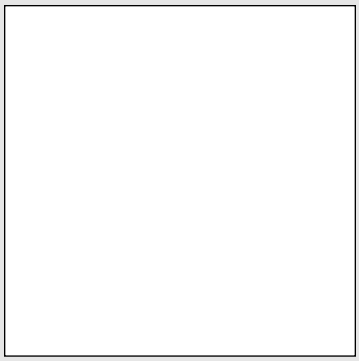
Overview of the Concept: Exploring 3-D and 2-D Geometry

Book Summaries

Title	Level	Summary
Playing with Shapes	C	In this photographed informational text, we are introduced to various three-dimensional shapes in the environment. Two children demonstrate how the shapes move (slide, stack, and roll).
Shape Search	G	This illustrated informational text describes the various attributes of 2-D and 3-D shapes. The reader is challenged to find a variety of shapes in the illustrations.
Mr. Sharp's Shapes	I	In this illustrated fantasy narrative, Mr. Sharp considers various three-dimensional shapes' attributes in order to use them to build a spaceship.

Target Outcomes

WNCP	Ontario	APEF
Shape and Space (3-D Objects and 2-D Shapes) • Explore, classify, and describe 3-D objects according to two attributes. • Observe and build a given 3-D object. • Identify, name, and describe specific 2-D shapes as circles, triangles, and rectangles. • Compare, sort, and classify 2-D shapes.	Describe and classify three-dimensional figures and two-dimensional shapes using concrete materials and drawings. • Describe similarities and differences between an object and a three-dimensional figure. • Compare and sort three-dimensional figures according to observable attributes (e.g., size, slide, roll). • Build three-dimensional objects and models. • Explore and identify three-dimensional figures using concrete materials and drawings (e.g., cube, cone, cylinder, sphere). • Describe and name two-dimensional shapes (e.g., circle, square, rectangle, triangle). • Explore and identify two-dimensional shapes using concrete materials and drawings (e.g., circle, rectangle, triangle). • Identify attributes of two-dimensional shapes.	Shape and Space: • Describe, model, draw, and classify 2-D and 3-D figures and shapes. • Explore and experiment with geometric shapes and relationships (including the orientation and perspectives of objects). E5 Recognize, name, describe, and represent a variety of 2-D and 3-D shapes E6 Describe attributes of and sort and compare 2-D and 3-D shapes E10 Recognize and identify 2-D and 3-D shapes in the environment



Level C

Text Type
informational text

Word Count
57

High Frequency Words
a, and, are, can, here, is, too

Content Words
sphere(s), roll, cone(s), slide, cube(s), stack, cylinder(s)

Text Features
- 16-page book
- 1–3 lines per page
- photographs
- strong picture clues
- patterned text
- varying text placement
- italics

Working with Words
Plurals

Cross-Curricular Links
Mathematics
Mathematics/Language Arts

Playing with Shapes

Before Reading

Provide the students with a collection of 3-D shapes (sphere, cone, cube, cylinder). Name the shapes for, or with, the students. Prepare a chart with three columns—Shape, Name, and What Can It Do? Attach an example of each shape in the Shape column, and write the name in the second column, as the students identify them. The "What Can It Do?" column will be completed below in an activity in the Revisiting the Text section.

Previewing the Text

- Show the cover of the book and read the title. Discuss the art and identify the shapes.
- Say, *This book shows us things around us that are shaped like cubes, cones, cylinders and spheres. There are two children in the story, who experiment with the way the shapes move.*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

  Pages 2–3: Ask the students to say the word "sphere" slowly and tell you what the first letter might be. Have the students locate the word "sphere" on page 2. Ask, *What little word do you see inside "sphere"?* (here) *Do you see that word anywhere else on these two pages?* (Here, spheres) Ask the students to say the word "these" slowly. Review the "th" sound, then have the students locate the word on the page. Ask for a volunteer to read the text on page 2 smoothly, then read page 3 yourself, to model fluency. Identify the various spherical items in the picture, and ask the students to identify the 2-D shapes of the photographs on page 3. (circles)

