Kuder-Richardson 20 reliability coefficient of .89 was produced on the overall test. Subsequent analysis of the sub-tests indicated that low reliability indices were produced. This was attributed to the small number of items in each of the sub-tests. Due to the low reliabilities (less than .6) this factor should be considered a limitation of the study.

Administering the revised test. The revised test was administered to 199 students in grade five during the second

week in November. All students involved in the testing were in that grade for the first time and had studied the grade four geography course in the previous school year. To ensure that the testing situations would be as equivalent as possible, the test was administered by the investigator during the morning school sessions over a one week period. The time given to students to complete the test, after all instructions had been given, was 60 minutes.

Sample

The sample for the study involved 199 students in six schools selected at random throughout the Avalon North Integrated School District. Four of the schools had two classes each of grade five and two schools had only one class each of grade five. In each of the schools with two grade five classes, the class used for the study represented a random sample of the grade five students in that school. All the classes of grade five would seem to have been representative of a variety of student abilities and socio-economic backgrounds at least in this school district.

Contextual Variables

The contextual variables which could not be controlled included the effects of the School District, the District Resource Centre, Schools, and Teacher.

The school district. The school district of the Avalon North Integrated School Board encompasses a relatively large geographic area. Consequently, most schools are central

schools in that they each serve a number of communities and most students are taken to and from school by bus. The total school enrolment of this school board in 1978-79 was 9,810, in 50 schools. The student enrolment per grade in each school is given in Appendix C. The total number of teachers, including principals, vice-principals and specialist teachers employed by the school board was 477. A breakdown of the numbers of teaching personnel in each school is given in Appendix C. The teacher allocation to schools included 51 specialist teachers who taught in the area of their speciality on a part-time or full time basis. Specific breakdown of these teachers is as follows:

TABLE 3
Specialist Personnel in Schools

| | Full Time | Part Time |
|---|---|---|
| Physical Education | 12 | 1 |
| Music | 11 | 2 |
| Art | 1 | - |
| Home Economics | 5 | 1 |
| Industrial Arts | 2 | 1 |
| Guidance | 4 | 1 |
| Religious Education | 1 | - |
| Special Education | 8 | - |
| French | - | 1 |

Teacher qualifications by Newfoundland teachers' certificate level were as follows:

TABLE 4
Teacher Qualifications 1978-79

| | |
|---|---|
| Certificate One | 13 |
| Certificate Two | 40 |
| Certificate Three | 45 |
| Certificate Four | 131 |
| Certificate Five | 123 |
| Certificate Six | 97 |
| Certificate Seven | 28 |

The professional staff attached to the District Office of the Avalon North Integrated School District included eight specialists, four generalists and two administrative personnel. Table 5 gives a breakdown of the District Office professional staff.

TABLE 5
District Professional Staff

| Specialists | Number |
|---|---|
| French | 1 |
| Guidance | 1 |
| Library/Media | 2 |
| Mathematics/Science | 1 |
| Music | 1 |
| Reading/Language Arts | 1 |
| Religious Education | 1 |

TABLE 5 (Continued)

| Generalists | Number |
|---|---|
| Area supervisors | 4 |
| **Administration** | **Number** |
| Superintendent | 1 |
| Assistant Superintendent | 1 |

District resource centre. The District Office of the School Board included a District Resource Centre which serves all schools in the District. The Centre houses a wide variety of teaching aids and resources which are available to teachers on a loan basis. A weekly delivery and pick-up of these materials ensures that teachers are able to provide students with many resource materials in addition to those materials already in the schools.

Characteristics of schools in the study. All six schools involved in this study could be considered typically rural with populations ranging from 260 to 475 students. Three of the schools had grades ranging from kindergarten to grade six; two had grades from kindergarten to grade eight and one had grades from three to six. All schools were considered to have had comparable teaching aids and resources for teaching geography.

Characteristics of teachers in the study. Most of the teachers involved with the students at the grade four and five levels had very little academic background in geography.

In the schools involved in the study there was a total of ten grade four teachers and ten grade five teachers. A resumé of the academic backgrounds of the grade four teachers of last year showed that only two had a major and two had a minor in geography. The academic backgrounds of the grade five teachers were similar in the area of geographic education. Only three had a major and two had a minor in that subject.

Statistical Procedures

The data for the total group was analyzed to compute the mean percentage score and standard deviation for each of the skill areas. The S.P.S.S. computer program was used. This analysis was used to answer descriptive hypotheses 1.

A t-test was used to answer the statistical hypotheses 2 to 9. The design for this analysis was as follows:

TABLE 6
Design For the Analysis of Differences
Between Mean Scores of Boys and Girls

| Subtest | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| Boys | $\bar{X}_{.11}$ | $\bar{X}_{.21}$ | $\bar{X}_{.31}$ | $\bar{X}_{.41}$ | $\bar{X}_{.51}$ | $\bar{X}_{.61}$ | $\bar{X}_{.71}$ | $\bar{X}_{.81}$ | $\bar{X}_{..1}$ |
| Girls | $\bar{X}_{.12}$ | $\bar{X}_{.22}$ | $\bar{X}_{.32}$ | $\bar{X}_{.42}$ | $\bar{X}_{.52}$ | $\bar{X}_{.62}$ | $\bar{X}_{.72}$ | $\bar{X}_{.82}$ | $\bar{X}_{..2}$ |

Hypotheses

Statement of the descriptive hypothesis. The main purpose of this study was to assess the attainment of grade five students in eight geographic skill areas. A level of

acquisition of 80 percent or higher in each skill area was considered reasonable for the study. The level was seen as being appropriate since the test assessed the acquisition of skills as opposed to content material. These skills were necessary in learning and understanding the content material of the course and an 80 percent level of acquisition of them was felt to be a prerequisite for efficient study.

In order to accomplish this purpose, the following descriptive hypothesis was presented.

1. Students will illustrate, according to their performance expressed as a percentage score on a forty item test, that they have acquired the following geographic skills:

(1) location,

(2) scale,

(3) directions,

(4) elevation,

(5) grid map,

(6) horizontal graphs,

(7) vertical graphs,

(8) interpretation of information from maps and diagrams.

Statement of the statistical hypotheses. A second purpose of this study was to assess the differences between boys and girls in the attainment of eight geographic skills. To accomplish this, the following statistical hypotheses were tested at the .05 level of significance. Following

are the null and alternative hypotheses of this part of the study.

2. There will be no significant difference between the mean scores of boys and girls in the skill area of location.

$$H_0: \bar{X}_{.11} = \bar{X}_{.21}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of location.

$$H_1: \bar{X}_{.11} \neq \bar{X}_{.21}$$

3. There will be no significant difference between the mean scores of boys and girls in the skill area of scale.

$$H_0: \bar{X}_{.12} = \bar{X}_{.22}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of scale.

$$H_1: \bar{X}_{.12} \neq \bar{X}_{.22}$$

4. There will be no significant difference between the mean scores of boys and girls in the skill area of direction.

$$H_0: \bar{X}_{.13} = \bar{X}_{.23}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of direction.

$$H_1: \bar{X}_{.13} \neq \bar{X}_{.23}$$

5. There will be no significant difference between the mean scores of boys and girls in the skill area of elevation.

$$H_0: \bar{X}_{.14} = \bar{X}_{.24}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of elevation.

$$H_1: \bar{X}_{.14} \neq \bar{X}_{.24}$$

6. There will be no significant difference between the mean scores of boys and girls in the skill area of reading map grids.

$$H_0: \bar{X}_{.15} = \bar{X}_{.25}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of reading map grids.

$$H_1: \bar{X}_{.15} \neq \bar{X}_{.25}$$

7. There will be no significant difference between the mean scores of boys and girls in the skill area of reading horizontal graphs.

$$H_0: \quad \bar{X}_{.16} = \bar{X}_{.26}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of reading horizontal graphs.

$$H_1: \quad \bar{X}_{.16} \neq \bar{X}_{.26}$$

8. There will be no significant difference between the mean scores of boys and girls in the skill area of reading vertical graphs.

$$H_0: \quad \bar{X}_{.17} = \bar{X}_{.27}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of reading vertical graphs.

$$H_1: \quad \bar{X}_{.17} \neq \bar{X}_{.27}$$

9. There will be no significant difference between the mean scores of boys and girls in the skill area of interpreting information from maps and diagrams.

$$H_0: \quad \bar{X}_{.18} = \bar{X}_{.28}$$

There will be a significant difference between the mean scores of boys and girls in the skill area of interpreting information from maps and diagrams.

$$H_1: \bar{X}_{.18} \neq \bar{X}_{.28}$$

Limitations of the Study

The following statements serve to limit the generalizability of this study.

1. This study was limited to six classes of grade five students enrolled in six schools under the jurisdiction of the Avalon North Integrated School Board.

2. The sample selection was limited since the investigator had no input into the selection of students for each grade five class in the schools having two classes. In this instance the selection was done by the school administration.

3. The geographic skills studied in this paper for the most part, pertained to those contained in the grade four text. The degree of formal instruction in geographic skills, to which these students may have been exposed in grade four and in the primary grades, may have varied even though the same textbook was used in all cases.

4. The instrument was limited to the selection of skills used for this study and did not tap or recognize other skills that may have been as or more important.

5. The study was limited to the extent that all teachers stressed geography to the same degree in the grade four class.

6. The instrument, based on skills presumed to have been taught up to the end of grade four, was administered to students in their ninth week of grade five. Therefore, the study is limited to the extent that some of the skills tested may have been mastered by students during the first eight weeks of grade five.

7. The test instrument was limited in that the reliability coefficients for the sub-tests were found to be low.

## CHAPTER IV

## Results and Summary of the Findings

This chapter reports the results of the study. It will be divided into two sections: (1) Results of the study and (2) Summary of the findings.

### Results of the Study

The findings related to the descriptive hypothesis 1, that students will illustrate their degree of acquisition of eight geographic skills, are presented as follows:

1. In the skill area of location, 54.88 percent of the students indicated that they had attained that skill.

2. In the skill area of scale, 55.49 percent of the students indicated that they had attained that skill.

3. In the skill area of direction, 39.49 percent of the students indicated that they had attained that skill.

4. In the skill area of elevation, 30.15 percent of the students indicated that they had attained that skill.

5. In the skill area of grid map reading, 77.01 percent of the students indicated that they had attained that skill.

6. In the skill area of reading horizontal graphs, 65.07 percent of the students indicated that they had attained that skill.

7. In the skill area of reading vertical graphs, 40.07 percent of the students indicated that they had attained that skill.

8. In the skill area of interpretation of information from maps and diagrams, 39.69 percent of the students indicated that they had attained that skill.

A summary of the analysis referring to the descriptive hypothesis is given in Table 7.

TABLE 7
Student's Mean Percentage Scores in Each Skill Area

| Skill | Mean Percentage | Standard Deviation | Standard Error |
|---|---|---|---|
| Location | 54.886 | 22.491 | 1.594 |
| Scale | 55.492 | 23.248 | 1.648 |
| Direction | 39.497 | 22.869 | 1.621 |
| Elevation | 30.151 | 23.353 | 1.655 |
| Grid Map | 77.010 | 22.802 | 1.616 |
| Horizontal Graphs | 65.075 | 33.355 | 2.294 |
| Vertical Graphs | 40.075 | 28.518 | 2.022 |
| Interpretation | 39.698 | 27.306 | 1.936 |

The findings, relating to the statistical hypotheses 2 to 9 referring to the differences between boys and girls in the attainment of eight geographic skills, were as follows:

2. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of location, was accepted.

$$H_0: \bar{X}_{.11} = \bar{X}_{.21}$$

3. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of scale, was accepted.

$$H_0: \bar{X}_{.12} = \bar{X}_{.22}$$

4. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of direction, was accepted.

$$H_0: \bar{X}_{.13} = \bar{X}_{.23}$$

5. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of elevation, was accepted.

$$H_0: \bar{X}_{.14} = \bar{X}_{.24}$$

6. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of reading map grids, was accepted.

$$H_0: \bar{X}_{.15} = \bar{X}_{.25}$$

7. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in reading horizontal graphs was rejected in favour of the alternative hypothesis that there will be a significant difference between the mean scores of boys and girls in the skill area of reading horizontal graphs. Girls outperformed boys significantly on this skill.

$$H_1: \bar{X}_{.16} \neq \bar{X}_{.26}$$

8. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of reading vertical graphs, was accepted.

$$H_0: \bar{X}_{.17} = \bar{X}_{.27}$$

9. The null hypothesis, that there will be no significant difference between the mean scores of boys and girls in the skill area of interpreting information from maps and diagrams, was accepted.

$$H_0: \bar{X}_{.18} = \bar{X}_{.28}$$

A summary of the findings relating to the statistical hypotheses is given in Table 8.

TABLE 8
Summary of Results for the Analysis of
Differences Between Mean Scores of Boys and Girls

| Skill | Group | Number of Cases | Mean | Standard Deviation | Degrees of freedom | Significance |
|---|---|---|---|---|---|---|
| Location | Boys | 95 | 54.8531 | 22.564 | 197 | 0.985 |
| | Girls | 104 | 54.9137 | 22.536 | | |
| Scale | Boys | 95 | 54.8867 | 24.684 | 197 | 0.727 |
| | Girls | 104 | 56.0432 | 21.961 | | |
| Direction | Boys | 95 | 38.7368 | 21.988 | 197 | 0.655 |
| | Girls | 104 | 40.1923 | 23.729 | | |
| Elevation | Boys | 95 | 31.9297 | 24.270 | 197 | 0.306 |
| | Girls | 104 | 28.5256 | 22.478 | | |
| Grid Map | Boys | 95 | 76.3158 | 24.290 | 197 | 0.683 |
| | Girls | 104 | 77.6442 | 21.452 | | |
| Horizontal Graphs | Boys | 95 | 58.9474 | 32.395 | 197 | 0.010* |
| | Girls | 104 | 70.6731 | 31.438 | | |
| Vertical Graphs | Boys | 95 | 39.4737 | 27.430 | 197 | 0.777 |
| | Girls | 104 | 40.6250 | 29.598 | | |
| Interpre-tation | Boys | 95 | 36.8421 | 26.758 | 197 | 0.159 |
| | Girls | 104 | 42.3077 | 27.668 | | |

*Significant at .05

Summary of the Findings

In the skill areas of location and scale approximately 55 percent of the students indicated attainment in these skills. Approximately 40 percent of the students indicated attainment in the skill areas of direction, reading vertical graphs and interpreting information from maps and diagrams. Only 30 percent of the students showed attainment in the skill area of elevation. In contrast to their poor showing in reading vertical graphs, students demonstrated greater proficiency in reading horizontal graphs in that 65 percent indicated attainment in that skill area. Students indicated greatest attainment, with a percentage of 77, in the skill area of reading a grid map.

In no skill area did the students' mean scores reach the 80 percent level of attainment. In all of the skill areas, with the exception of reading a horizontal graph and a grid map, students' level of skill acquisition was extremely low.

A comparison of the mean scores of boys and girls in each of the skill areas indicated that in only one skill--that of reading horizontal graphs--was there a significant difference between the two groups. As table 9 indicates, the girls' attainment in reading horizontal graphs was significantly higher than the boys'.

# CHAPTER V

## Summary, Discussion and Recommendations

### Summary

This study was designed to assess the attainment of geographic skills by grade five students. Specifically, the following questions were examined. (1) To what degree have grade five students attained the geographic skills of location, scale, direction, elevation, reading a grid map, reading horizontal graphs, reading vertical graphs and interpretation of information from maps and diagrams? (2) Was there a significant difference between the mean scores of boys and girls in each of the eight skill areas?

