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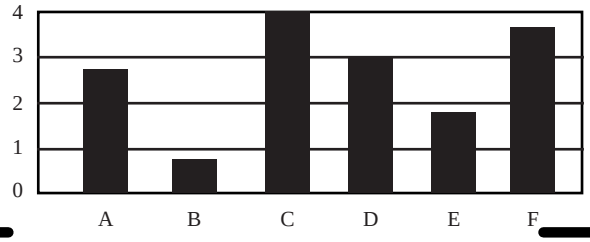
Introduction

Maths Explorations is a 144 page resource book created specifically for students studying at CSF level 3. Five types of graphs (pictographs, bar graphs, line graphs, coordinate graphs, real graphs) are presented. Students learn how to collect and organise different types of data, create graphs, and use graphs to interpret data. This book provides fun and exciting opportunities for students to apply graphing skills across the curriculum. Connecting curriculum areas is a popular trend in education with the goal of building a better understanding of maths concepts while enhancing students' interest and making learning more meaningful. Students improve their basic maths skills and are encouraged to be problem solvers by using techniques such as brainstorming, critical thinking and cooperative learning. As they are introduced to new challenges, students will approach these tasks eagerly and enthusiastically.

Feel free to present these graphing activities in the way that best fits the needs of your students and your teaching style.



Ways to Present Graphs

This book presents a variety of topics so that students can make and use graphs while studying different thematic units. Graphs that are large and easy to see can be created for the floor, wall or notice board. These types of graphs are excellent tools for modelling new skills and motivating students to become active participants. To complete the graphing activities in this book, students can work as a class, in small groups, with partners or independently.

Floor Graph: Use butcher paper, a large sheet of plastic or vinyl or a flat bed sheet to create a floor graph. Draw the horizontal and vertical lines on the graph. If you are using butcher paper, laminate it. Cut out the pictures, symbols or bars from coloured construction paper that is laminated, plastic or vinyl, or fabric. Attach these to the floor graph with Velcro®, double-sided tape or safety pins. Create line graphs, using coloured wool or string. Prevent the graph from slipping by attaching pieces of rubber to the back or by using duct tape to stick it onto the floor.	**Wall Graph:** This type of graph can be placed along a wall or on a notice board and used throughout the year. Create a wall graph, using the same materials as the floor graph. Velcro®, double-sided tape, staples or tacks can be used to attach the pictures, symbols, bars and lines. Be sure the graph is at a height students can reach. The size depends on the amount of space available.
Individual Graphs: Reproduce the graph forms in this book and have students use them for guided and independent practice. Encourage students to take their graphs home to share with their families.	**Real Graph:** This type of graph is easily created using paper or cardboard. Help students create the graph. Then ask questions about it. You may wish to have students transfer the information from the real graphs to individual graphs.

Computer Resources: Several manufacturers offer programs that can be used to help students learn about graphs. Following are a couple of suggestions.

- *The Graph Club*. Software for Mac or Windows. Available from Edsoft, phone 1800 338 873
- *Graphers* by Lois Edwards Educational Design and Sunburst Communications. Software for Mac or Windows. Available from Edsoft, phone 1800 338 873

Shapes

Preparation:

1 Reproduce the table (page 6) for students and make an overhead transparency of it.

2. Reproduce the large and small shape patterns (page 11) and the pictograph (page 12). Cut apart the shape patterns. Make one set of small shapes for each pair or group of students. The number of each type of shape can vary. Place the small shapes in resealable plastic bags or envelopes, making all of the sets exactly the same.

Directions:

1. Use the large patterns to review the names and distinguishing features of the different shapes.
2. Have students help you count the number of each large shape. Use the overhead transparency to record the data, as shown in the following example.