  Pages 4–5: Ask, *What are the children doing with the sphere?* (rolling it) Say, *Yes, a sphere can roll.*

  Pages 6–7: Identify the shape on page 6 and discuss the hard "c" sound at the beginning of the word "cone." Have the students locate the word "cone" on page 6. Point out the word "cones" on page 7 and ask, *What's different about this word?* Identify the various cones in the picture. Ask the students to name the 2-D shapes of the photographs on page 7. (triangles)

Pages 8–9: Say, *The boy and girl are finding out how a cone can move.* Ask, *What can a cone do?* Elicit "slide" and "roll." Ask the students if they see another word on this page that starts with a hard "c" sound. (can)

Pages 10–11: Identify the shape on page 10, locate the word on the page and discuss the hard "c" sound. You may wish to have the students locate the plural form on the opposite page. Use the word "these" several times in your discussion of the objects on page 11. Ask the students to identify the 2-D shapes of the photographs on page 11. (squares)

Pages 12–13: Ask, *What is the boy learning about how a cube can move?* (it can slide) Say, *The girl found out that cubes can stack, too.* Explain and/or demonstrate the meaning of "stack," if necessary. Discuss the two words, "slide" and "stack." Say, *These two words start the same way, with an "s," so they're tricky.* Provide the students with a strategy for telling these words apart when it comes time for their independent reading. They may check the second letter or subsequent letters in each word.

Pages 14–15: Identify the shape and say, *Sometimes the letter "c" makes a soft "s" sound.* Have the students locate the word "cylinder" on page 14, and its plural form on the opposite page. Identify the various cylinders in the picture on page 15. Ask the students to identify the 2-D shapes of the photographs on page 15. (rectangles)

Page 16: Say, *Wow! Look at the nice castle that the girl made.* Ask the students to locate the word "Wow" on the page, and practise saying it with the proper inflection. Discuss the various properties of the cylinder. (elicit "slide," "roll," and "stack") Read the text to the students and model the appropriate emphasis for the italicized word "and."

Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

Revisiting the Text

You may choose to do only some of these activities, over several days.

- Display the chart from the Before Reading activity. Ask, *What did we learn about how each of the shapes moves?* The students may refer to the text for their answers. Record the students' responses in the "What Can It Do?" column on the chart.

- Encourage the students to reread the book together as a group, independently, or with a partner.
- List the following words on chart paper: "a," "are," "and." Have the students search the text and count how many times each of these words appears. Remind the students that sometimes the word may have a capital letter. Make a tally mark in the appropriate column each time a student finds a word.
- Do a mini-lesson on sentences ending with a period or exclamation mark. Direct the students to a page with more than one line of text (e.g., p. 8) and explain that the sentence isn't over until a period or exclamation mark appears. In pairs, have the students reread alternate sentences of the text.

Working with Words: plurals

Do a mini-lesson on adding "s" to create the plural form of a word, giving several examples. Have the students search the text and record the singular and plural forms of the shape words.

Extending Activities

A New Story

Ask the students to look at the pictures of the little girl in the top right-hand corners on pages 3, 7, 11, and 15 of the book. Have the students create their own booklet telling the girl's story. The students can use the sentence starter, "Here is a ____" and illustrate their booklets.

Matching Shapes

Have the students recall the names of the shapes in the book and discuss the real-world objects in the pictures that have the same shape. Provide the students with **BLM 7-1: Matching Shapes**. The students cut out the real-world object from the bottom of the page and paste it into the appropriate column.

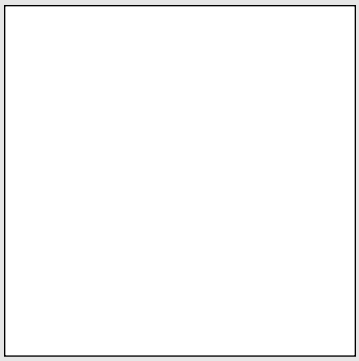
Cross-Curricular Links

Mathematics

Provide the students with a variety of cubes, cones, cylinders, and spheres. Encourage the students to explore the properties of these shapes. The students can stack, roll, and slide the shapes. Have each student choose a shape, and describe how it moves to another student.