To carry out the study, a forty item four-foil multiple choice test, embodying eight geographic skills included in the grade four geography programme, was constructed by the investigator. The test was administered to 199 grade five students in the school district of the Avalon North Integrated School Board.

The analysis of the results of the test involved computing the mean percentage scores of all students in each skill area. In addition, an analysis was made of the differences between the mean scores of boys and girls in each skill area.

The results of the study indicated that students' attainment did not reach the expected cut-off score of 80 percent in any of the skill areas. The lowest level of attainment was found in the skill area of elevation or the reading of a contour map. In this, only 30 percent of the students showed acquisition of the skill. In each of the skill areas of direction, reading vertical graphs and interpretation of information from maps and diagrams, student attainment was approximately 40 percent. Approximately 55 percent of the students showed attainment of the skills of location and scale. In reading horizontal graphs 65 percent of the students indicated that they had acquired that skill. The highest level of attainment was in the skill area of reading a grid map in which 77 percent of the students indicated that they had acquired that skill.

In analyzing the differences between the mean scores of boys and girls in each skill area, a significant difference was found in only one skill area. That skill involved the reading of horizontal graphs and showed that girls' attainment was significantly higher than that of the boys.

Discussion

Students' attainment in each of the eight geographic skills used in the study fell below the acceptable level of 80 percent. Following is a brief discussion of some of the probable factors contributing to this low achievement and of some observations on the actual skill attainment shown by

students in the study.

In discussing the grade four geography programme teachers were of the opinion that the text, Around Our World, presented students with some difficulty, particularly in the area of reading. They claimed that a substantial amount of time had to be taken in order to assist students in reading and understanding the narrative. Although this may have been valid, it should have given more impetus in emphasizing many of the geographic skills which would assist students in acquiring much of the content material by way of the various maps and diagrams. In addition, with a difficult geography textbook, it would be expected that teachers would have sought other more appealing teaching and learning aids with which to develop the skills and ideas contained in the text. Although there was available in the district resource centre a wealth of maps, filmstrips, films, slides, study prints and audio tapes related to the teaching of geographic skills, the majority of teachers indicated that they had availed of this service in only a limited way.

The observations of supervisory personnel indicated that the teaching strategies in the elementary grades in the district appear to have changed very little over the past 10 or 15 years. Emphasis is still being placed on the lecture and reading type of presentation. Student mastery of content material continues to be most important. The inquiry-discovery approach to learning is seldom used and little

attention is given to group work and projects. Although there is no doubt that some attention is given to map skills, it appears that many teachers fail to realize that the acquisition of skills is the result of continuous practice. The large amount of attention given to coverage of verbal material in the text tends to result in too little time for instruction and practice in geographic skills. The apparent tendency for teachers to devote little teaching time to maps and map related activities supports the opinion of Carswell (1968) who felt that much of the instruction in geography involved teaching 'about maps' rather than 'with them'.

As indicated earlier, most of the teachers involved in the study had very little educational background in geography. This may have been one reason for the apparent lack of emphasis on skills. In this school district the annual turnover of elementary teachers is almost negligible. Many of the teachers have not been exposed to any methods courses in social studies. Most of their recent training has consisted of courses selected from the limited number of professional and academic courses offered by the university in the evenings for part time students.

Several skills on the test instrument were tested on two or more maps having different degrees of complexity. In the skill area of location, students tended to score higher on the simpler type of large scale maps and progressively lower on the more conventional types of maps containing more detail.

Student attainment in this skill on the map of Make Believe Town was 85 percent; on the Make Believe Country it was 58 percent; and on the maps of Block Island it was 42 percent.

Student attainment in the skill area of scale could be broken down into two categories. On the test items referring to the simpler maps, 58 percent of the students indicated attainment while on the more conventional types of maps the attainment level was only 49 percent. The overall low attainment of students in this skill area might reflect the findings of Towler and Nelson (1968) and Sorohan (1962) who found that most students do not develop a concept of scale until the grade five or six level.

In the skill area of directions, student attainment on test items involving cardinal directions was 49 percent. However, on the test items involving the intermediate directions the attainment level was only 26 percent. The low level of attainment in this skill area supported the findings of Douglass (1965), Lord (1941) and Howe (1931).

The attainment of students in the skill area of determining elevation on a map was very low. It is probable that this skill had not been given sufficient attention in the course. An examination of the geography text indicates that this skill area is presented towards the end of the textbook. It has become somewhat of a standard practice for teachers to present most textbook material and content in the same order as found in the texts. Therefore, it is reasonable to assume

that due to problems related to time, much of the material in the last few chapters of the text were merely skimmed or not taught at all.

In contrast to the low attainment of students in the other skill areas, student attainment in reading a map grid was high. It is conceded that this skill may have been less difficult than some of the others but that the better performance of students might be attributed to student exposure to this type of skill in another subject area. The mathematics course in grades three and four, in which students have considerable practice and exposure in graphing by means of coordinates, may have had a positive effect on their high attainment in this skill area.

In the skill area of reading horizontal graphs student attainment was expected to be much more than 65 percent since this particular type of graph is not peculiar to geography alone but receives a great deal of attention in the grade three and four mathematics courses.

Student attainment in the skill area of reading vertical graphs was very low in comparison with that in the area of horizontal graphs. In the geography textbook, vertical graphs are used on numerous occasions and it was expected that, with such a frequency of exposure, students would display a high attainment level in that skill. However, the horizontal graph section of the test contained much less detail than that of the vertical graphs. The vertical graph section involved

a number of graphs among which students had to make some comparisons in order to determine the correct answers. It is reasonable to conclude that these graphs presented more of a challenge to the students and that the gap between student attainment scores in these two skills might be expected.

A low attainment of students in the skill area of interpreting information from maps supported the findings of Carswell (1968) who found that grade four students did not indicate a significant improvement in interpretation skills after a period of instruction. Also, the interpretation skill is dependent upon the acquisition of other map reading skills and for this reason would be considered the most difficult for students in this study.

A comparison of the skills attainment of boys and girls indicated a significant difference, in favor of the girls, in only one skill area, that of reading horizontal graphs. However, there appeared to be a trend for girls to do better than boys in the skill areas of scale, direction, reading a map grid and interpretation of information. Only in the skill area of elevation did boys outscore girls. The trend for girls to do better than boys in the skill area of direction is not supported by previous research. The findings of Douglass (1965), Howe (1931) and Lord (1941) indicated that boys outperformed girls in the skill area of direction.

The results obtained in this study substantiated those

of other similar studies. The overall low attainment of students on the test of geographic skills was consistent with the findings of Howe (1931), Lord (1941), Rushdoony (1963), McAulay (1964), Lee and Stampfer (1966) and Bettis and Manson (1975). However, a review of the literature indicated that, with specific instruction and adequate emphasis, students can acquire the basic geographic skills included in the geography programmes in primary and elementary grades. Although the skills tested in this study form an integral part of the grade four geography course, there is reason to believe that these skills were not adequately emphasized and taught. The findings of Jones (1978) which indicated that teachers tend to place heavy emphasis on rote memorization of social studies material supports this.

In consideration of the results of this study and the findings recorded in the related literature, the following suggestions are made.

1. The Provincial Department of Education should be urged to provide teachers with a developmental or sequential list of the geographic skills to be taught in the primary and elementary grades.

2. Since the teachers' guide for the grade four text Around Our World by Massey (1965) is no longer in print, the Department of Education should provide the leadership and expertise in developing a teachers' guide for this course. This guide should particularly emphasize the teaching of map

reading skills in the grade four programme.

3. School Boards should be encouraged to show greater concern in providing more and better instructional materials for geography and to give better supervision with their use.

4. Teachers should be encouraged to provide more integration of geographic skills with other subject areas especially in activities involving graphs and measurement.

5. It is suggested that the introduction to geography in grade four begin with a detailed study of the students' immediate environment. This would involve students in first hand experiences in the use of the map reading skills of location, scale, direction and elevation.

6. The Faculty of Education at Memorial University of Newfoundland should consider the offering of methods courses in geography. Particular emphasis should be placed on courses which provide teachers with direction in developing geographic skills in the primary and elementary grades.

Recommendations for Further Study

Based on the findings and conclusions of this study, the writer submits the following specific recommendations:

1. That this study be replicated using a wider and larger sample in Newfoundland schools.

2. That a cross-grade comparison of geographic skills attainment be made in all school grades.

3. That strategies for teacher use in developing geographic skills in primary and elementary grade students be developed and evaluated.

# BIBLIOGRAPHY

Anderzhon, M. L. Steps in Map Reading. Toronto: W. J. Gage & Co. Ltd., 1955.

Arnsdorf, V. E. Teaching map-reading and geographic understandings with projectuals, Journal of Geography, 1964, 63, 75-81.

Arnsdorf, V. E. Geographic education: principles and practices in the primary grades, Social Education, 1967, 31, 613.

Askov, E. N., & Kamm, K. Map skills in the elementary school, Elementary School Journal, 1974, 75, 112-121.

Bailey, P. Teaching Geography. Vancouver, B. C., Douglas, David & Charles Ltd., 1974.

Ball, J. M., Steinbrink, J. E., & Stoltman, J. P. (ed.) The Social Sciences and Geographic Education: A Reader. Toronto: John Wiley & Sons Inc., 1971.

Bartz, B. S. Maps in the classroom, Journal of Geography, 1970, 69, 18-24.

Bettis, N. C., & Manson, G. A. An assessment of the geographic learning of fifth-grade students in Michigan, Journal of Geography, 1975, 74, 16-24.

Carmichael, D. R. Developing map reading skills and geographic understandings by means of conceptual teaching methods (Doctoral dissertation, University of California, 1965) Dissertation Abstracts, 1965, 26, 7176 (University Microfilms No. 66-03529).

Carswell, R. J. B. Children's abilities in topographic map reading. A paper presented at A Symposium on the Influence of the Map User on Map Design. Queens University, Kingston, 1970.

Carswell, R. J. B. Topographic map reading abilities of learners in grades four, five and six (Doctoral dissertation, University of Florida, 1968) Dissertation Abstracts, 1968, 30, 200 (University Microfilms No. 69-10,901).

Chace, H. Developing map skills in elementary school, Social Education, 1955, 19, 309-310. (a)

Chace, H. Map skills in the first grade, Social Education, 1955, 19, 361-362. (b)

Cons, G. J., & Honeybone, R. C. Handbook for Geography Teachers. London: Methuen & Co., 1966.

Douglass, M. P. Laterality and knowledge of directions, Elementary School Journal, 1965, 66, 69-74.

Ferguson, G. A. Statistical Analysis in Psychology and Education. Toronto: McGraw-Hill, 1966.

Good, C. V. (ed.) Dictionary of Education. New York: McGraw-Hill, 1959.

Gopsill, G. H. The Teaching of Geography. London: MacMillan & Co., 1973.

Hanna, P. R., Sabaroff, R. E., Davies, G. F., & Farrar, C. R. Geography in the Teaching of Social Studies. Boston: Houghton-Mifflin Co., 1966.

Howe, G. F. A study of children's knowledge of directions, Journal of Geography, 1931, 30, 298-304.

Hudman, L. E. Geographic concepts: a need to be explicit, Journal of Geography, 1972, 71, 520-525.

Jarolimek, J. Social Studies in Elementary Education. New York: MacMillan, 1967.

Jones, F. G. Geography Teaching in Canadian Schools. St. John's: Memorial University of Newfoundland, 1978.

Kennamer, L. Developing a sense of place and space. In Skill development in the social studies. Thirty-third yearbook, National Council for the Social Studies, Washington, D.C.: The Council, 1963, p. 148-170.

Lee, J. R., & Stampfer, N. Two studies in learning geography: implications for the primary grades. Social Education, 1966, 30, 627-628.

Lord, F. E. A study of spatial orientation of children, Journal of Educational Research, 1941, 34, 481-505.

Massey, D. L. (ed.) Around Our World - A Study of Communities. Toronto: Ginn & Co., 1965.

McAulay, J. D. Map learnings in the fourth grade, Journal of Geography, 1964, 63, 123-127.

McAulay, J. D. Second grade children's growth in comprehension of geographic understandings, Journal of Geography, 1966, 65, 33-37.

McNee, R. An approach to understanding the current structure of geography. In I. Morrissett (ed.), Concepts and Structure in the New Social Science Curricula. New York: Holt, Rinehart & Winston Inc., 1967.

Meyer, J. M. W. Map skills instruction in the child's developing cognitive abilities, Journal of Geography, 1973, 72, 27-35.

Millar, G. J. Testing map reading ability, Journal of Geography, 1931, 30, 38-42.

Miller, J. W. Measuring perspective ability, Journal of Geography, 1967, 66, 167-171.

Moore, E., & Owen, E.E. Teaching the Subjects in the Social Studies. Toronto: The MacMillan Co., 1966.

Odell, C.B. The use of maps, globes and pictures in the classroom. In New Viewpoints in Geography. Twenty-ninth yearbook of the National Council for the Social Studies. Washington, D.C.: The Council, 1959, p. 200-210.

Preston, R.C. Teaching Social Studies in the Elementary School. New York: Holt, Rinehart & Winston Inc., 1968.

Ragan, W.B., & McAulay, J.D. Social Studies for Today's Children. New York: Meredith Publishing Co., 1964.

Raisz, E. Principles of Cartography. New York: McGraw-Hill, 1962.

Resnick, L. B. Programmed instruction and the teaching of social studies skills. In Skill development in the Social Studies. Thirty-third yearbook of the National Council for the Social Studies. Washington, D.C.: The Council, 1963, p. 252-273.

Rice, M. J. Improving elementary geography: tests in geography, Elementary School Journal, 1965, 66, 134-136.

Robertson, D. J. The development and standardization of an objective test of elementary school geography. (M. A. Thesis, McGill University, 1968). Microfilm Tc 2331.

Rushdoony, H. A. Achievement in map-reading: an experimental study, Elementary School Journal, 1963, 64, 70-75.

Rushdoony, H. A. The geographer, the teacher, and a child's perception of maps and mapping. Journal of Geography, 1971, 70, 429-433.

Rushdoony, H. A. A child's ability to read maps. A paper presented at the N. C. G. E. conference, Washington, D.C.: 1973.

Sabaroff, R. Maps and mapping in the first grade, National Council for Geographic Education Leaflet No. 3. Normal, Illinois 61761: Illinois State University, No date.

Sabaroff, R. Map interpretation in the primary grades, Elementary School Journal, 1963, 64, 59-67.

Sabaroff, R. Improving the use of maps in the elementary school, Journal of Geography, 1961, 60, 184-190.

Savage, T. V. Jr., & Bacon, P. Teaching symbolic map skills with primary grade children, Journal of Geography, 1969, 68, 491-497.

Sorohan, L. J. The grade placement of map skills according to the mental ages of elementary school children (Doctoral dissertation, Ohio University, 1962) Dissertation Abstracts, 1962, 23, 2452 (University Microfilms No. 63-01066).

Stamp. L. D. A Glossary of Geographical Terms. London: Longmans Greene & Co., 1966.

Stampfer, N. A study of map skills attainment in selected middle grades (Doctoral dissertation, Northwestern University, 1966) Dissertation Abstracts, 1966, 27, 2102 (University Microfilms No. 66-14,071).

Stoltman, J. P. & Goosby, T. M. Developing map skills through reading instruction. Journal of Geography, 1973, 72, 32-36.

Thorp, M. T. Studies of the abilities of pupils in grade four to eight to use geographic tools. In G. M. Whipple (ed.) The Teaching of Geography. Thirty-second yearbook of the National Society for the Study of Education. Bloomington, Illinois: Public School Publishing Co., 1933, p. 494-506.

Tiegs, E. W., & Adams, F. Teaching the Social Studies. Boston: Ginn & Co., 1959.