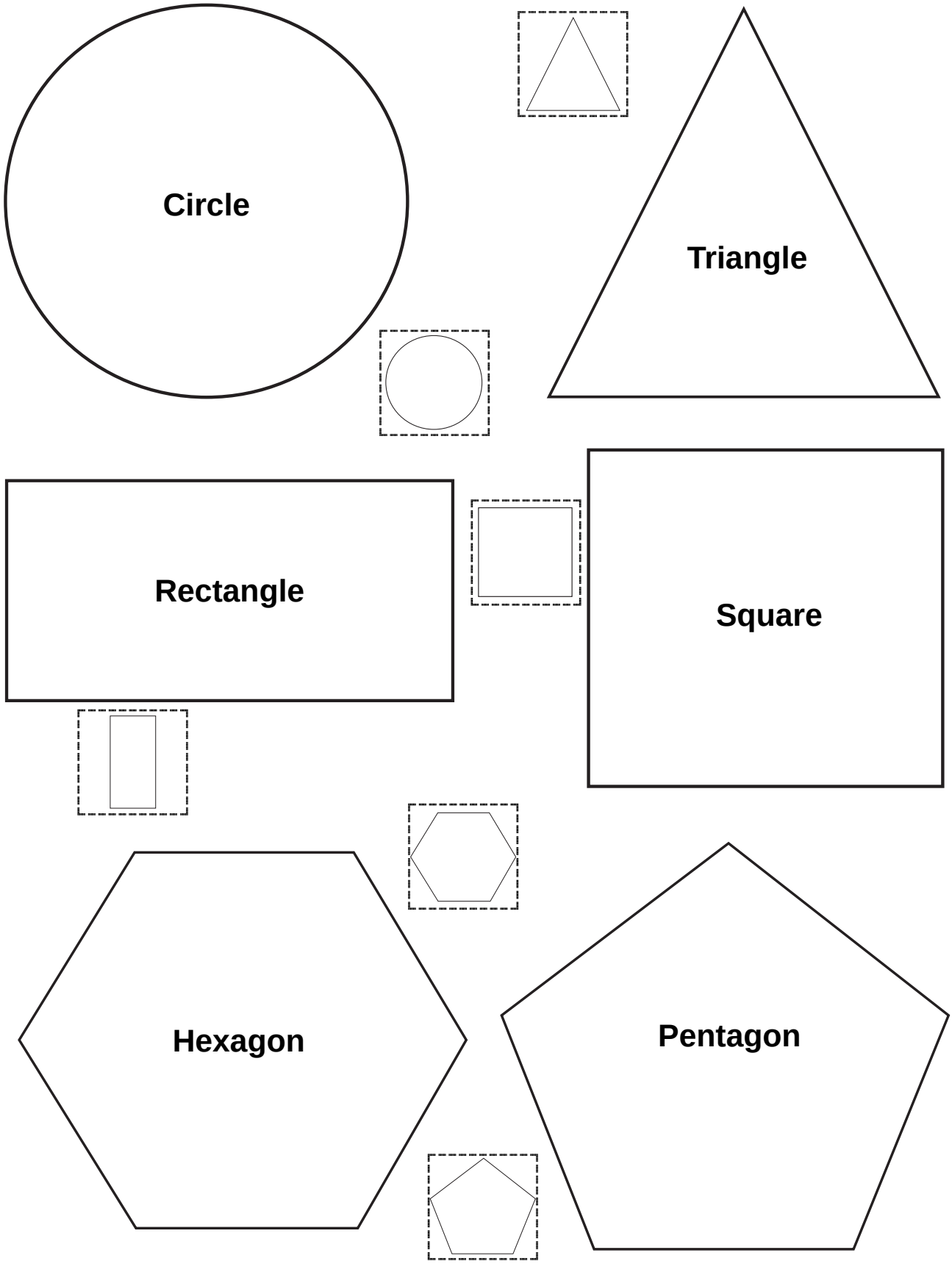
SHAPES	
Shapes	**Number of Shapes**
Circle	3
Triangle	4
Square	5
Rectangle	2
Pentagon	3
Hexagon	1

3. Use the floor or wall graph to model the activity. Make the key: 1 Picture = 1 Shape. Have students place the large shapes in the appropriate sections of the graph, making sure they are aligned vertically.
4. Divide the class into small groups or assign partners. Have students count the small shapes in the bags and record the data on their tables. Then have them glue the shapes on their pictographs. Remind them to align the shapes so that the graph is easy to read.
5. Discuss the questions (page 12) and ask additional ones to check students' understanding.

Extension Activities:

1. Have students brainstorm a list of objects in the classroom that are the same shapes as the ones used in this activity.
2. Teach students about probability, using the shapes. After determining the number of each shape, have students replace them in the bags or envelopes. Then have students make predictions about which shapes are most likely, least likely or equally likely to be drawn. *(The shape with the greatest number will most likely be drawn. The one with the fewest will least likely be drawn. Shapes that have the same number will have an equal chance of being drawn.)*
3. Reproduce the small shape patterns (page 11) for students. Let them create pictures by gluing the shapes onto construction paper and colouring them.
4. Have students create real graphs, using three-dimensional shapes such as spheres, cubes, cylinders and cones.

Shapes *(cont.)*



Buttons

Preparation:

1. Obtain a copy of the book *Corduroy* by Don Freeman (Picture Puffin, 1968).
2. Reproduce the table (page 6), large button patterns (page 38) and bar graph (page 39) for students. Make an overhead transparency of the table.

Directions:

1. Begin this activity by reading *Corduroy.* Discuss the story with students. Point out that Corduroy lost a button.
2. Show examples of buttons on students' clothing as well as on your own. Have students help you count the buttons on your clothes.
3. Distribute the large button patterns, one per student. Assign partners. Have students help each other count how many buttons they have. Tell them to write the number of buttons they have on their patterns.
4. Use the floor or wall graph to model the activity. Mark the scale on the left-hand side: 0, 1–2, 3–4, 5–6, 7+. Point out the range of this scale. Review how 7+ means that there are seven or more buttons on the clothing a student is wearing. Then show students how to mark the scale along the bottom, counting by ones or twos.
5. Help students place the bars on the graph.
6. Have students use the graph to count how many students have each number of buttons. Use the overhead transparency to record the data, as shown in the example below. Ask students to record the data on their copies of the table.

BUTTONS ON OUR CLOTHES	
Number of Buttons	**Number of Students**
0	1
1–2	4
3–4	7
5–6	4
7+	4

7. Have students colour the bar graphs according to the data on their tables.
8. Discuss the questions (page 39) and ask additional ones to check students' understanding.

Extension Activities:

1. Create pictographs, using the small button patterns (page 38).
2. Provide each pair of students with a variety of buttons in a resealable plastic bag. Ask students to sort the buttons into groups. They may choose to sort them by colour, size, shape, the number of holes, etc.
3. Have students use buttons to create patterns. Ask them to tell the class about their patterns.
4. Encourage students to bring spare buttons from home. Ask them to glue their buttons together to make imaginary creatures. Allow time for students to tell about their button animals.