Mathematics/Language Arts

Encourage the students to work in pairs or small groups to locate objects in the classroom that are cubes, cones, cylinders, or spheres. The students then play a game of "I Spy," providing clues about the object they see (e.g., "I spy a shape that can't stack." Or, "I spy a cylinder that is used for drinking." [straw]).



Level G

Text Type

informational text/poetry

Word Count

246

High Frequency Words

a, all, and, are, at, big, but, can, did, do, has, how, in, is, it, like, look, on, or, see, so, that, the, there, this, to, too, want, you

Content Words

shapes, rectangle, corners, sides, square, circle, flat, round, curves, triangle, cube, faces, cylinder, cone, point, sphere, clue, secret number

Text Features

- 16-page book
- 2–4 lines per page
- illustrations
- moderate picture clues
- rhyme
- labels
- bold

Working with Words

Long "a" Sound

Cross-Curricular Links

Mathematics/Language Arts

Art

Shape Search

Before Reading

Provide the students with a collection of 2-D shapes (rectangle, square, circle, and triangle) cut out from construction paper, and 3-D shapes or solids (cube, cylinder, cone, and sphere). Allow the students to handle the objects and ask them to describe their characteristics. Elicit or use vocabulary from the text (e.g. round, square, faces, curved, corners).

Previewing the Text

- Show the cover of the book and read the title. Discuss the art.
- Say, *This is a rhyming book that gives us information about 2-D and 3-D shapes. There's also a challenge for you to find all of the shapes that are hidden in the pictures.*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

  Pages 2–3: Say, *There are so many different kinds of shapes.* Ask, *Do we just see these shapes at school? Where else do we see them?* (elicit "everywhere" and locate the word on the page) Have the students identify each of the shapes on page 3, providing help where necessary. You may wish to discuss the different sounds made by the letter "c" at the beginning of the words "circle," "cylinder," "cube," and "cone."

  Pages 4–5: Ask, *What shapes do you see?* Have the students confirm their responses by pointing to the names of the shapes in bold text. Ask, *What do you know about rectangles and squares?* (elicit "four corners," "four sides," "four sides are all the same") Mention "picture frames" in your discussion.

  Pages 6–7: Ask, *What shapes do you see?* Have the students confirm their responses by pointing to the bolded names of the shapes. Ask, *What do you know about circles?* (elicit "round" and "flat") Say, *A circle has curves everywhere.* Have the students locate the word "curves" and discuss the hard "c" sound. Say, *There's another word on this page that starts with a "c" that makes a hard "c" sound. I'll give you a*

clue: it's telling you how you should look at the picture if you want to find every one of the circles. (carefully) Ask, *How many sides does a triangle have? How many corners?*

Pages 8–9: Identify the shape. Ask, *How many faces does a cube have?* If necessary, provide a cube for the students to examine since the picture cannot reveal all of the faces. Say, *Yes, it has six faces and in each one of those places there is a shape you know.* Ask, *What is the shape of each one of the cube's faces?* (square) Ask a volunteer to read the text on page 9 smoothly, as though they are talking.

Pages 10–11: Identify the shape. Ask, *How many flat ends does a cylinder have?* If necessary, provide a cylinder for the students to examine. Ask, *What is each one of these flat ends called?* (face) Say, *Find the words that tell you what we see in every other place on the cylinder.* (elicit "one big curve") Ask a volunteer to read the text on page 11 smoothly, as though they are talking.

Pages 12–13: Identify the shape. Ask, *How would you describe the face on the cone?* (elicit "flat" and "round") *What does a cone have at the other end?* (point) *And how is it shaped all around the middle?* (elicit "curved") Ask a volunteer to read the text on page 13 smoothly, as though they are talking.