Towler, J. O., Nelson, L. D. The elementary child's concept of scale, Journal of Geography, 1968, 67, 24-28.

Webster's Third New International Dictionary. P. B. Gove, (ed.) Springfield, Mass.: G. & C. Merriam Co., 1971.

Weinswig, S. E. Evaluation of lessons to teach introductory map skills in grade four (Doctoral dissertation, Boston University, 1962) Dissertation Abstracts, 1962, 23, 1295 (University Microfilms No. 62-4805).

Wesley, E. B., & Cartwright, W. H. Teaching Social Studies in Elementary Schools (3rd ed.). Boston: D. C. Heath & Co., 1968.

West, E. The social science disciplines. In J. M. Ball, J. E. Steinbrink & J. P. Stoltman (ed.). The Social Sciences and Geographic Education: A Reader. Toronto: John Wiley & Sons Inc., 1971.

Witucki, L. G. Map reading skills. In Skills and processes in the social studies. Thirty-second yearbook of the National Council for the Social Studies. Washington, D.C.: The Council, 1962, p. 196-205.

# APPENDIX A

Geography Skills Test

for

Elementary Grades

(Initial Test)

# G E O G R A P H Y  S K I L L S  T E S T

# F O R

# E L E M E N T A R Y  G R A D E S

(Initial Test)

Items indicated by an asterisk (*) were deleted in the revised test.

Instructions to Students

This test contains a number of questions on certain geography skills. These skills were included in your geography course in grade four.

In order to answer each question you will have to study a map or diagram in the maps and diagrams booklet. It is important for you to read the instructions carefully and find the correct map or diagram before beginning to answer the questions.

There are four answers given after each question and these are labelled A, B, C, & D. Only one answer is correct. After you have read the question and the four possible answers use the map or diagram to decide which one is correct. Remember to read all four answers carefully. When you have chosen the correct answer, go to your answer sheet and circle the letter A, B, C, or D which stands for the answer you have chosen.

For example: Look at the map of the Make Believe Town and answer the following question.

Which one of the following is nearest to the school?

A. Theatre
B. Sports Shop
C. Swimming Pool
D. Arena

By looking at the map you will see that the correct answer is the "swimming pool". You would indicate your answer by drawing a circle around C in the appropriate place on your answer sheet.

If you have any questions about writing the test you must ask them now before the test starts.

Study the map of the Make Believe Town and answer questions 1 to 9.

1. If you left the theatre and walked to the swimming pool, which of the following would you pass by?

   A. School
   B. Drug Store
   C. Post Office
   D. Library

*2. On which street is the Post Office located?

   A. Spruce Street
   B. Pine Street
   C. 13th Street
   D. Fir Street

3. Which one of these is directly south of the school?

   A. Library
   B. Drug Store
   C. Post Office
   D. Church

4. If you walked from the arena to the swimming pool in what direction would you go?

   A. North then East
   B. West then South
   C. East then South
   D. West then North

5. If you were to walk from the arena to the Police Station, about how far would you go?

   A. ½ mile
   B. 1 mile
   C. 2 miles
   D. 1½ miles

6. About how far is it from the bridge on Fir Street to the Church?

   A. ½ mile
   B. 2 miles
   C. 1 mile
   D. 3 miles

*7. Which of the following is located on a street corner?

A. Post Office
B. Swimming Pool
C. Fire Station
D. Library

*8. If your house is the one marked A, (next to the Doctor's Office) about how far would you have to walk to get to the Sports Shop?

A. 2 miles
B. 1 mile
C. ½ mile
D. 3 miles

9. Which street crosses the river?

A. 14th Street
B. Spruce Street
C. 15th Street
D. Fir Street

Study the map of Mr. Nabor's farm and answer questions 10 to 13.

*10. About how many acres are there in Mr. Nabor's farm (all the land which has the fence around it)?

A. 20 acres
B. 10 acres
C. 25 acres
D. 5 acres

11. About how many acres are used to grow turnips?

A. 3 acres
B. 1 acre
C. 6 acres
D. 4 acres

12. About how many acres are covered with forest?

A. 4 acres
B. 10 acres
C. 6 acres
D. 2 acres

13. What is most of Mr. Nabor's farm used for?

A. Growing potatoes
B. Growing oats
C. Growing grass
D. Growing cabbage

Use the map of the Make Believe Country to answer the questions 14 to 19.

*14. In what direction does the Rocky River flow?

A. West
B. North
C. East
D. South

15. What river flows into another river?

A. Nile
B. Nob
C. Rocky
D. Sandy

16. About how long is Nile Lake?

A. 50 miles
B. 10 miles
C. 100 miles
D. 25 miles

17. Near which town does the railway cross a river?

A. Preston
B. Orlando
C. Fremont
D. Hardwicke

18. What is true about the four towns of Preston, Fremont, Hardwicke and Port-Oxford?

A. They are all the same size.
B. They are all situated on rivers.
C. They are all on the coast.
D. They are all mining towns.

19. About how far is it from Fremont to Hardwicke?

A. 50 miles
B. 36 miles
C. 12 miles
D. 60 miles

Use the map of Australia to answer questions 20 to 23.

20. In what grid would you find Brisbane?

A. C3
B. E3
C. A4
D. E4

21. What town is located in grid D2?

A. Weipa
B. Adelaide
C. Mount Isa
D. Winton

22. In what grid would you find Adelaide?

A. E4
B. D4
C. E5
D. C3

23. What two towns are found in the same grid?

A. Albany and Menzies
B. Adelaide and Melbourne
C. Cairns and Townsville
D. Tennant Creek and Alice Springs

Study the graph which shows how four different countries get their power and answer questions 24 to 27.

24. What country uses most coal?

A. No. 4
B. No. 3
C. No. 2
D. No. 1

25. What country uses the most water power?

A. 3
B. 1
C. 2
D. 4

26. What is the second largest source of power for country number 3?

A. Coal
B. Oil
C. Water Power
D. Gas

27. What country uses no gas?

A. No. 2
B. No. 1
C. No. 3
D. No. 4

Find the page which has the graphs showing the monthly amounts of rainfall and the levels of temperature of six different cities in a one year period. Each graph has a number which stands for a city. For example, graph number 1 stands for city number 1 and graph number 2 stands for city number 2 and so on.

Using the legend given, study the graphs and answer questions 28 to 32.

*28. What city has the smallest amount of rain in a year?

A. 3
B. 6
C. 4
D. 1

29. In which month do we find the most rain in city 3?

A. June
B. October
C. November
D. May

30. What city has high temperatures and the greatest amount of rainfall for most of the year?

A. 2
B. 3
C. 5
D. 1

31. What city has the coldest month of December?

A. 5
B. 1
C. 4
D. 3

32. Which city has the most even temperature all year?

A. 3
B. 2
C. 5
D. 6

Study carefully the maps of Block Island and answer questions 33 to 42.

*33. In what direction do the highlands and uplands lie?

A. East-West
B. North-West
C. South-East
D. North-South

34. Which location best describes where the highlands are?

A. Eastern
B. Western
C. Northern
D. Southern

35. On the population map the numbers 1 to 8 stand for cities. Which city is near a peninsula?

A. 1
B. 5
C. 3
D. 4

36. Which river runs into another river?

A. Nob
B. Black
C. Son
D. Red

*37. Near which city might there be a problem with flooding?

A. 6
B. 7
C. 5
D. 8

38. From which direction do winds blow onto the island?

A. West
B. North-West
C. North-East
D. South

39. How many people per square mile would you find in an area marked  ?

A. 0 – 25
B. 250 or more
C. 25 – 100
D. 100 – 250

*40. Which city is located on highland?

A. 1
B. 8
C. 5
D. 6

41. Which one of these cities is not located near the mouth of a river?

A. 4
B. 7
C. 5
D. 3

42. Near which one of the following cities would coal be found?

A. 4
B. 8
C. 3
D. 7

The map of Wilkins Island includes contour lines which show the height of the land above sea-level. Study the map carefully and answer questions 43 to 46.

43. About how high is Trapper's Camp above sea level?

A. 500 feet
B. 1000 feet
C. 1500 feet
D. 2000 feet

44. In which direction does the Lor River flow?

A. North-West
B. South-West
C. North-East
D. South-East

45. About how high is Mount Olsen?

A. 1500 feet
B. 1000 feet
C. 2000 feet
D. 2500 feet

46. What would be the most suitable spot on the Island for a forest ranger's lookout station?

A. Knob Lake
B. Mount Olsen
C. King's Point
D. Trapper's Camp

Turn to the diagram which shows the different positions of the earth as it moves around the sun once a year. Study the diagram and answer questions 47 to 50.

47. How long does it take the earth to move from position 1 to position 5?

A. 1 year
B. 4 months
C. 9 months
D. 6 months

48. In position 5, how many hours of daylight would you get in Arctic areas?

A. 12 hours
B. 18 hours
C. 6 hours
D. 24 hours

49. How long would it take the earth to move from position 5 to position 7?

A. 6 months
B. 3 months
C. 12 months
D. 1 month

*50. What do the longer curved arrows outside the drawings of the earth indicate?

A. The counterclockwise turning of the earth on its axis.
B. The clockwise movement of the earth around the sun.
C. The counterclockwise movement of the earth around the sun.
D. The clockwise turning of the earth on its axis?

# GEOGRAPHY TEST ANSWER SHEET

NAME _____ SCHOOL _____

Place an X in the box which applies to you. ☐ BOY ☐ GIRL

Circle the letter which stands for the answer which you have chosen.

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D

10. A B C D
11. A B C D
12. A B C D
13. A B C D

14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D

20. A B C D
21. A B C D
22. A B C D
23. A B C D

24. A B C D
25. A B C D
26. A B C D
27. A B C D

28. A B C D
29. A B C D
30. A B C D
31. A B C D
32. A B C D

33. A B C D
34. A B C D
35. A B C D
36. A B C D
37. A B C D
38. A B C D
39. A B C D
40. A B C D
41. A B C D
42. A B C D

43. A B C D
44. A B C D
45. A B C D
46. A B C D

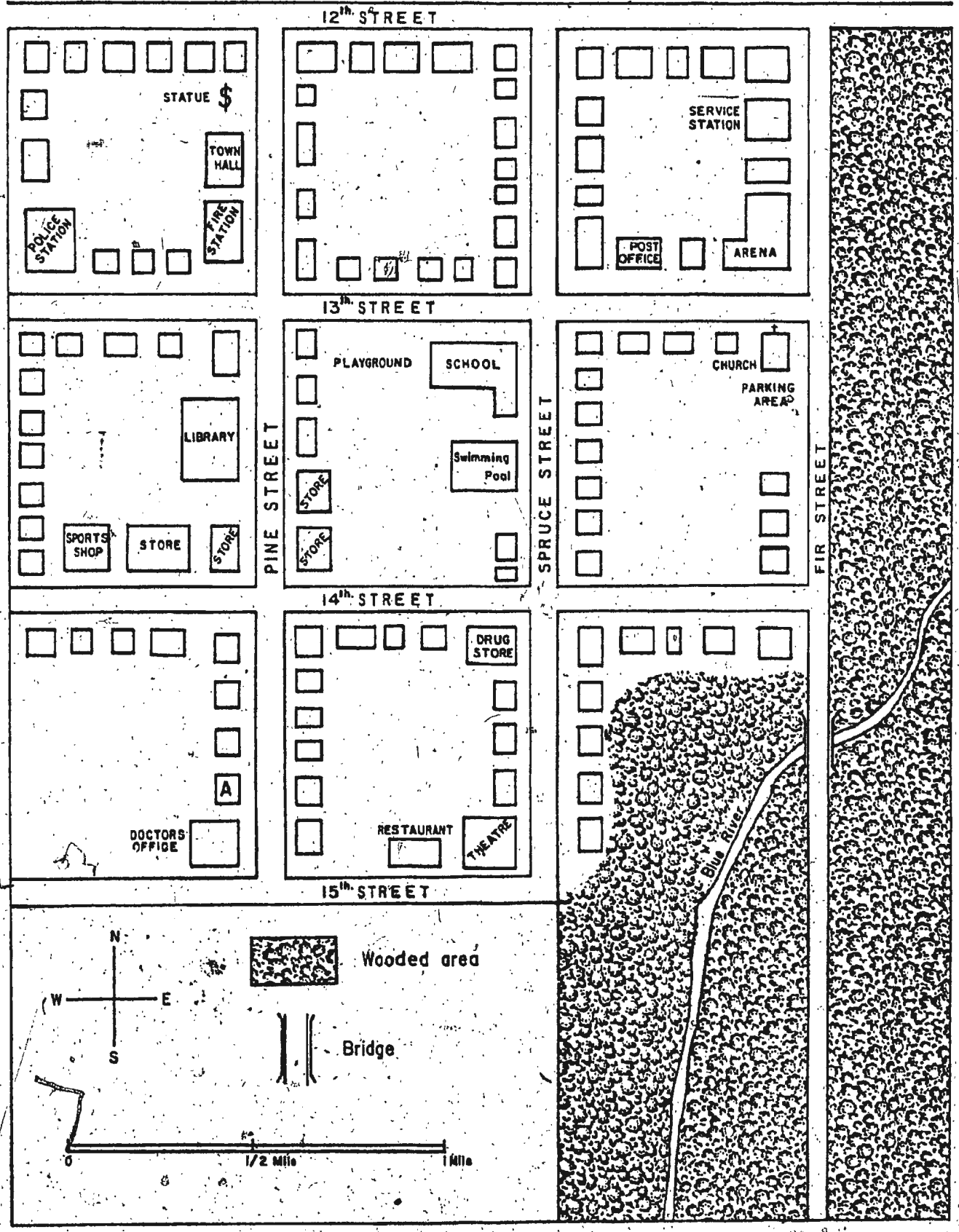
47. A B C D
48. A B C D
49. A B C D
50. A B C D

