

GCO F: Students will solve problems involving the collection, display, and analysis of data.

Outcomes

KSCO: By the end of grade 3, students will be expected to

i) collect, record, organize, and describe relevant data

SCO: By the end of grade 3, students will be expected to

F1 select appropriate strategies for collecting, recording, organizing, and describing relevant data

Third-grade children are keenly aware of what others think about certain topics. This interest in others broadens and deepens as children gather and analyse opinions from a variety of people. (Curriculum and Evaluation Standards, Addenda Series, Third-Grade Book, p. 20)

Suggestions for Teaching and Learning

F1 At this level, the focus should be on the selection of appropriate strategies for collecting and displaying data, rather than following a set of instructions.

Have pairs of students decide on the procedure they will use to collect and display data that will show interesting information about class members.

Have students conduct a survey to find out what types of things 8- and 9-year-olds like to collect. They will need to decide who to survey and how to organize and present their data.

Other graphing activities might include

- graphing temperature over the school week/month
- collecting and displaying data that represent accomplishments of favourite sport figures or friends (e.g., the number of goals, hits, points)
- collecting and displaying data that would show the number of pizzas and hot dogs ordered at the cafeteria during one week
- graphing the distance class members can throw a ball
- graphing prices of board games
- collecting and displaying data to represent mass of various fruits/vegetables
- graphing favourite books of classmates
- graphing the mass of subject textbooks
- graphing the mass of different breeds of dogs

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Suggestions for Assessment*Performance*

F1.1 Ask pairs of students to design a survey that will show favourite school subjects.

F1.2 Ask small groups to brainstorm a list of interesting questions for possible surveys.

Paper and Pencil

F1.3 Ask the students to conduct a survey of the types of vehicles in the parking lot or the number of vehicles passing the school during a half-hour period.

Interview

F1.4 Tell the student that Sasha wanted to find out if students in grade 4 liked the same television programs she liked. Ask him/her to suggest a way that Sasha might get this information.

F1.5 Ask the student for different strategies one could use to find the high temperatures for each day of the school week.

F1.6 Tell the student that Derek notices the prices of chocolate bars vary from store to store. Ask him/her to suggest ways Derek could gather information in order to make a graph showing the different prices.

Presentation

F1.7 Ask students to select a topic, survey family members and/or neighbours, and present their findings to the class in an organized way.

Portfolio

F1.8 Ask the students to keep track of weather conditions over the period of one month and to design a way to present the information in an organized manner.

Resources

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Outcomes

KSCO: By the end of grade 3, students will be expected to

ii) *construct concrete and pictorial displays of relevant data* and

iii) *read and interpret displays of relevant data*

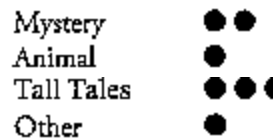
SCO: By the end of grade 2, students will be expected to

F2 create and interpret pictographs and symbolic bar graphs

Suggestions for Teaching and Learning

F2 Students should make the connection between multiplication and graphing situations in which each pictograph symbol represents more than one item. Simple fractions of symbols (e.g., halves, fourths) may be introduced.

Favourite Types of Stories

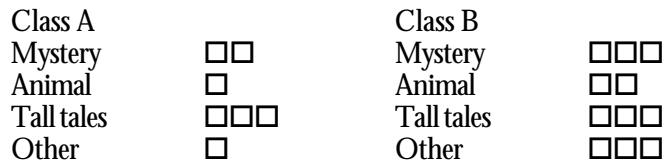


● represents 4 children

Students should have experiences interpreting pictographs before creating them by conducting surveys and organizing data. They might contrast data on two graphs for which different values are attached to the same symbol.

For example:

Favourite Types of Stories



□ represents 4 students

□ represents 2 students

In which class do more children prefer mysteries?

Which type of story was preferred by the same number of students?

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Suggestions for Assessment

Performance

F2.1 Have the student redraw the pictograph so that each symbol represents 4, instead of 2. Ask the student which graph he/she prefers and to give reasons for the choice. Ask if there is another way to display the data which might be clearer.

Cafeteria Orders

Pizza	o o o o o
Hamburger	o o
Hot dogs	o o o o o o

(o represents 2 people)

F2.2 Ask the student to tell how many more children prefer carrots to broccoli. Have him/her tell what other information is shown by the graph.

Carrots	o o o o
Broccoli	o o
Peas	o o o

(o represents 5 children)

Ask why a symbol in a pictograph usually represents more than 1.

Portfolio

F2.3 Ask pairs of students to create a pictograph describing their classmates' favourite colours, using one symbol to represent three children. Ask them to include a brief description of the strategies used to collect their data and any difficulties they encountered while creating the graph.

Resources

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Outcomes

KSCO: By the end of grade 3, students will be expected to

iv) generate questions, develop and modify predictions, and implement plans, with respect to data analysis

SCO: By the end of grade 2, students will be expected to

F3 develop and modify predictions, with respect to data collected or presented to them

F4 implement plans with respect to the collection of data

Children sometimes have difficulty with pictographs and other graphs in which each picture or symbol stands for more than one object. But careful development here will help children make sense of units and of multiplication.

(Curriculum and Evaluation Standards, Addenda Series, Third-Grade Book, p. 20)

Suggestions for Teaching and Learning

F3 Students have had some experience creating bar graphs for which each section represents a value of one. At this point, students should learn to interpret graphs for which each section represents a greater value.

Students should recognize that scales are useful in situations involving larger numbers. For example, data are collected about the number of students in each grade:

K - 48 Gr 1 - 64 Gr 2 - 56

Since it would require a minimum of 64 squares to represent this information, it is preferable to use a scale. Both horizontal and vertical graphs should be considered.

In addition to drawing bar graphs from provided data, students should continue to conduct surveys and organize data to create such graphs. For example, have students collect data on the vowels in classmates' first names (e.g., how many have "a", how many have "e").

F4 When considering how to collect data, students need to consider a variety of issues:

- Where is a good source?
- If I am surveying, how many people do I need to contact?
- Where should I go to conduct my survey?
- Does it matter when I conduct my survey?
- If I am planning to ask questions, how should I phrase them?

Have a small group/class discussion. Tell the students that their assignment is to plan a survey of students in grades 3 through 5 to find out whether school uniforms should be introduced.

Have the class discuss the following:

- How many students should be surveyed?
- How many from each grade/class would be surveyed?
- How many girls and how many boys should be surveyed?
- How would they decide which girls and which boys should be surveyed?

Encourage students to discuss the importance of carefully designing the survey plan to ensure a cross-section of the targeted population.

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Suggestions for Assessment

Paper and Pencil

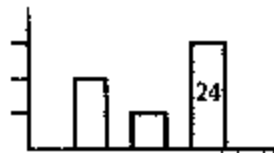
F3.1 Provide data for a bar graph:

Favourite	Sports
hockey	36
baseball	22
basketball	30
volleyball	16

Have the student select a scale and create a bar graph.

Interview

F3.2 Show the student this graph, which represents the favourite basketball teams of a number of grade 3 students.



Ask him/her to tell how many students each of the first two bars represents.

Interview

F4.1 Ask the student what source(s) he/she might use to find information on the mass of different zoo animals.

F4.2 Ask the student how many people he/she should ask to determine the number of quarters adults usually carry with them.

Presentation

F4.3 Have students consider how to conduct a survey to find out the amount of TV people generally watch. They should report on all the issues to which they think they must attend.

Resources