Pages 14–15: Identify the shape. Ask, *How would you describe a sphere?* (elicit "round" and "curves") Say, *Find the words that tell you what a sphere looks like.* Ask a volunteer to read the text on page 15 smoothly, as though they are talking.

Page 16: Have the students point to the shapes and recall their names. Do not discuss the text on this page so that the students may discover the "answer" when they read the text.

Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

Revisiting the Text

You may choose to do only some of these activities, over several days.

- Have the students focus on the bolded text indicating the names of shapes. Orally, have them find the words that describe the shapes' characteristics. You may wish to record these words in a chart.
- Have the students reread page 16, then go back through the book to find the number clue for each shape. Invite the students to find the appropriate number of shapes in the pictures.

- In pairs, have the students reread alternate sentences of the text.
- Have the students search the text to find all of the rhyming words. List these on chart paper or a whiteboard as the students locate them. When the list is complete, have the students look at the rhyming pairs and identify the spelling patterns. Note that some couplets have different spellings, but sound the same. (Rhyming words: kinds/find, all/wall, same/frames, everywhere/there, too/few, faces/places, face/place, round/around, ball/all, clue/you)
- Distribute **BLM 7-2: Missing Words** for the students to complete by writing in the appropriate shape word from the list at the top. Point out that not all the words are used. They can search their books for the relevant sentences, if necessary.

Working with Words: long "a"

Do a mini-lesson on the long "a" sound, giving examples and having the students say the words slowly to hear the sound. Have the students search the text and list all of the words that contain a long "a" sound. (shape, table, same, frames, faces, places, face)

Extending Activities

Identifying Shapes

Have the students choose a shape and write a list of objects found in the classroom that are the same shape. Encourage the students to give their list a title and to number the objects they find as they record them. Students can refer to a picture dictionary in order to spell more challenging vocabulary. Provide time for the students to share and compare their lists.

Make Hidden Shape Drawings

Have the students create their own pictures with shapes hidden within. When the pictures are complete, have the students count the number of shapes in each other's pictures.

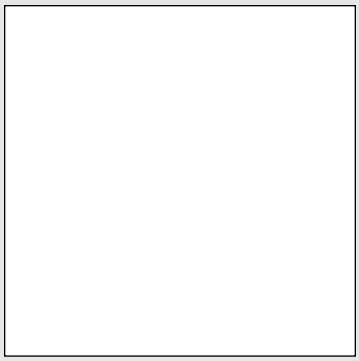
Cross-Curricular Links

Mathematics/Language Arts

Have the students refer to the text and use **BLM 7-3: Shape Graph** to graph the number of shapes they see in the pictures. When complete, the students write about what they have learned from the information on the graph (e.g., "There are more cylinders than any other shape.").

Art

Review the names and characteristics of the 2-D and 3-D shapes introduced in the book. Have the students create an object out of playdough that has at least one of the 2-D or 3-D shapes as one of its elements (e.g., gumball machine, birthday present, dice). Alternatively, students could draw or paint something that made use of at least one 2-D shape. The students may search the pictures in the book for ideas. Allow the students to present their finished products. Encourage them to use the appropriate math vocabulary to describe their objects' attributes.



Level I

Text Type

narrative (fantasy)

Word Count

370

High Frequency Words

a, all, and, are, as, at, back, be, big, but, came, can, can't, come, do, for, get, going, good, have, he, here, him, his, how, I, in, is, it, little, me, not, now, of, out, over, said, see, so, some, that, the, then, they, to, too, up, very, want, was, we, what, when, with, yes, you, your

Content Words

shapes, drawing, sphere, rolled, stack, cubes, slide, faces, square, cylinders, round, curved, point, cone, spaceship, planets

Text Features

- 16-page book
- 3–11 lines per page
- illustrations
- moderate picture clues
- dialogue
- print within illustrations
- italics