MAPS and DIAGRAMS

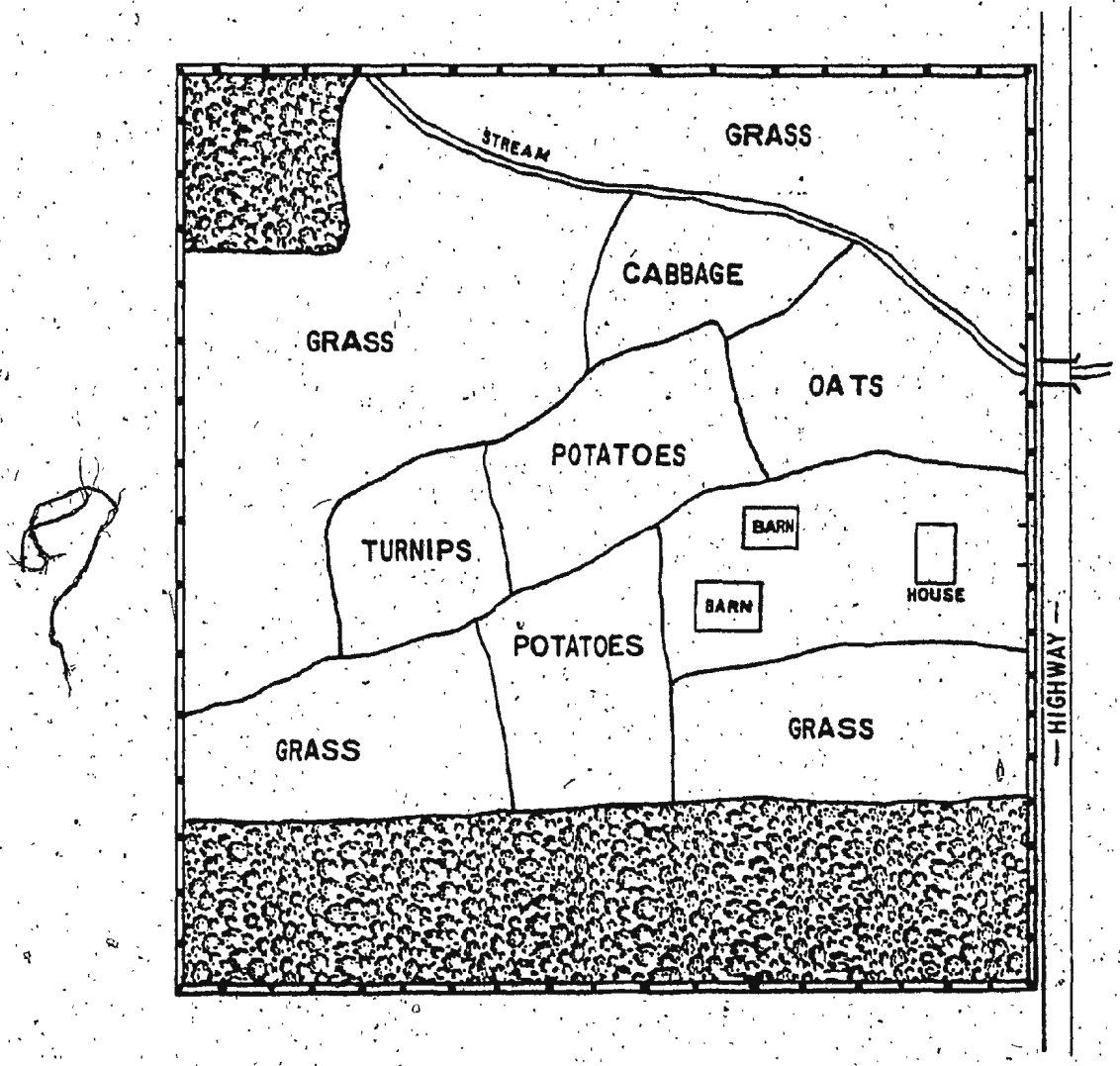
to be used with

GEOGRAPHY SKILLS TEST

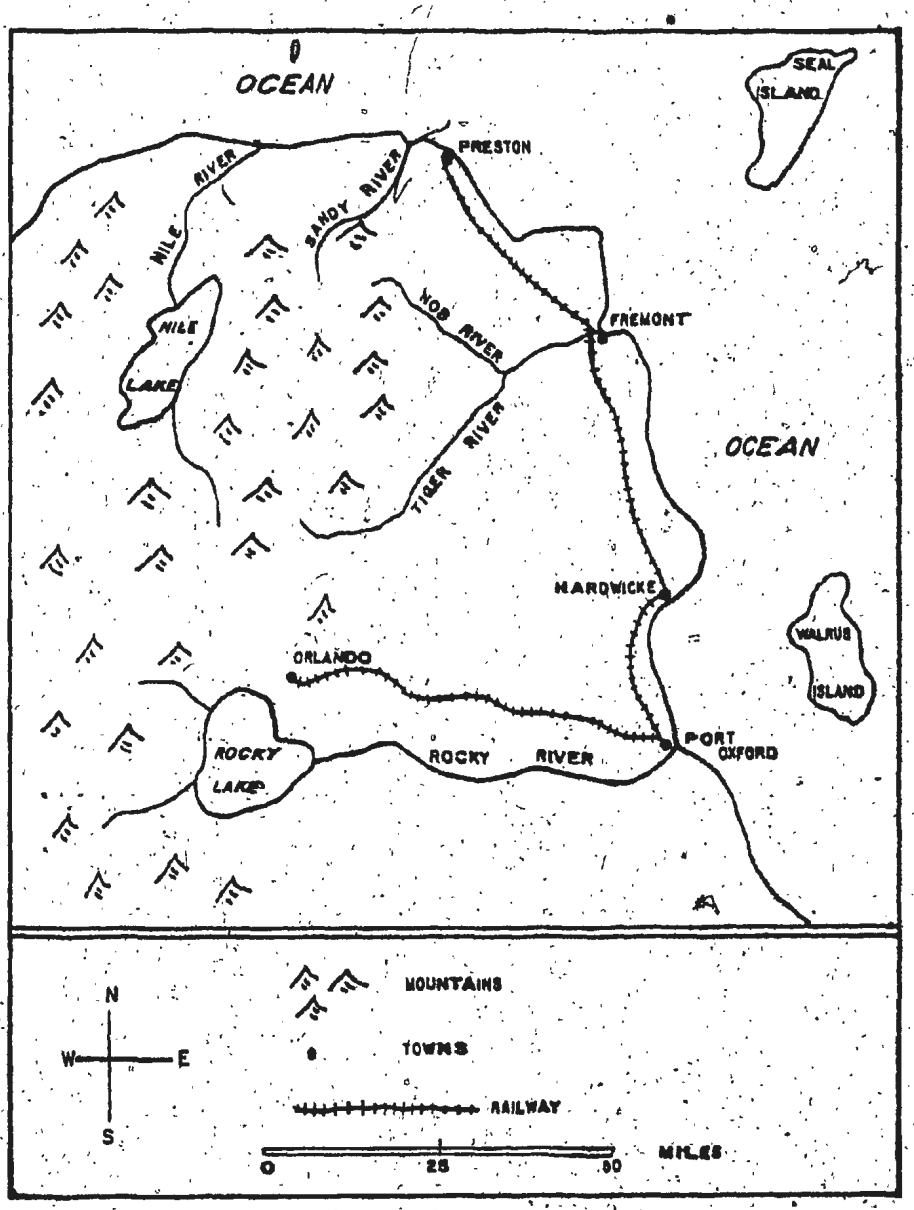
FOR ELEMENTARY GRADES



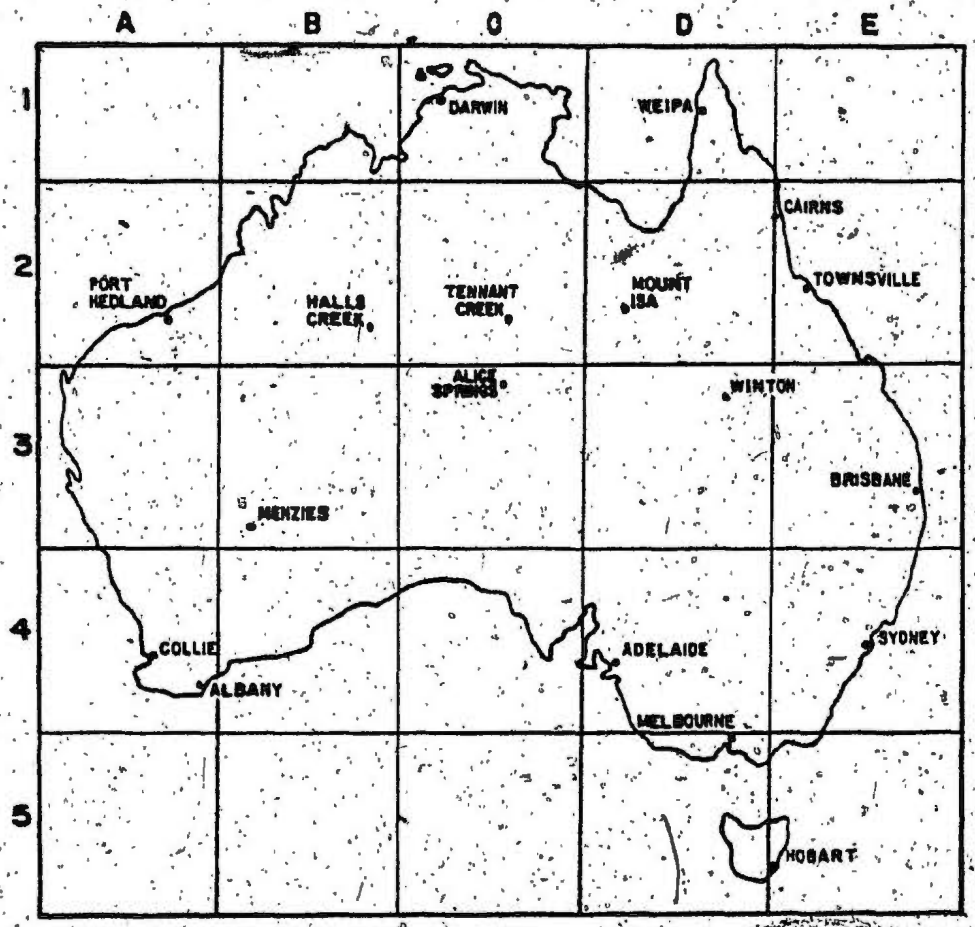

MAKE BELIEVE TOWN



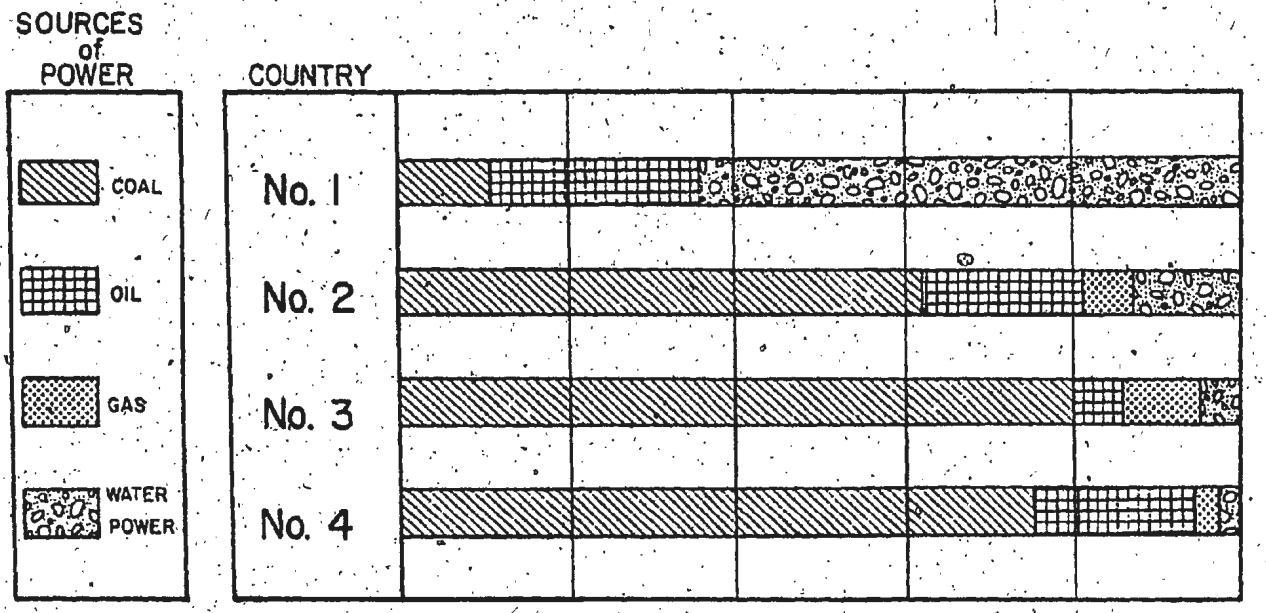

MR. NABOR'S FARM



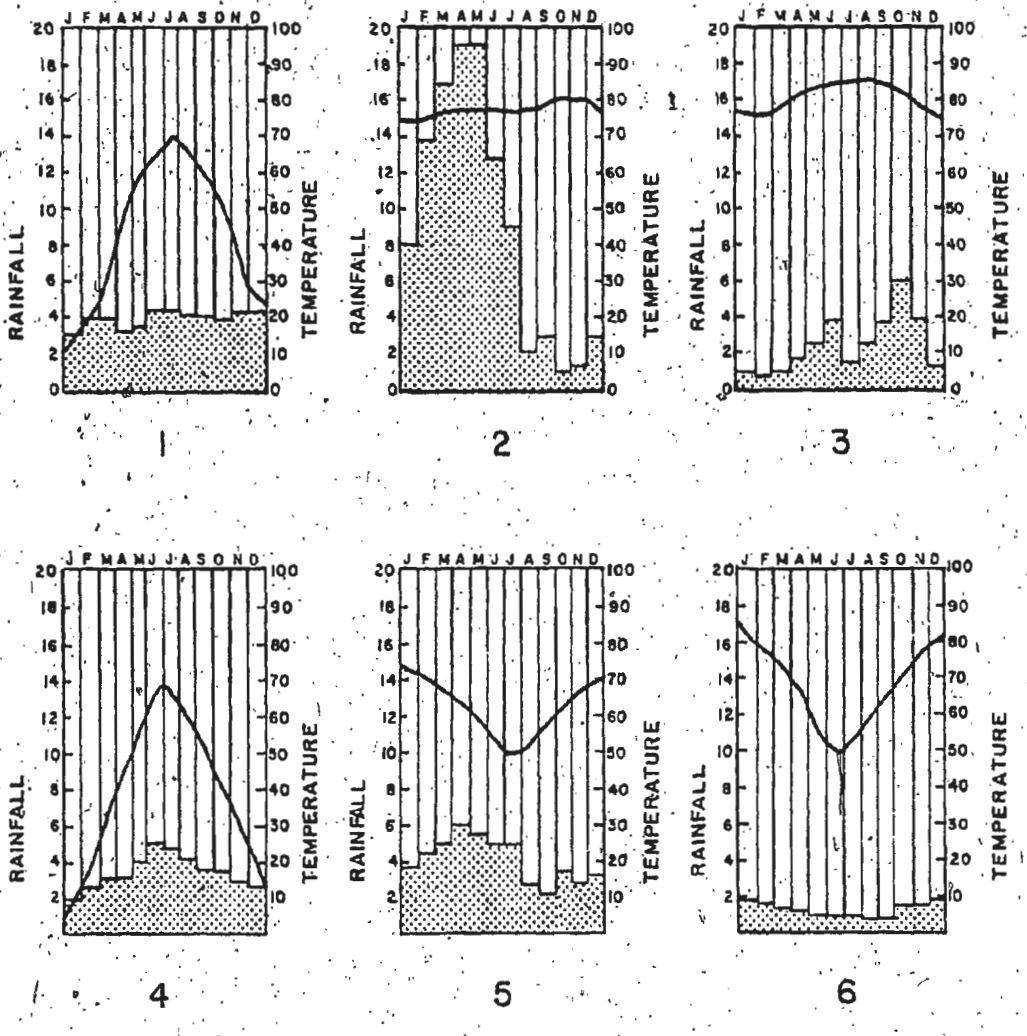

MAKE BELIEVE COUNTRY


A
B
C
D
E
1
2
3
4
5
DARWIN
WEIPA
CAIRNS
PORT HEDLAND
HALLS CREEK
TENNANT CREEK
MOUNT ISA
TOWNSVILLE
ALICE SPRINGS
WINTON
BRISBANE
MENZIES
COLLIE
ALBANY
ADELAIDE
SYDNEY
MELBOURNE
HOBART

AUSTRALIA



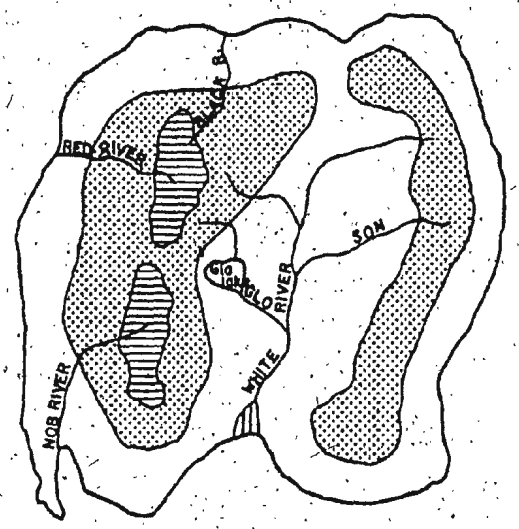

Graph showing how four different countries get their power.