Working with Words

Speaker Tags

Cross-Curricular Links

Mathematics

Art

Mr. Sharp's Shapes

Before Reading

Display 16 cubes, 5 cylinders, 1 cone, and 9 spheres (i.e., the components of the spaceship at the end of the story). Review the names of these shapes, then ask, *What would you build with these shapes?* Discuss the students' suggestions and attempt to build them, with the students' help. (Note: Do not build a spaceship unless it is specifically suggested by a student.) Discuss the properties of the 3-D shapes wherever possible. For example, ask, *Where should we put this one with a point? This cube has six faces—can we stack it? How should we stack these curved cylinders?* In the case of the spheres, discuss their inability to stack.

Previewing the Text

- Show the cover of the book and read the title. Discuss the art. Ask, *Why do you think he's called Mr. Sharp?* (elicit the word "point")
- Say, T*his is a story about a boss named Mr. Sharp who wants to build something. He needs a lot of different kinds of 3-D shapes.* Ask, *What 3-D shapes do you think he might use? What do you think he will build?*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

  Pages 2–3: Say, *Mr. Sharp has made a drawing of something he wants to build, and the sleepy red sphere is curious.* Ask, *What does the red sphere ask him? What is Mr. Sharp's answer?* You may wish to discuss the contraction "you'll," as well as the expression "you'll see."

  Pages 4–5: Say, *Mr. Sharp needs a shape that can stack.* Ask, *Which shape do you think he'll choose?* (accept "cube" or "cylinder") Say, *What is the shape of a cube's face?* Ask the students to prove their answer, then choral read that line of text with the proper emphasis on the italicized word.

  Pages 6–7: Say, *Mr. Sharp is laughing because he thinks the cylinders are too round to stack.* Ask, *Are they? Why not?* (elicit number of faces)

Pages 8–9: Ask, *Why do you think the spheres look so sad?* Have the students practise reading the following text with phrasing, fluency, and expression: " 'It doesn't matter,' said the blue sphere. 'We won't get picked.' " Ask, *Why does the blue sphere think they won't get picked?* Say, *The spheres are wondering about something. Find two things that they are wondering about.*

Pages 10–11: Say, *At first, Mr. Sharp said he needed a curved shape.* Ask, *How do you think that made the spheres feel?* (elicit "excited") Ask, *Which shape did Mr. Sharp choose, though? Why do you think he chose the cone?* (elicit "curved," "point," "face") *How did Mr. Sharp move the cone out the door?* (elicit "rolled")

Pages 12–13: Ask, *What did Mr. Sharp ask the little sphere? Which shapes did Mr. Sharp say he needed next?* Discuss the reaction of the big spheres. Ask the students to find the word "Hooray!" and practise saying it with the proper inflection. Ask, *How does the little sphere feel?*

Pages 14–15: Ask, *What did Mr. Sharp build with all of the shapes that stack?* Have the students locate the compound word "spaceship," and discuss its two parts. Ask, *What did Mr. Sharp use the spheres for?* (elicit "planets") Ask the students to read the following line of text, taking a pause at the comma and putting emphasis on the italicized word: "All of the shapes were in the right place, so what *was* the problem?" Model the reading of Mr. Sharp's reactions, "Hmm" and "Aha!" and ask the students which shape is missing. Ask, *Do you think he'll use the little sphere for something?* Encourage the students to predict the ending.

Page 16: Ask, *Were you right? What did Mr. Sharp use the little sphere for?* Have the students choral read the last line of text.

Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

Revisiting the Text

You may choose to do only some of these activities, over several days.

- Encourage the students to reread the book together as a group, independently, or with a partner.
- Using the pictures as a guide, invite individual students to retell the story, focusing on the sequence of events. Encourage the students to use sequence/time words (e.g., first, next, then). Have students complete **BLM 7-4: Mr. Sharp's Orders** by writing numbers in front of each sentence to indicate the sequence of events.

- Locate the italicized word on the first page of text and demonstrate how the sentence should be read, with emphasis on that word. Ask the students to search the text and find the other sentences containing italicized words and practise reading those sentences with appropriate emphasis. (You may also wish to do the same exercise with all of the sentences ending in exclamation marks.)
- Discuss the use of quotation ("talking") marks. Assign characters and ask the students to read their parts (the text written in quotation marks), while you act as the narrator and read all of the text that isn't in quotation marks. Allow students time to become familiar with their lines. Encourage them to attend to punctuation and text style (e.g., italics) and to read with expression.

Working with Words: speaker tags

Explain to the students that the word "said" is a verb that tells us a character is speaking. Tell them that sometimes authors use words other than "said" to describe how a character is speaking. These words help us to read with expression, and they make the story more interesting. Have the students look through the text to locate the different "speaking" verbs the author uses. (shouted, asked, answered, laughed, thought) Using these words, have the students write new sentences.

Extending Activities

Story Writing

Have the students write their own story about Mr. Sharp and his shapes. The students choose a different structure for Mr. Sharp to build, but they must use the same four 3-D shapes. They write dialogue for Mr. Sharp and for the other characters, referring to the text for story ideas and difficult spellings. The activity can be completed on plain paper or in booklet form.

Build 3-D Structures

Ask the students to work in pairs to build a 3-D structure by using a variety of 3-D shapes (e.g., wooden shapes, foam shapes, recyclable materials). Have the students plan their structure as Mr. Sharp did, by drawing a picture of it before they start to build. They may choose to recreate the spaceship that appears at the end of the story, or build something different. Provide the students with the opportunity to present their structures and explain why they chose the shapes they did.

Cross-Curricular Links

Mathematics

Provide the students with a collection of 3-D shapes (cubes, cylinders, cones, spheres). Have the students explore and describe the properties of the shapes (number of faces, ability to roll/stack/slide). Students can record their findings on **BLM 7-5: I Know My Shapes**.

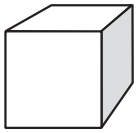
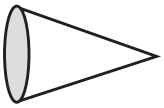
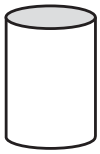
Drama

Working in groups, ask the students to re-enact the story in their own words. Give plenty of time for the students to decide on roles and rehearse before they present their play. To represent the final structure, the students may create a "tableaux" with their bodies.

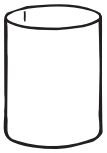
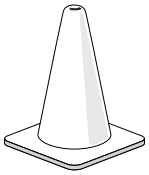
Name: _____ **Date:** _____

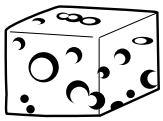
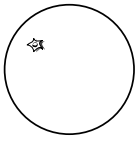
Matching Shapes

Match the pictures to the shapes.

cube			
cone			
cylinder			
sphere			




Name: _____ **Date:** _____

Missing Words

Write the correct shape word to complete each sentence.