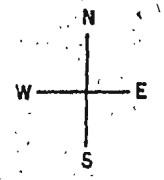



Graphs showing the monthly amounts of rainfall and the levels of temperature of six different cities in a one year period.

# BLOCK ISLAND

## LANDFORMS



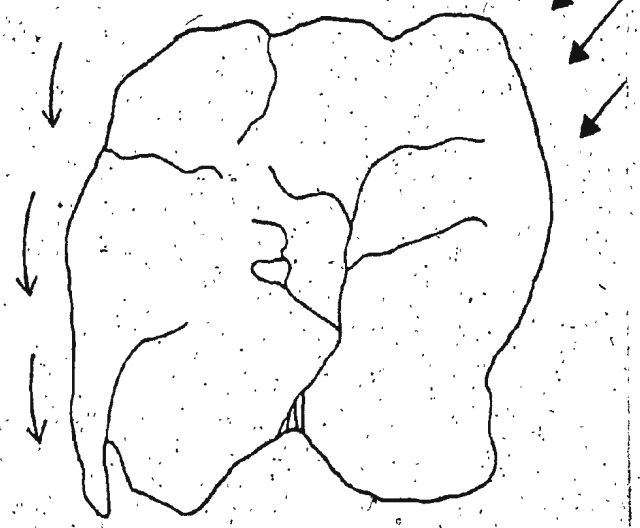




HIGHLAND

UPLAND

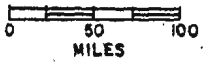
LOWLAND

## CLIMATE

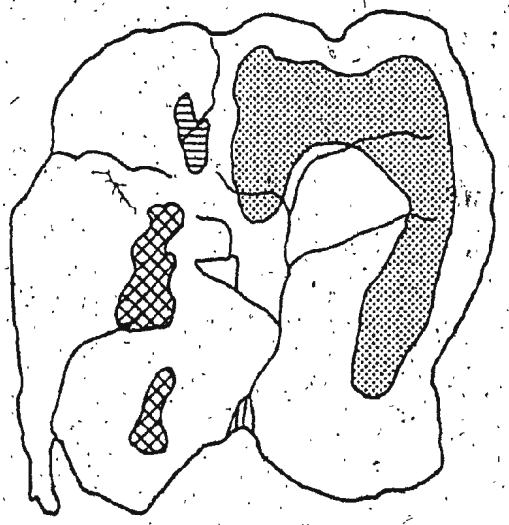



WIND

OCEAN CURRENT




## RESOURCES

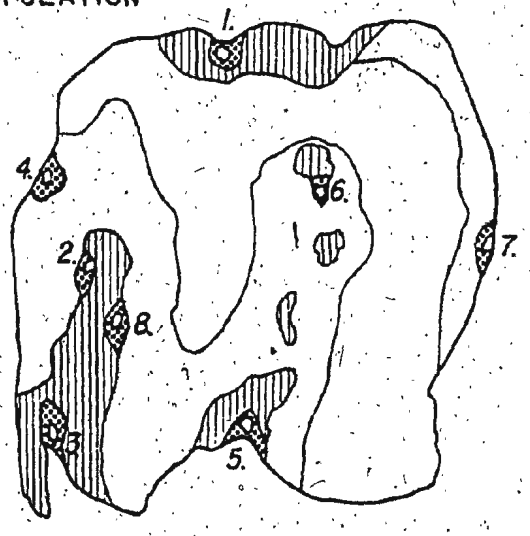


COAL

IRON ORE

FORESTS

## POPULATION

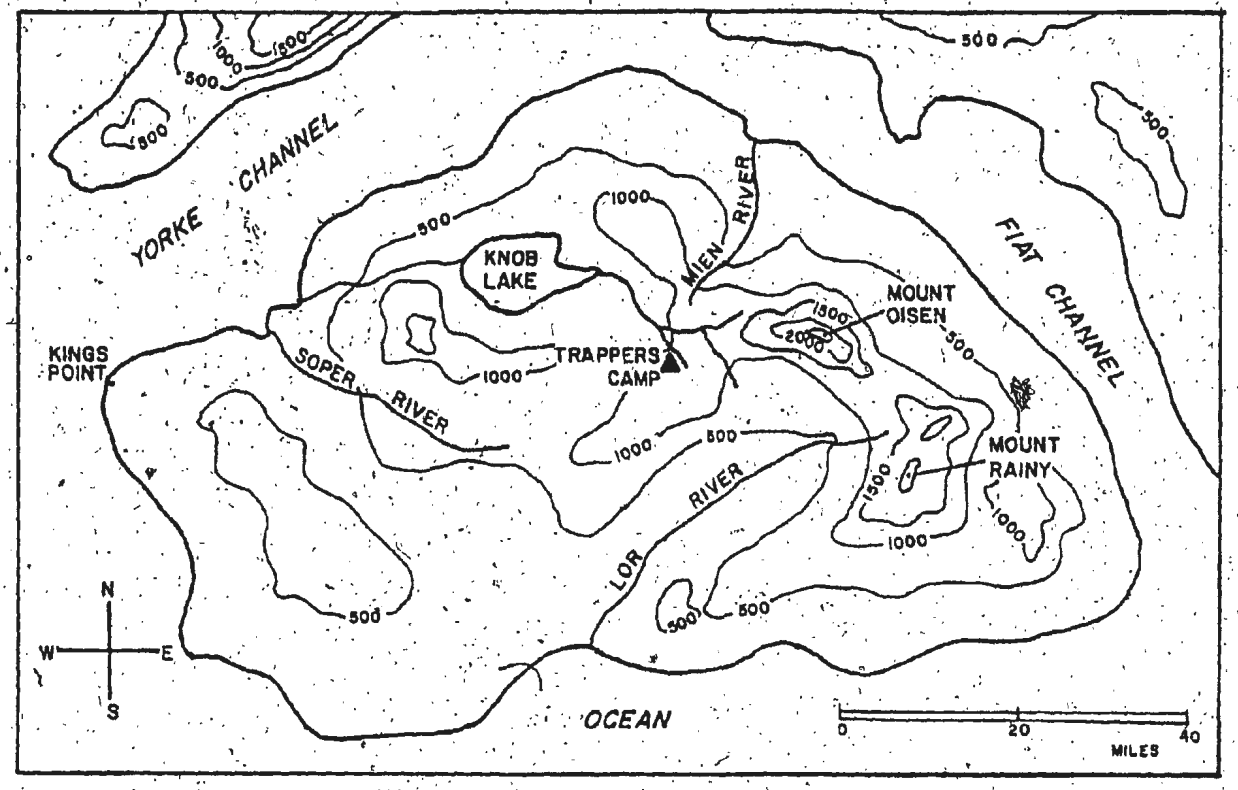



250 OR MORE PER SQUARE MILE

100 – 250 " " "

25 – 100 " " "

0 – 25 " " "




WILKINS ISLAND

The above map of Wilkins Island has contour lines which show the height of land above the level of the sea. The lines marked 500 tell that every place along these lines is 500 feet above the level of the sea. The lines marked 1000 tell that every place along these lines is 1000 feet above the level of the sea and so on.

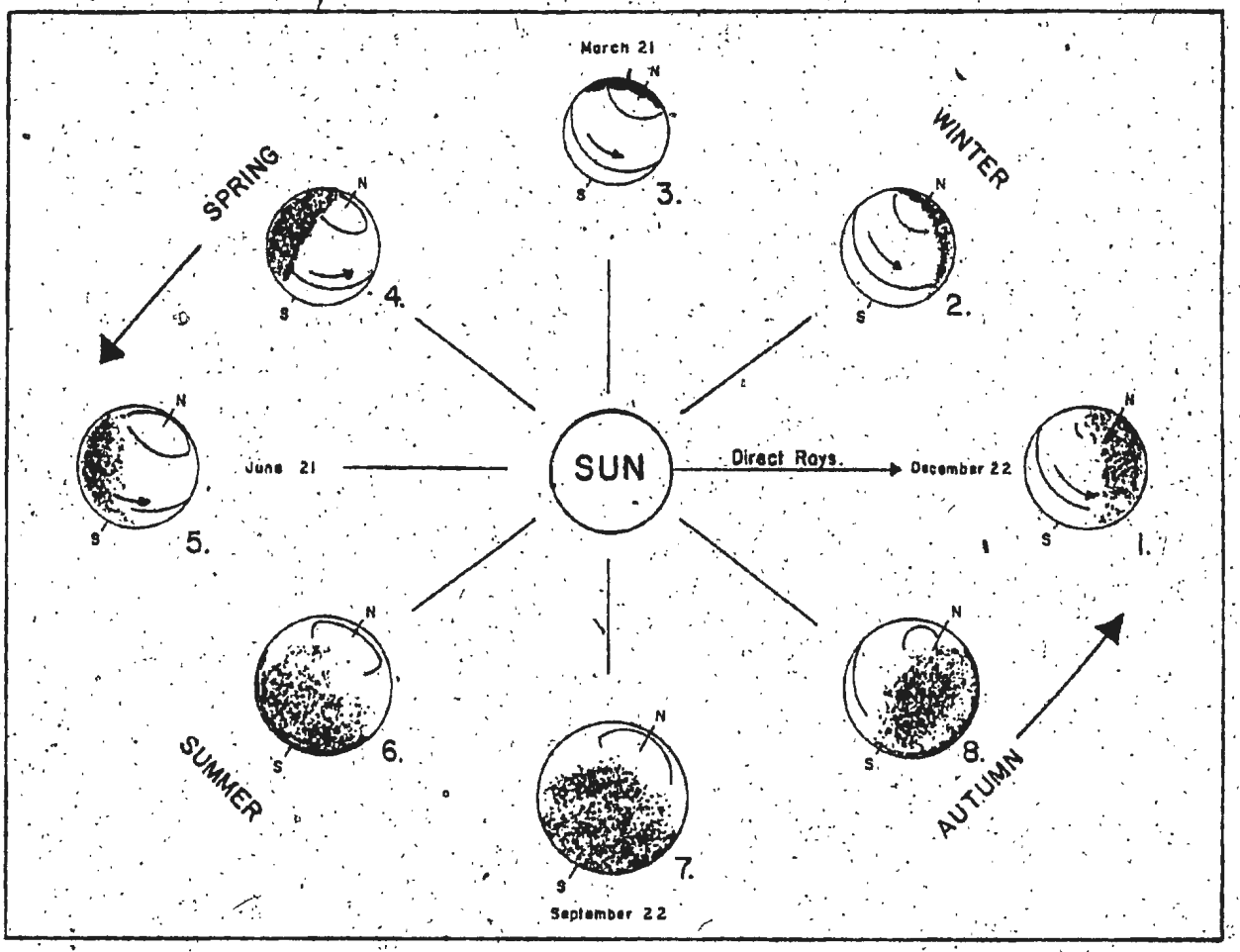



Diagram showing the different positions of the earth as it moves around the sun once a year.

# APPENDIX B

## Pack's Geography Skills Test

## For Elementary Grades

PACK'S GEOGRAPHY SKILLS TEST

FOR ELEMENTARY GRADES

Student's Name _____

School _____

Place an X in the box which applies to you.

☐ BOY ☐ GIRL

Instructions to Students

This test contains a number of questions on certain geography skills. These skills were included in your geography course in grade four.

In order to answer each question you will have to study a map or diagram in the maps and diagrams booklet. It is important for you to read the instructions carefully and find the correct map or diagram before beginning to answer the questions.

There are four answers given after each question and these are numbered 1,2,3, & 4. Only one answer is correct. After you have read the question and the four possible answers use the map or diagram to decide which one is correct. Remember to read all four answers carefully. When you have chosen the correct answer, draw a circle around the number 1,2,3, or 4 which stands for the answer you have chosen.

For example, look at the map of the Make Believe Town and answer the following two questions.

1. Which one of the following is nearest to the school?

   1. Theatre
   2. Sports Shop
   3. Swimming Pool
   4. Arena

   By looking at the map you will see that the correct answer is the "swimming pool". You would indicate your answer by drawing a circle around 3.

2. On which street is the POST OFFICE found?

   1. Spruce Street
   2. Pine Street
   3. Fir Street
   4. 13th. Street

   Again by looking at the map you will see that the correct answer is 13th Street. You would indicate your answer by drawing a circle around 4.

You are now ready to begin. You have one hour (60 minutes) in which to do this test.

Study the map of the MAKE BELIEVE TOWN and answer questions 1 to 6.

1. If you left the theatre and walked to the swimming pool, which of the following would you pass by?

   1. School
   2. Drug Store
   3. Post Office
   4. Library

2. Which one of these is directly south of the school?

   1. Library
   2. Church
   3. Theatre
   4. Post Office

3. If you walked from the arena to the swimming pool in what direction would you go?

   1. West then South
   2. North then East
   3. East then South
   4. West then North

4. If you were to walk from the arena to the Police Station, about how far would you go?

   1. 1/2 mile
   2. 1 mile
   3. 1 1/2 miles
   4. 2 miles

5. About how far is it from the bridge on Fir Street to the Church?

   1. 1/2 mile
   2. 1 mile
   3. 2 miles
   4. 3 miles

6. Which street crosses the river?

1. 14th Street
2. Spruce Street
3. Fir Street
4. 15th Street

Study the map of MR. NABOR'S FARM and the legend and then answer questions 7 to 9.

7. About how many acres are covered with forest?

1. 4 acres
2. 10 acres
3. 6 acres
4. 2 acres

8. About how many acres are used to grow turnips?

1. 3 acres
2. 1 acre
3. 4 acres
4. 2 acres

9. What is most of Mr. Nabor's farm used for?

1. Growing grass
2. Growing potatoes
3. Growing oats
4. Growing cabbage

Use the map of the MAKE BELIEVE COUNTRY to answer the questions 10 to 14.

10. What river flows into another river?

1. NILE
2. NOB
3. ROCKY
4. SANDY

11. About how long is NILE LAKE?

1. 50 miles
2. 10 miles
3. 100 miles
4. 25 miles

12. Near which town does the railway cross a river?

    1. PRESTON
    2. ORLANDO
    3. FREMONT
    4. HARDWICKE

13. What is true about the four towns of PRESTON, FREMONT, HARDWICKE, and PORT-OXFORD?

    1. They are all on the coast.
    2. They are all situated on rivers.
    3. They are all the same size.
    4. They are all mining towns.

14. About how far is it from FREMONT TO HARDWICKE?

    1. 50 miles
    2. 36 miles
    3. 12 miles
    4. 60 miles

Use the map of AUSTRALIA to answer questions 15 to 18.

15. What town is located in grid D2?

    1. WEIPA
    2. ADELAIDE
    3. MOUNT ISA
    4. WINTON

16. In what grid would you find BRISBANE?

    1. C3
    2. E3
    3. A4
    4. E4

17. In what grid would you find ADELAIDE?

    1. E4
    2. E5
    3. C3
    4. D4

18. What two towns are found in the same grid?

    1. CAIRNS and TOWNSVILLE
    2. ALBANY and MENZIES
    3. ADELAIDE and MELBOURNE
    4. TENNANT CREEK and ALICE SPRINGS

Study the graph which shows how four different countries get their power and answer questions 19 to 22.

19. What country uses the most coal?

    1. No. 3
    2. No. 1
    3. No. 4
    4. No. 2

20. What country uses the most oil?

    1. No. 3
    2. No. 1
    3. No. 2
    4. No. 4

21. What is the second largest source of power for country number 3?

    1. Coal
    2. Oil
    3. Gas
    4. Water Power

22. What country uses no gas?

    1. No. 2
    2. No. 4
    3. No. 3
    4. No. 1

Find the page which has the graphs showing the monthly amounts of rainfall and the levels of temperature of six different cities in a one year period. Each graph has a number which stands for a city. For example, graph number 1 stands for city number 1 and graph number 2 stands for city number 2 and so on.

Using the legend given, study the graphs and answer questions 23 to 26.

23. In which month do we find the most rain in city 3?

    1. June
    2. October
    3. November
    4. May

24. What city has high temperatures and the greatest amount of rainfall for most of the year?

    1. 2
    2. 3
    3. 5
    4. 1

25. What city has the coldest month of December?

    1. 5
    2. 1
    3. 4
    4. 3

26. Which city has the most even temperature all year?

    1. 6
    2. 3
    3. 5
    4. 2

Study carefully the maps of BLOCK ISLAND and answer questions 27 to 33.

27. Which location best describes where the highlands are on BLOCK ISLAND?

    1. Eastern
    2. Western
    3. Northern
    4. Southern

28. On the population map the numbers 1 to 8 stand for cities. Which city is near a peninsula?

    1. 1
    2. 5
    3. 3
    4. 4

29. Which one of these cities is not located near the mouth of a river?

1. 4
2. 3
3. 5
4. 7

30. Near which one of the following cities would coal be found?

1. 8
2. 3
3. 4
4. 7

31. Which river runs into another river?

1. NOB
2. BLACK
3. RED
4. SON

32. From which direction do winds blow onto the ISLAND?

1. North-East
2. North-West
3. West
4. South

33. How many people per square mile would you find in an area marked  ?

1. 0 - 25
2. 100 - 250
3. 25 - 100
4. 250 or more

The map of WILKINS ISLAND includes contour lines which show the height of the land above sea-level. Study the map carefully and answer questions 34 to 37.

34. About how high is TRAPPER'S CAMP above sea level?

1. 1000 feet
2. 1500 feet
3. 2000 feet
4. 500 feet

35. In which direction does the LOR River flow?

1. North-West
2. North-East
3. South-West
4. South-East

36. About how high is MOUNT OLSEN?

1. 1500 feet
2. 1000 feet
3. 2000 feet
4. 2500 feet

37. What would be the most suitable spot on the island for a forest ranger's lookout station?

1. KNOB LAKE
2. MOUNT OLSEN
3. KING'S POINT
4. TRAPPER'S CAMP

Turn to the diagram which shows the different positions of the earth as it moves around the sun once a year. Study the diagram and answer questions 38 to 40.

38. How long does it take the earth to move from position 3 to position 7?

1. 1 year
2. 4 months
3. 9 months
4. 6 months

39. In position 5, how many hours of daylight would you get in Arctic areas?

1. 12 hours
2. 24 hours
3. 6 hours
4. 18 hours

40. How long would it take the earth to move from position 4 to position 6?

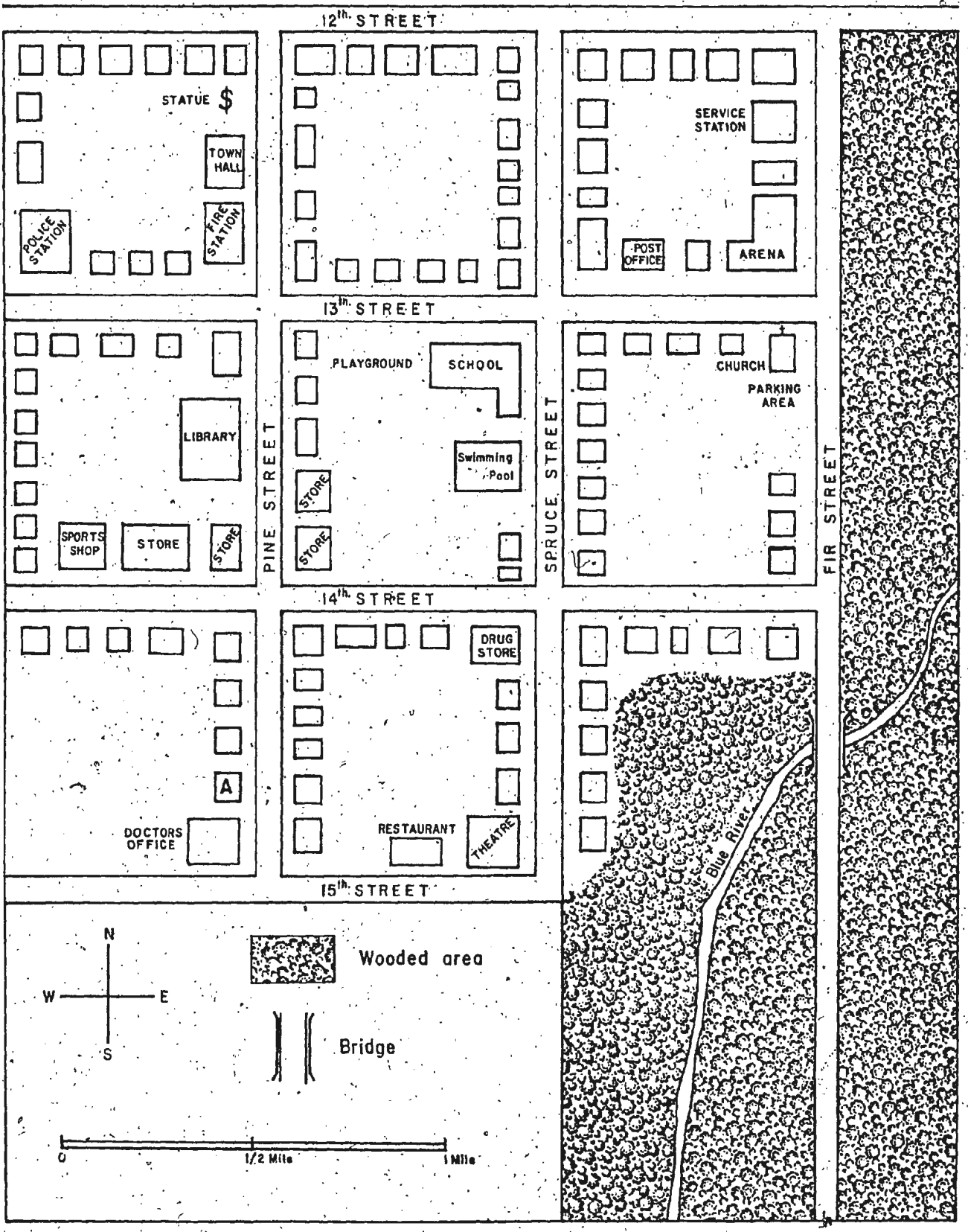
1. 6 months
2. 12 months
3. 3 months
4. 1 month