circle	cube	rectangle	square
cone	cylinder	sphere	triangle

1. A _____ has two flat ends.

2. A _____ has three sides.

3. A _____ is flat and round.

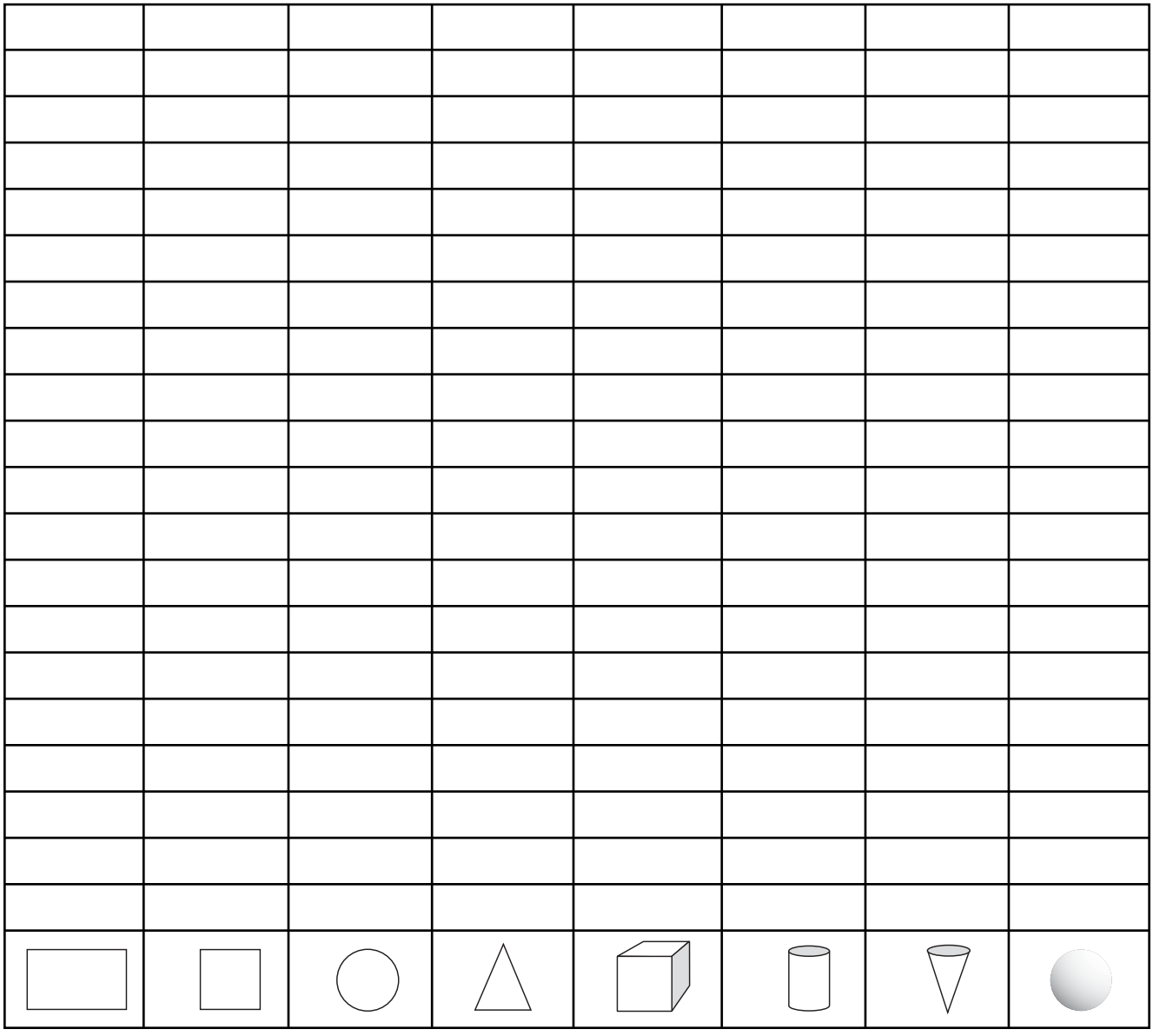
4. A _____ is round like a ball.

5. A _____ has six faces.

Name: _____ **Date:** _____

Shape Graph

Colour the graph to show the number of each shape in the book.



What did you find out?

_____

_____

Name: _____ **Date:** _____

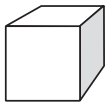
Mr. Sharp's Orders

Number each sentence to show the order they happened.

	I need a shape that is curved. (cone)
	I need another shape that can stack. (cylinders)
	I need a shape that I can stack. (cubes)
	I need all of the *big* spheres.
	Mr. Sharp needed the little sphere, too!

Name: _____ **Date:** _____

I Know My Shapes

	 sphere	 cone	 cube	 cylinder
Number of Faces				
Curves (Yes or No)				
Stacks (Yes or No)				
Rolls (Yes or No)				
Slides (Yes or No)				
Corners or Points (Yes or No)				