MAPS and DIAGRAMS

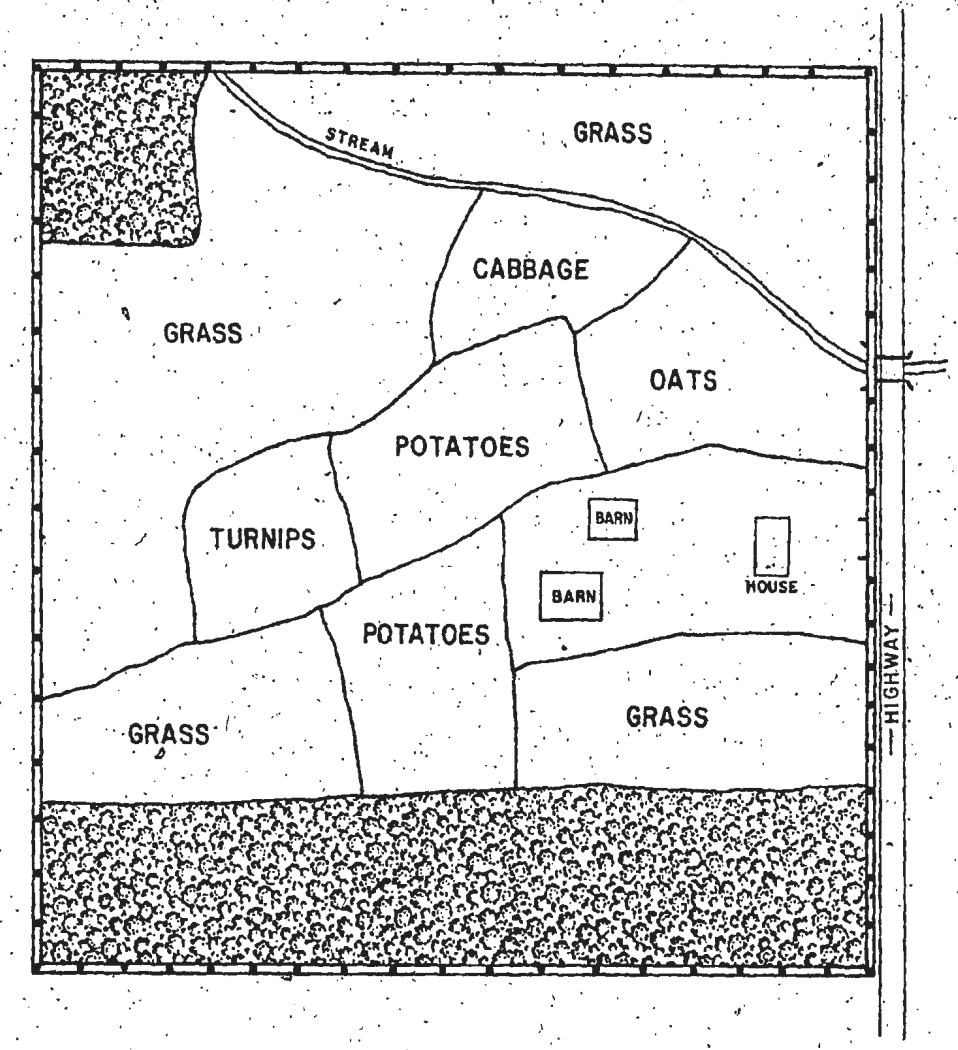
to be used with

PACK'S GEOGRAPHY SKILLS TEST

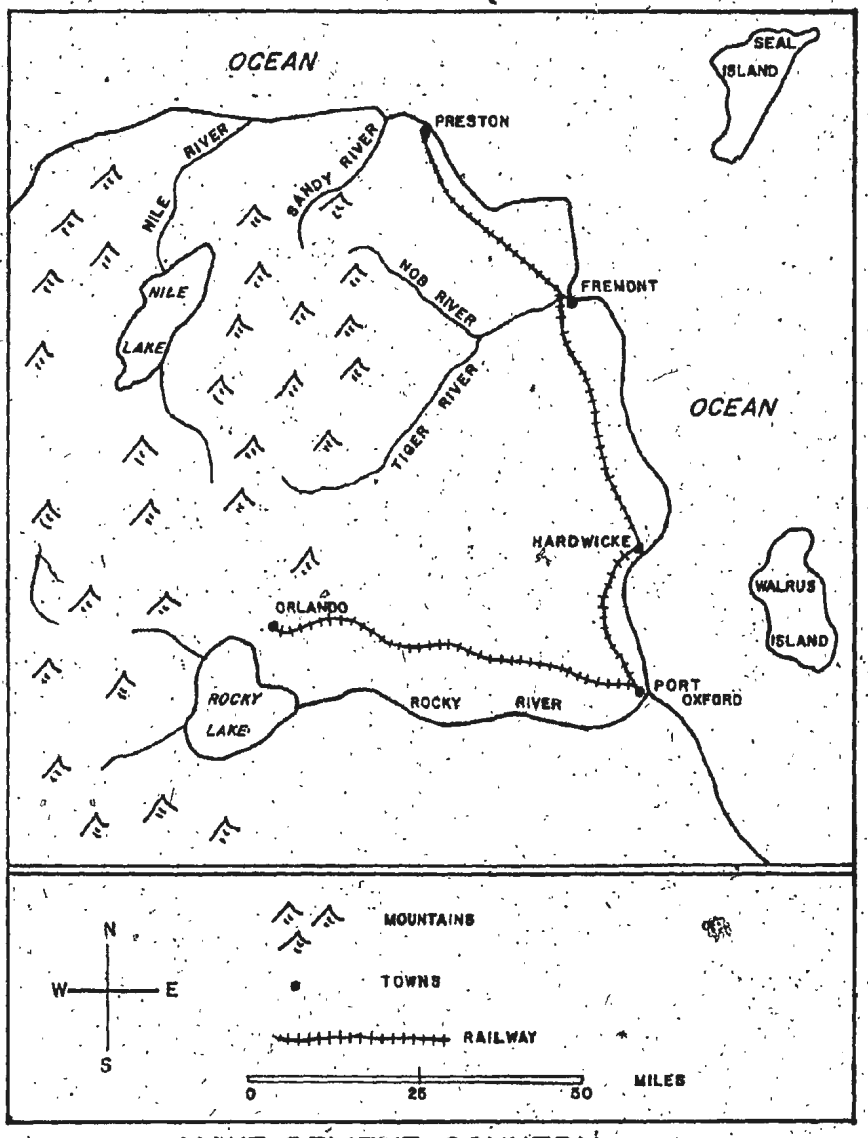
FOR ELEMENTARY GRADES



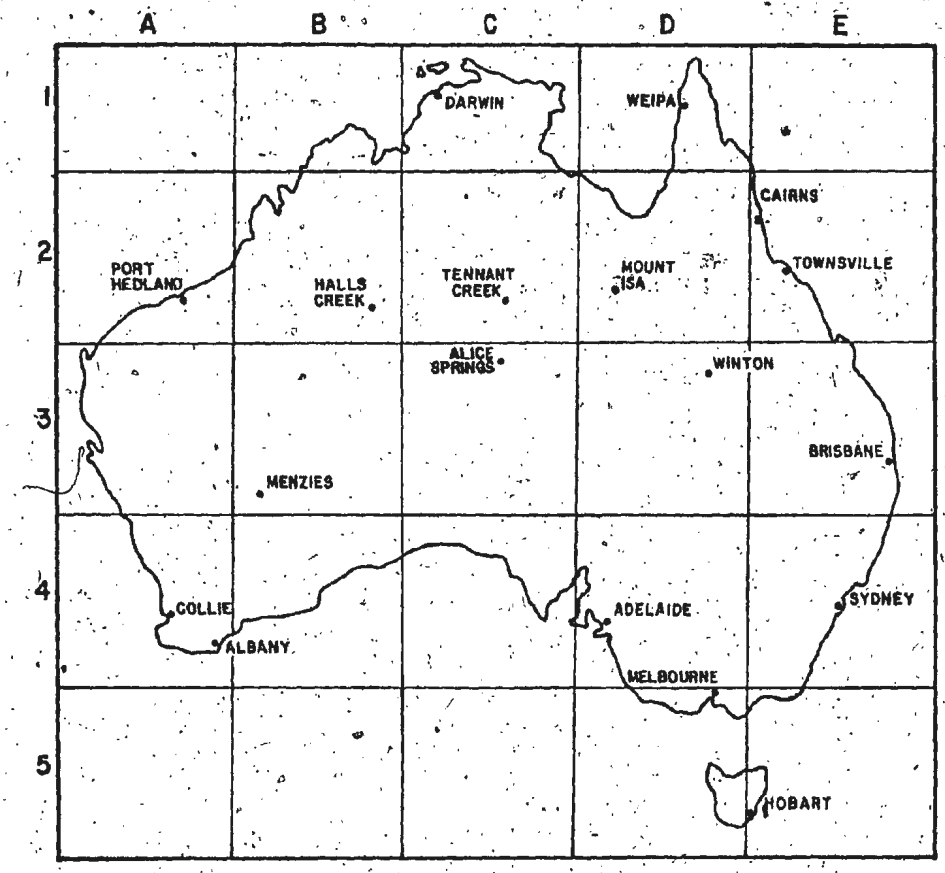

MAKE BELIEVE TOWN



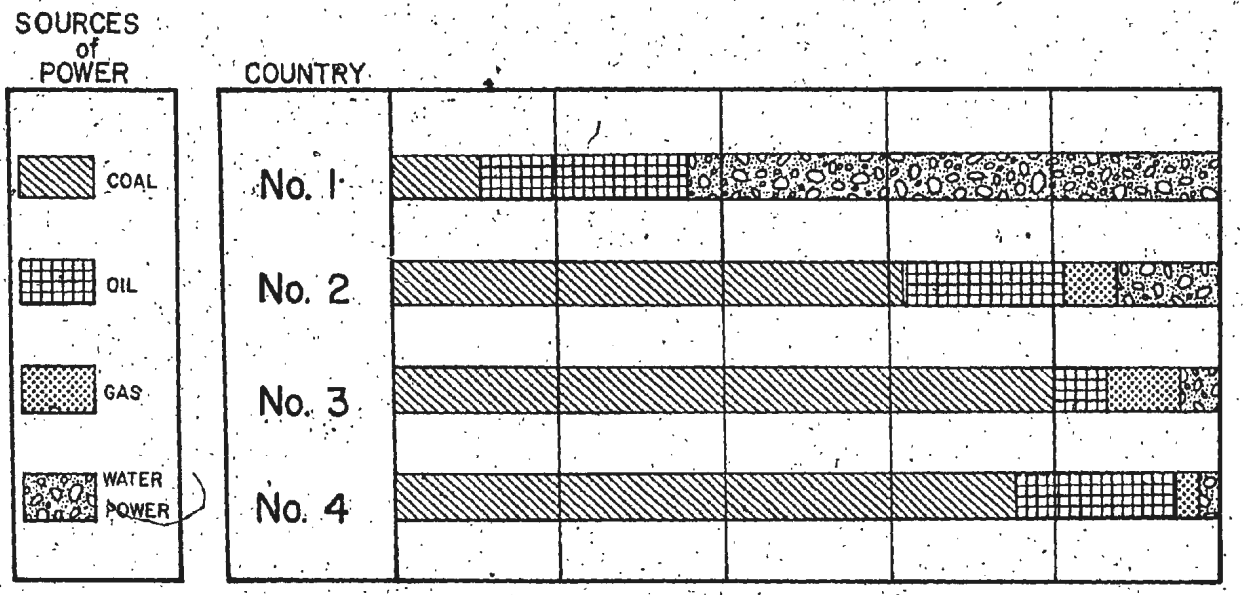

MR. NABOR'S FARM



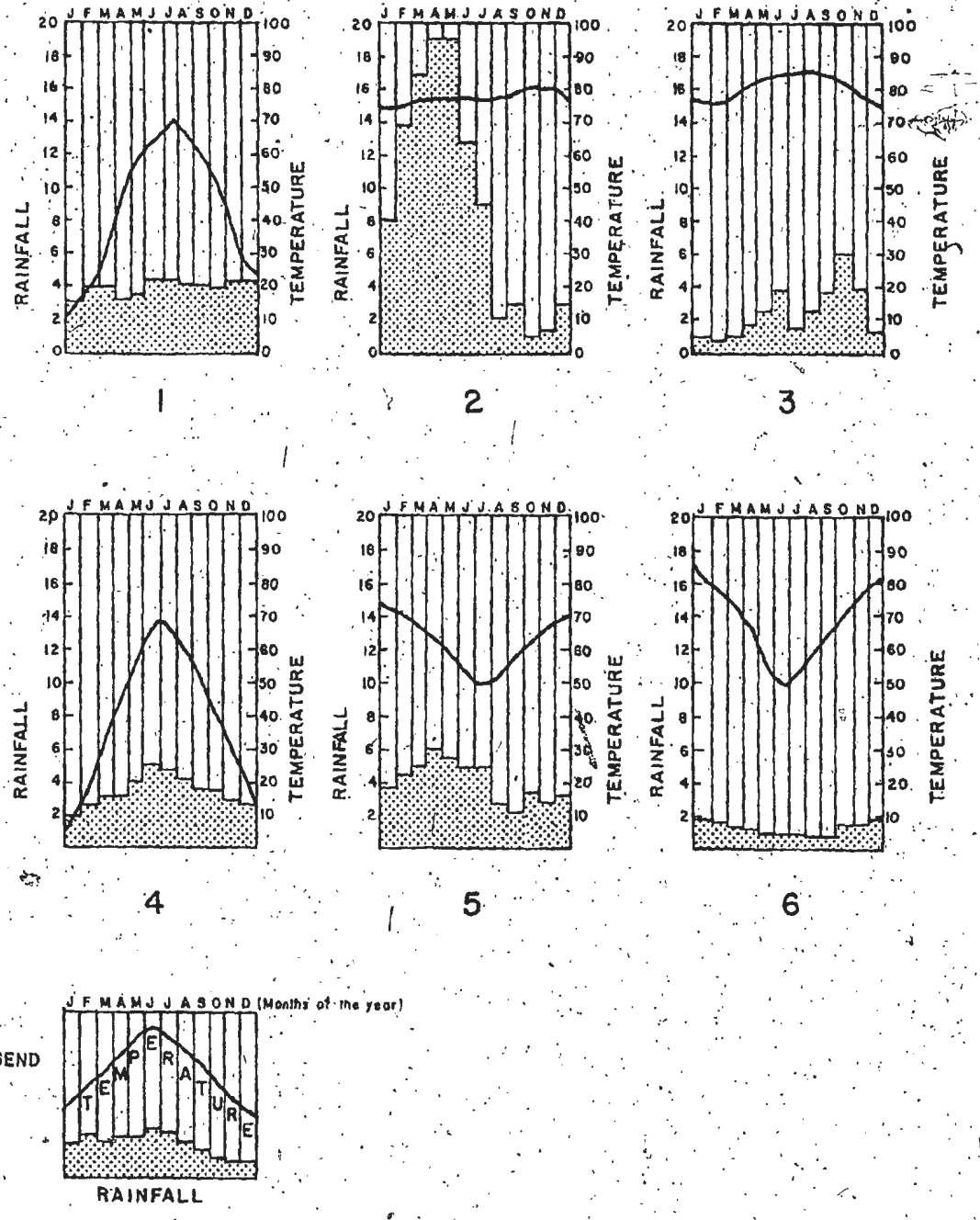

MAKE BELIEVE COUNTRY


A
B
C
D
E
1
2
3
4
5
DARWIN
WEIPA
CAIRNS
PORT HEDLAND
HALLS CREEK
TENNANT CREEK
MOUNT ISA
TOWNSVILLE
ALICE SPRINGS
WINTON
BRISBANE
MENZIES
COLLIE
ALBANY
ADELAIDE
SYDNEY
MELBOURNE
HOBART

AUSTRALIA



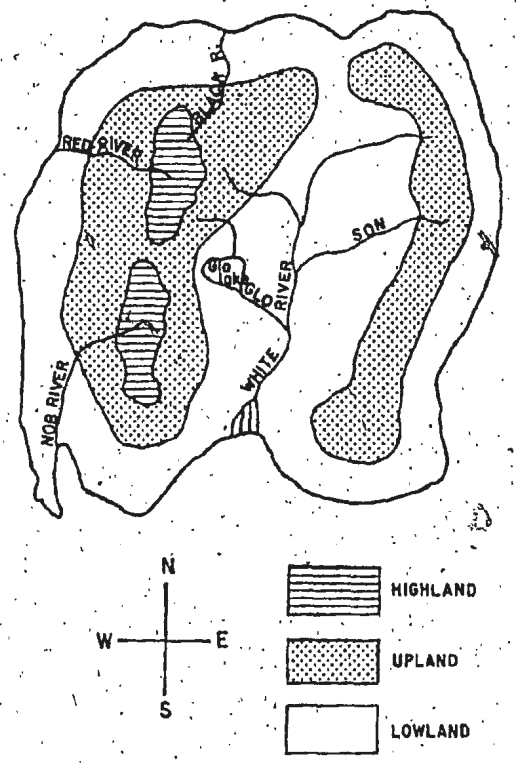

Graph showing how four different countries get their power.



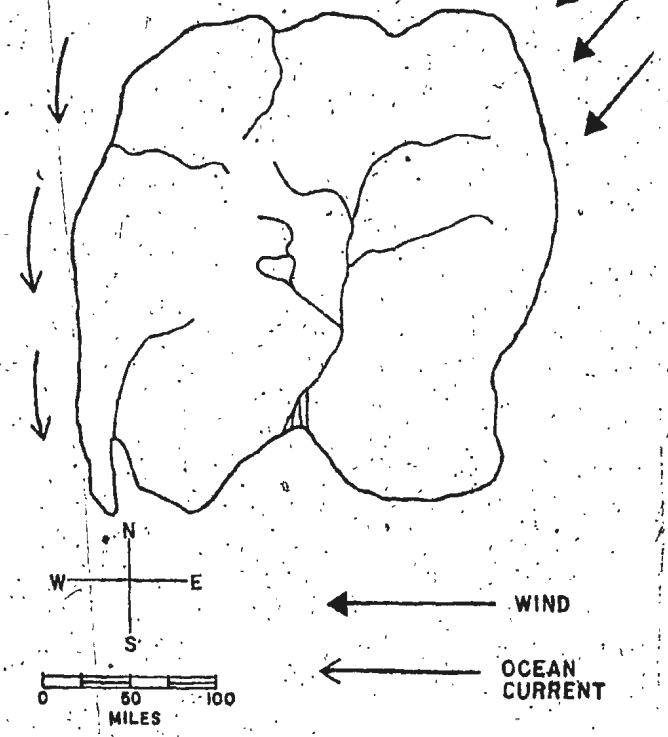

Graphs showing the monthly amounts of rainfall and the levels of temperature of six different cities in a one year period.

# BLOCK ISLAND

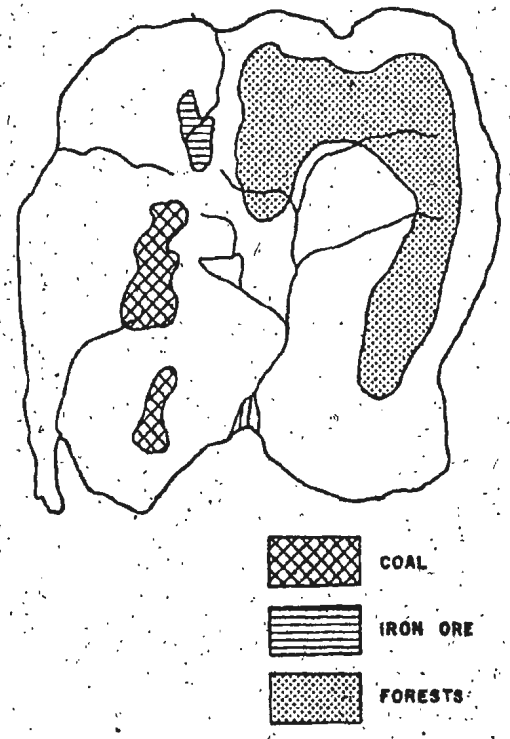
## LANDFORMS



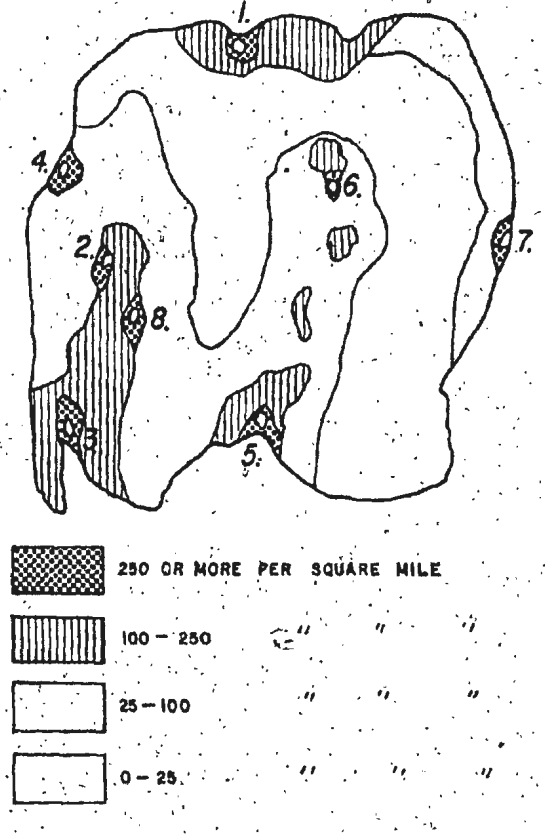

## CLIMATE

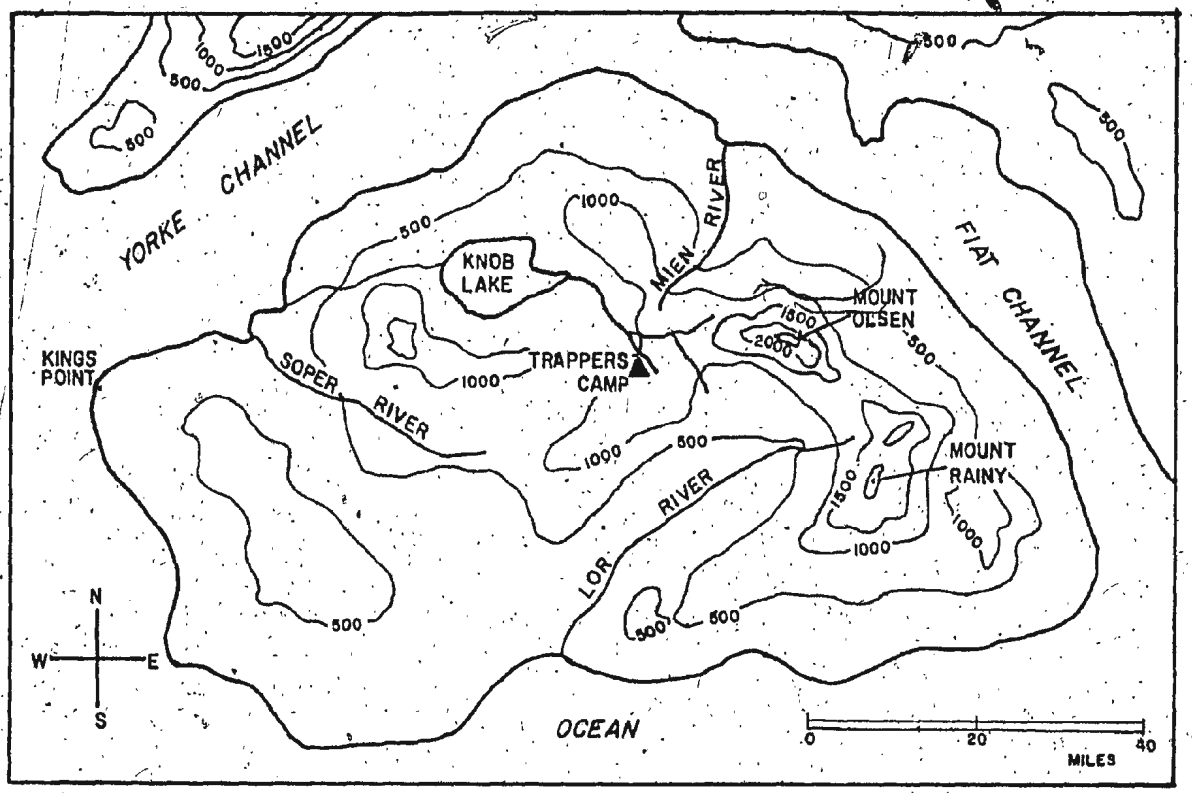



## RESOURCES




## POPULATION






WILKINS ISLAND

The above map of Wilkins Island has lines which show the height of land above the level of the sea.

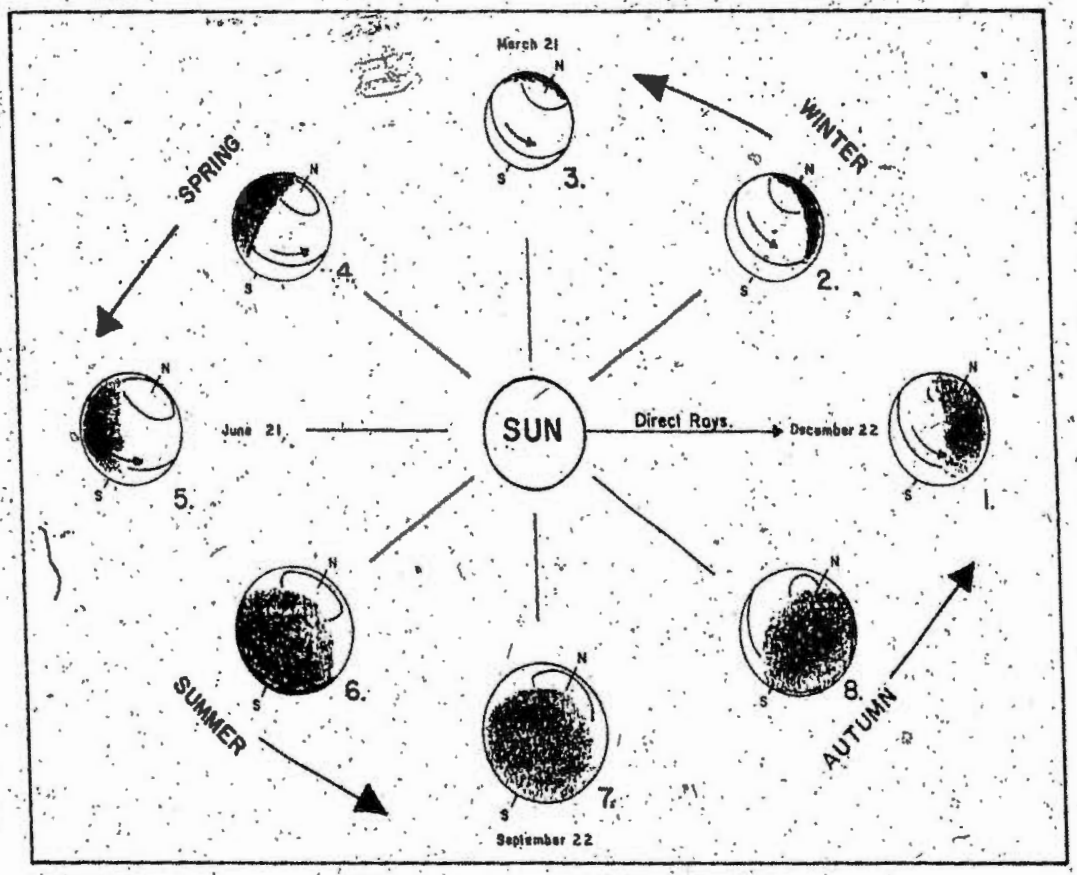



Diagram showing the different positions of the earth as it moves around the sun once a year.

# APPENDIX C

## Student Enrollment and Teaching Personnel in the School District

## Avalon North Integrated School District
## Student Enrolment by Grades 1978-79

| SCHOOL NAME & LOCATION | K | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | Spec. Ed. | Oth. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Holy Trinity High, Norman's Cove | | | | | | | | 47 | 58 | 59 | 40 | 36 | 11 | | 251 |
| Elementary School, Norman's Cove | 26 | 34 | 25 | 36 | 36 | 48 | 43 | | | | | | 8 | | 257 |
| Fair Haven | 1 | 2 | 4 | 3 | 6 | 4 | 7 | | | | | | | | 27 |
| Chance Cove | 17 | 10 | 10 | 8 | 13 | 15 | 13 | 18 | 18 | | | | | | 122 |
| Chapel Arm | 4 | 5 | 8 | 3 | 5 | 5 | 8 | | | | | | 4 | | 42 |
| Whitbourne High, Whitbourne | | | | | | | | 55 | 34 | 35 | 22 | 20 | 12 | | 178 |
| Whitbourne Elementary, Whitbourne | 31 | 31 | 30 | 34 | 35 | 53 | 34 | | | | | | 19 | | 267 |
| St. Martin's High, Dunville | | | | | | | | 20 | 26 | 22 | 16 | 15 | 9 | | 108 |
| Grace Elementary, Dunville | 22 | 24 | 20 | 9 | 14 | 12 | 13 | | | | | | 8 | | 122 |
| St. George's High, New Harbour | | | | | | | | | | | 81 | 63 | | | 144 |
| Woodland Jr. High, Dildo | | | | | | | | | 81 | 65 | | | 11 | | 157 |
| Woodland Elementary, Dildo | | | | 66 | 62 | 64 | 68 | | | | | | 9 | | 269 |
| St. Augustine's Prim., New Harbour | 39 | 34 | 55 | | | | | | | | | | 4 | | 132 |
| All Saints Primary, Dildo | 40 | 29 | 27 | | | | | | | | | | | | 96 |
| Ridgewood Jr. High, Green's Harbour | | | | | | | | 33 | 43 | 97 | | | 15 | | 188 |
| Acreman Elementary, Green's Harbour | 44 | 37 | 31 | 33 | 36 | 33 | 40 | | | | | | 20 | | 274 |
| Holy Trinity High, Heart's Content | | | | | | | | 47 | 79 | 61 | 45 | | 8 | | 240 |

Student Enrolment by Grades 1978-79 (Continued)

| SCHOOL NAME & LOCATION | K | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | Spec Ed. | Oth. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| St. Mary's Elem., Heart's Content | 19 | 12 | 12 | 11 | 13 | 13 | 12 | 12 | | | | | 10 | | 114 |
| Epiphany Elem., Heart's Delight | 14 | 17 | 18 | 24 | 24 | 16 | 27 | 29 | | | | | 11 | | 180 |
| Perlwin Elementary, Winterton | 21 | 14 | 22 | 17 | 19 | 25 | 21 | 19 | 26 | | | | 12 | | 196 |
| E. J. Pratt High, Brownsdale | | | | | | | | 31 | 44 | 36 | 32 | 23 | 8 | | 174 |
| Hant's Harbour Elem., Hant's Harbour | 14 | 14 | 12 | 11 | 14 | 13 | 17 | | | | | | 11 | | 106 |
| Sibley's Cove Prim., Sibley's Cove | 8 | 8 | | | | | | | | | | | | | 16 |
| John Hoskins Memorial, Old Perlican | 11 | 14 | 20 | 19 | 10 | 20 | 27 | | | | | | 10 | | 131 |
| Tricon Elementary, Bay de Verde | 30 | 25 | 24 | 26 | 22 | 19 | 28 | | | | | | 17 | | 191 |
| Jackson-Walsh High, Western Bay | | | | | | | | 36 | 35 | 38 | 14 | | 9 | | 132 |
| Jackson-Walsh Elem., Western Bay | 33 | 33 | 26 | 28 | 37 | 39 | 30 | 38 | | | | | 16 | | 280 |
| Persalvic High, Victoria | | | | | | | | 60 | 60 | 51 | 53 | 33 | 16 | | 173 |
| Persalvic Elementary, Victoria | 42 | 49 | 52 | 43 | 53 | 63 | 48 | | | | | | 25 | | 375 |
| James Moore High, Carbonear | | | | | | | | 62 | 59 | 78 | 62 | 60 | 46 | | 367 |
| Freshwater Primary, Freshwater | 4 | 5 | 5 | | | | | | | | | | | | 14 |
| Davis Elementary, Carbonear | 28 | 52 | 41 | 53 | 55 | 61 | 51 | | | | | | 20 | | 361 |
| Murray Elementary, Carbonear | 22 | 20 | 27 | 17 | 25 | 16 | 22 | | | | | | 9 | | 158 |
| St. Paul's High, Harbour Grace | | | | | | | | 49 | 27 | 26 | 36 | 23 | 16 | | 177 |

Student Enrolment by Grades 1978-79 (Continued)

| SCHOOL NAME & LOCATION | K | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | Spec Ed. | Oth. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| St. Paul's Primary, Harbour Grace | 36 | 47 | 44 | 58 | 21 | | | | | | | | 8 | | 214 |
| Lawrence Coughlan Elem., Hr. Grace | | | | | 19 | 37 | 43 | | | | | | 10 | | 109 |
| Ascension Collegiate, Bay Roberts | | | | | | | | | | 330 | 214 | 191 | 21 | 20 | 756 |
| St. Luke's Elem., Port-de-Grave | 10 | 14 | 9 | 13 | 14 | 8 | 12 | 12 | 11 | | | | 8 | | 111 |
| Brigus Academy, Brigus | 32 | 30 | 24 | 28 | 27 | 23 | 28 | 35 | 35 | | | | 8 | | 260 |
| Cupid's Elementary, Cupid's | 4 | 8 | 3 | 5 | 9 | 3 | | | | | | | | | 32 |
| South River Primary, South River | 32 | 24 | 27 | | | | | | | | | | | | 83 |
| Coley's Point Elem., Coley's Point | 36 | 34 | 35 | 35 | 43 | 32 | 38 | 38 | 42 | | | | 8 | | 341 |
| Clarke's Beach Elem., Clarke's Beach | | | | 33 | 30 | 26 | 22 | 27 | 34 | | | | 8 | | 180 |
| St. Mark's Elementary, Shearstown | 44 | 25 | 44 | 41 | 35 | 34 | 46 | 42 | 36 | | | | 22 | | 369 |
| Amalgamated School, Bay Roberts | 27 | 22 | 29 | 36 | 29 | 26 | 19 | 35 | 32 | | | | 8 | | 263 |
| Holy Redeemer Elem., Spaniard's Bay | 31 | 47 | 36 | 57 | 56 | 52 | 51 | 36 | 55 | | | | 17 | | 438 |
| Tilton Primary, Tilton | 7 | 8 | 7 | | | | | | | | | | | | 22 |
| St. Andrew's Prim., Bryant's Cove | 11 | 14 | 6 | | | | | | | | | | | | 31 |
| St. Peter's Elem., Upper Island Cove | 39 | 28 | 29 | 73 | 62 | 55 | 57 | 50 | 61 | | | | 20 | | 474 |
| T. M. R., Bay Roberts | | | | | | | | | | | | | 8 | | 8 |
| TOTALS FOR THE DISTRICT | 779 | 770 | 763 | 820 | 824 | 815 | 825 | 912 | 870 | 833 | 615 | 464 | 520 | 20 | 9810 |

# Avalon North Integrated School District
## Allocation of Teachers 1978-79

| School | Number of teachers |
|---|---|
| Holy Trinity High, Norman's Cove | 13 |
| Elementary School, Norman's Cove | 12 |
| St. John Baptist Elem., Chapel Arm | 4 |
| Elementary, Fair Haven | 3 |
| Elementary, Chance Cove | 5 |
| Whitbourne Central High, Whitbourne | 10 |
| St. John Baptist Elementary, Whitbourne | 12 |
| St. Martin's High, Dunville | 8 |
| Grace Elementary, Dunville | 6 |
| St. George's High, New Harbour | 12 |
| Woodland Jr. High, Dildo | 7 |
| Woodland Elementary, Dildo | 12 |
| St. Augustine's Primary, New Harbour | 5 |
| All Saints Primary, Dildo | 3 |
| Ridgewood Jr. High, Green's Harbour | 8 |
| Acreman Elementary, Green's Harbour | 12 |
| Holy Trinity High, Heart's Content | 13 |
| Epiphany Elementary, Heart's Delight | 9 |
| St. Mary's Elementary, Heart's Content | 5 |
| Perlwin Elementary, Winterton | 11 |
| E. J. Pratt High, Brownsdale | 10 |
| Elementary, Hant's Harbour | 5 |
| Primary School, Sibley's Cove | 1 |
| John Hoskins Memorial, Old Perlican | 6 |
| Tricon Elementary, Bay de Verde | 10 |

Allocation of Teachers 1978-79 (Continued)

| School | Number of teachers |
|---|---|
| Jackson-Walsh High, Western Bay | 8 |
| Jackson-Walsh Elem., Western Bay | 13 |
| James Moore High, Carbonear | 22 |
| Primary, Freshwater | 1 |
| Davis Elementary, Carbonear | 16 |
| Murray Elementary, Carbonear South | 8 |
| Persalvic High, Victoria | 16 |
| Persalvic Elementary, Victoria | 17 |
| St. Paul's High, Harbour Grace | 12 |
| St. Paul's Primary, Harbour Grace | 9 |
| Lawrence Coughlan Elem., Harbour Grace | 5 |
| Ascension Collegiate, Bay Roberts | 37 |
| St. Luke's Elementary, Port-de-Grave | 5 |
| Brigus Academy, Brigus | 11 |
| Elementary School, Cupids | 2 |
| All Saints Primary, South River | 3 |
| Elementary School, Clarke's Beach | 8 |
| Elementary School, Coley's Point | 14 |
| St. Mark's Elementary, Shearstown | 16 |
| Elementary School, Bay Roberts | 11 |
| Holy Redeemer Elem., Spaniard's Bay | 19 |
| All Saints Primary, Tilton | 1 |
| St. Andrew's Primary, Bryant's Cove | 1 |
| St. Peter's Elementary, Upper Island Cove | 19 |
| School for Handicapped, Bay Roberts | 2 |

# APPENDIX D

## School Board Approval Correspondence

Bay Roberts,
Newfoundland
October 1, 1978

Mr. C. M. Smith
Superintendent
Avalon North Integrated School Board
P. O. Box 70
Bay Roberts, C.B., NF
A0A 1G0

Dear Mr. Smith:

I am in the process of writing a thesis as part of the requirements for a Master of Education degree in Curriculum and Instruction. Part of my thesis work involves the administering of a test of selected geographic skills to grade five students.

I am requesting your permission to administer this test to classes of grade five students in six elementary schools throughout the Avalon North Integrated School District. This, of course, would be done after consultation with the principals and teachers involved.

The results of the test would be made available to the District Social Studies Coordinator and may be of some value in the future assessment of some aspects of the geography program in the elementary grades.

I hope that you will be able to comply with my request.

Yours sincerely,

Russell Pack

Avalon North Integrated School District

Telephone 786-3560; 786-3569

P. O. Box 70

Bay Roberts, Newfoundland

A0A 1G0

W. Dyke, Board Chairman

C. M. Smith, B.A.(Ed.), M.Ed.,
Superintendent

October 15, 1978

Mr. Russell Pack
Bay Roberts
Conception Bay, NF
A0A 1G0

Dear Mr. Pack:

I am pleased to comply with your request for approval to administer a test of selected geographical skills to grade five pupils in six of our schools.

As Director of Instruction in the District, you are in a favourable position to identify schools of your choice for this purpose, the selection of which I would, therefore, leave entirely to your discretion. I have no doubt that the cooperation of the principal in any of our schools will be readily forthcoming.

Your test results could undoubtedly be valuable to our District Coordinator of Social Studies; we would be glad to receive a copy in due time.

I offer my best wishes for your successful fulfillment of the requirements of Master of Education Degree.

Sincerely,

C. M. Smith
District Superintendent

CMS:led